

## A WOMEN PHYSICIST'S CONTRIBUTION THROUGH THE PROCESS OF ISLAMIZATION OF KNOWLEDGE IN STRENGTHENING THE SELF-IDENTITY

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### ABSTRACT

The Islamization of science issue has long been a debated in our society. This research is about the idea of a Malay Islamic figure on the Islamization of science which emphasizes on Physics. The researcher observed from the idea of a Malay woman thinker and discussed on the development of knowledge especially in Physics. Prof. Dr. Khalijah Mohd Salleh has been selected as a figure of this study because she was a prominent scientist who played an important role in giving a valuable idea that can transform, correct and create facts according to Islam which acknowledge Allah, according to the Quran and Hadith. The study is based on an Islamisation of Knowledge, idea introduced by Syed Muhammad Naquib Al-Attas. The main task for all driving forces to Islamize the knowledge is by creating research programmes according to Islamic teaching and preventing the current sciences from the West to change into the Islamic way. Knowledge is global and it is not separated from Islam, including Physics. Muslim intellectual contributions also reflect their concern that is very meaningful in creating human development, education and Muslim's ideologies besides becoming a defense and must be strong enough to prevent all forms of deviation towards Islam and increasing the self-identity of Malaysians.

**Keywords:** Islamization of knowledge, Physics, Life Contribution, Self-identity.

## 1.0 INTRODUCTION

Every human being ought to have self-identity. The concept of self-identity explains the internal characteristic of an individual which includes the attitudes or behaviours of the individual. This feature can be identified through the individual appearance. Typically, individual self-identity also symbolizes the national identity as the individual characteristics are also the nation characteristics (Abdullah Hasan, 2009). Thus, national identity in general can reflect the identity of the individual and vice versa. John Locke once said that "the equality of an individual is confined in the essence of his mind. The essence of the mind that is brought since childhood until adulthood will not change. It is a continuation of the memory itself. The unchanged continuation of the memory is actually the essence of self-identity". Thus, self-identity is an individual characteristic that is somewhat hidden and innate but can be formed through the action. In the Constitution of Malaysia, Malays are defined as Muslims who speak Malay language and practice Malay customs, culture and lifestyle. However, Shamsul Amri (2004, 135 -148) has elaborated on the concept of self-identity with different meaning. He stated that self-identity is a perception of the mind that is created and enforced by the Western thinkers and British colonials to us. In other words, the Western ruling has successfully permeated our culture and colonized our mind to think similarly about our self-ability in defining our own world.

The author also defined self-identity as stable and permanent nature, characteristics or values of an individual that will not change or difficult to change. For example, telling the truth, trustworthy, communicates the information wisely, honest and theoretical and aesthetic values. The author did not take shameful and negative characteristics and attitudes as the values of self-identity like lying, lazy and messy. Self-identity does not include physical traits such as height and body size. Self-identity is a positive internal characteristic and it is very personal but universal enough to be shared collectively, as a universal and positive group will be able to form the national identity and the local community.

For example, a similar understanding can be shared. The positive universal characteristics and homogeneous will be highlighted by the author as the basis of national identity of Malaysia. This universal internal basis will only be able to stand with language as its pillar, and the author believed that the Malay language can be a basic pillar in shaping the national identity of

Malaysian. With the understanding of personal appearance as one of the characteristics of self-identity, we will also find that identity can shape the public perception about ourselves. Self-perception that has not changed from the public opinion is the outward identity that can be seen, studied and explored by other individuals about ourselves.

The concept of self-identity is about the personal trait and characteristic of an individual. For example, Malaysian self-identity can be defined as people who practice Malay customs, were born from Malay family, and can speak in their own dialect and Malay language as their mother tongue. Self-identity is defined as a unique trait or characteristic in terms of customs, language, culture, religion and so on which become the core and symbol of one's personality, nation, and so forth.

## **2.0 THE IMPORTANT OF PHYSICS AND ITS ISLAMIZATION OF KNOWLEDGE**

Physics is the study of matter, energy and their interaction which is an international enterprise, which plays a key role in the future progress of humankind. The support of physics education and research in all countries is important because Physics is an exciting intellectual adventure that inspires young people and expands the frontiers of our knowledge about Nature and generates fundamental knowledge needed for the future technological advances that will continue to drive the economic engines of the world. Physics also contributes to the technological infrastructure and provides trained personnel needed to take advantage of scientific advances and discoveries.

Physics is an important element in the education of chemists, engineers and computer scientists, as well as practitioners of the other physical and biomedical sciences. It's because Physics extends and enhances our understanding of other disciplines, such as the earth, agricultural, chemical, biological, and environmental sciences, plus astrophysics and cosmology which subjects of substantial importance to all peoples of the world. Physics also improves our quality of life by providing the basic understanding necessary for developing new instrumentation and techniques for medical applications, such as computer tomography, magnetic resonance imaging, positron emission tomography, ultrasonic imaging, and laser surgery.

The idea of Islamization of knowledge has been known through the Muslim scholars and thinkers such as Syed Muhammad Naquib al-Attas, Ismail al-Faruqi and Seyyed Hossein Nasr. In fact, they are the pioneers of the idea of Islamization of knowledge through theoretical and practical work according to their understanding and expertise (Mahadi & Khadijah, 2013). Generally, the Islamization of knowledge aims to reassess the contemporary knowledge built in the tradition of Western scholarship, based on the assumption that they are influenced by secular ideologies.

Due to secularism, knowledge that comes from Western tradition contains many elements that are contrary to Islamic values. In this case, the premise is the knowledge that is not value-free and not as objective as being assumed because of the influence of values hold and believed by scholars who developed the knowledge. If the knowledge comes from the Western tradition, it will surely bring Western values. Hence, this knowledge has to be assessed based on the values in line with Malay tradition and Islamic teaching.

The focus of this paper is the Islamization of knowledge which concentrates on physics. Physics is a science created from human attempts to understand nature. At first, physics is better known as natural philosophy. This name is more meaningful as Physics is a compilation of experiences, observations and concepts so that this natural phenomenon can be understood within a consistent framework (Zainul Abidin, 1997).

Physics involves the process of perceiving, thinking and describing a physical natural phenomenon based on the laws of nature. These laws are written in the form of equations, inequalities or other mathematical expressions and descriptions about these laws are obtained through equations. On the other hand, metaphysics is the study of the supernatural, which is a phenomenon that can be observed in the real world directly or indirectly with the natural laws of the physical universe. As the supernatural world is broader, more unknown and difficult to know or to be believed that the physical universe (nature) is embedded in this supernatural world inside the topology that we still do not know, certainly the Metaphysics becomes so difficult to make it scientific.

For Muslims, it is clear that supernatural world has become part of the pillars of faith and thus, the nature of their views will not differ from metaphysical perspective on how great physics or biology research is. In fact, despite every new discovery of science and knowledge, we will find more depth issues arise which is, where ultimately, what are the laws and the models that are more accurate and comprehensive, and who designed and made it in such way?

The objectives and methods of physics depend on the idea about physics. The basic idea is strongly influenced by the view of nature from physicists. This study will investigate the idea of an Islamic physicist about the relationship between physics and religion in daily life as many students are currently studying physics since secondary school. Physics is different from other sciences such as chemistry and biology because it refers to substance in everything created by God. The main goal of this study is to acquire knowledge about the substance objectively (Maxwell, 1984) and in a logical order. Natural features to be studied are about the form, nature, behavior of the substance, laws being followed and requirements of the invisibility of its characteristic. The purpose is ultimately to help people carry out activities in their daily lives.

### **3.0 THE BACKGROUND OF KHALIJAH SALLEH**

This research study is about Prof. Dr. Khalijah Binti Mohd Salleh. She was born on February 1, 1947 in Kuala Lumpur. She was born in Kampung Bharu, Kuala Lumpur. She was the second child out of six siblings. She was the daughter of Mohd Salleh Abdul Majid and Rahmah Zainal Abidin and was particularly interested in Physics since childhood. She often read the books about heat that belonged to her father who was an engineer at that time. She had five children, two daughters and three sons.

Similar to most great leaders, Khalijah Mohd Salleh had basically achieved success on her own hard work. Although her mother was a teacher and her father was an engineer, it did not mean that she lived in luxury. Her modesty and intelligence encouraged her to place a high target for herself in achieving life goals. Finally, she managed to become a lecturer and a good mother in teaching her kids as well as her own students.

She began her study at Kampung Baru Malay Girl's School, Kuala Lumpur in 1952-1954. Then she continued her study at Junior Methodist Girl's School Brickfields, Kuala Lumpur and in the

afternoon, she went to Kampung Baru Religious Girl's School, Kuala Lumpur in 1955-1958. In the following year, she continued her secondary education at the Malay Girl's College, Damansara, Kuala Lumpur from 1959 to 1961. Next, she moved to a smart school which was Tunku Kursiah College, Seremban in 1962-1963. In 1964-1965, she went to Convent Bukit Nanas, Kuala Lumpur (Khalijah, 1992).

In form 3, she obtained 5As in the Lower Certificate of Education (LCE) examination in 1961. In the MCE examination in 1963, she managed to get 11 aggregates. She obtained 2 credits for Science subject. Unfortunately, her result for English was not good enough and this has led her result to fall to the second ranking. In her Bachelor of Science examination in 1970, she obtained a second class upper.

She continued her undergraduate degree at the University of Malaya, Kuala Lumpur in 1966-1970. She got the opportunity to study abroad for the master's degree for two years from 1970-1972 at the University of Kent, Canterbury, UK and continued her studies up to the doctorate degree from the year 1974-1979 at the University of California Davis, USA (Khalijah, 1992). She was the first woman in Malaysia who got a doctorate degree in Physics. Indeed, during that time, not many young people were interested in Physics. Since school days, she was very fond of the religious knowledge. Although she was not encouraged to learn the translation of the Qur'an without the guidance of a religious teacher, she had the courage to study the translation at that time. She took the Malaysian Certificate of Education (SPM) at the age of 16, earlier than other students who took the examination at the age of 17. This is clearly proven when she became the first Malay woman to get a doctorate degree in Physics in Malaysia.

She wanted to become a Muslim believer. During her lifetime, she stressed that every action must be done only because of Allah to achieve His pleasure in this world and the hereafter. According to her husband who became her friend until her last breath, Khalijah Salleh liked to know every meaning of the Quranic texts when she read it from the first page until the last page. After finished the recitation, she repeated the recitation again with translation. Her hobby continued until the end of her life, especially during the month of Ramadan in which Allah encourages his servants to read the Quran in the month full of blessings.

From the reading of the translation, she found many elements of science contained in the Quran. Hence, she tried to connect science with Islamic theology. Islamic theology is the study of the oneness of Allah. Tawhid means there is no god but Allah to be worshiped and Muslims must carry out their duties as a servant and caliph.

Since her hobby was well-suited with her, it made her excited to know the translation of the Quran even though she did not know how to speak Arabic. She never learned Arabic during her school time, but she was very capable in the translation of the Quran. This is because she knew a lot of words in the Quran from her memorization of the Quranic verses. At the university level, she involved in the Muslim Youth Movement of Malaysia (ABIM). She was the former Chairman of ABIM Women Affairs and Woman Secretary of ABIM.

She was very committed to apply the science of *tawhid* to the public, including children in kindergarten. Therefore, she and her colleagues from ABIM taught other kindergarten teachers in order to explain the real *tawhidik* science. She used Radio Television Malaysia (RTM) approach in a slot that explained the *tawhidik* science. In that slot, she gave simple examples so that people could easily understand science associated with Islamic theology. She liked to relate everything happened with religion as she believed that everything happened for a reason.

Khalijah Salleh was a very active and intelligent woman. According to her husband, during her lifetime, Khalijah Salleh was able to read quickly. Because of that, she was able to finish a lot of scientific books quickly. She was also very focused and active in any occasion. She always asked questions or expressed her opinions at the end of the event. This was proven as during her high school, she was a debater who represented the school in debate competitions. She emphasized the importance of science in human life and the relationship between science and Islam. She contributed a lot by suggesting the opening of the nursery for the employees' children at UKM. This helped the UKM staff to send their children to the nursery while monitoring their children within short distance. This was extremely helpful because they did not have to worry about monitoring their children from time to time.

She died at 10 am on Saturday, September 17, 2011 corresponding to 19 Shawwal 1432. She was a lecturer in the Department of Physics, UKM and a former Chairman of Helwa ABIM. She was the first Chief of Helwa, who was also among the founders of ABIM HELWA. Her

death was mourned by every ABIM member, both woman and man. She was suffering from blood cancer. Chemotherapy endured by her had a lot of side effects. At the end of her life, she was still strong enough to be a lecturer at the UKM and had to wear mask to avoid infection. However, her spirit to continue the Islamic preaching by Prophet Muhammad never faded.

During the last days she was hospitalized in HUKM, visitors never fail to visit her. Her patience to face the last moment of her life was very high. She was very enthusiastic as usual. She knew who her visitors were. Although she was sick, she still talked with sweet smile that symbolic her. She had been known as the first Malay woman in Malaysia to get a doctorate in Physics. She was the one who could inspire her listeners and became a Malay pioneer in whatever field she took might proven that Malay were also capable.

Her good and approachable characteristic as well as her integrity in science education are admired and can be used as a role model to the younger generation today. The opportunity to know her more thoroughly through interview with her husband and friends was something very precious. The author had the opportunity to know her life experience and it was something memorable. Despite the success achieved, she was a simple and humble woman. Sincerity and cheerfulness were constantly reflected in her tender face. Her personality was very impressive besides her personal success and contribution to the country especially in science, women's affairs and Islam.

Khalijah Salleh was elected as a prominent figure in this study because she was a scientist who played an important role in mobilizing a worthy idea to create embodiment, correction and the establishment of the Physics that was not different from the path of Islam which focused on the oneness of Allah, as stated in the Quran and Hadith. This idea is called as "Islamization of knowledge". The main task of the Islamization of knowledge is by creating a research study according to Islamic teaching and not allowing the existing science to modify the Islam so that it was accepted in the Western world. Knowledge is universal and there is no separation between knowledge and Islam, including Physics.

#### **4.0 THE CONCEPT OF ISLAMIZATION OF KNOWLEDGE**

There is no denying that the Western scholars have contributed a lot in science. They were famous because they have contributed the knowledge in their field, and often did research, writing, and organized conferences and scientific discourse until their knowledge was widespread throughout the world (Yusof Othman, 2014). The external influences from Greek, Persian, Hindu, Christian and Jews have become an important agenda for Muslims to handle. These influences must be addressed by intellectuals and become an important agenda to current scientists and scholars. Therefore, all Islamic intellectuals should unite to address the issues triggered by the West and content against their arguments through knowledge of Islamic scholars and intellectuals.

The idea of Islamization of knowledge plays an important role in the effort to redefine the social sciences such as sociology, anthropology, psychology, history, political science, economics and so on according to the concept of Islam based on the Quran and the Sunnah. However, it is not an easy task as modern Muslims are not only become familiar with the concept, ideology, methodology and approach of the West, but their characters have also been determined by modern secular education since childhood. Even in universities which are located in Muslim countries, Western concepts in social sciences have become synonymous in all faculties of social sciences. Reference materials for professors and lecturers are all dominated by the West ideologies. Then, the Western ideologies are passed to the students through lectures.

The term Islamization of knowledge was first proposed and used by Syed Muhammad Naquib al-Attas in his book *Islam and Secularism*, which was first published in 1978. The use of this term was also suggested by Ismail al-Faruqi in 1982 as a reaction to the obstacles faced by the Islamic community in various fields. The contemporary Muslim world faced a big problem because the appropriate methods in science could not be fully applied to the philosophy of Islam. On that basis, he suggested that the methods in Islamic philosophy must be revived, encouraged ijihad and integrated it with scientific methods within the boundaries of Islam (Maisarah Riza, 2012).

According Khalijah Mohd Salleh, science is a process of acquiring information through systematic observation, rational analysis of the observed object or event to gain knowledge. She

also noted that the Muslims' purpose to study science is to unravel the secrets about nature until they are able to know the characteristics and behaviours of nature as well as the the laws they comply and to recognize the power of Allah to reinforce their confidence in Him. In a more technical meaning, Khalijah Mohd Salleh defined science as "mapping one to one between reality and perception of the intellect and the action taken on the shape or structure of a being that exists, the dynamic process of an event and the existence of a being or an event" (Sh. Mohd Saifuddeen, 2012).

The Islamization of physics is only a minor part of the Islamization of science. There were also intellectuals from Malaysia and in foreign countries who assumed that Islamization of science is not an appropriate title (Haji Badri, 1997). For them, physics, chemistry, biology and so on is the knowledge with no Islamic term and they are non Islamic. Everything is a gift from Allah to His servants. From one angle, this opinion is correct if it is based on the neutral concept of knowledge. According to Haji Badri, even if the knowledge is neutral, the problem that may arise is the use of that neutral knowledge that might deviate from the tenets of Islam. In fact, the technology that was created from science must be monitored. In this context, the Islamization of science is to distance itself from making an 'immoral' technology according to Islam.

By the 19th century, structured science and technology activities existed in Malaya. Science and technology used in certain fields of science, especially in Physics was not far behind. For example, radiographic X-ray machine has been installed at the Ipoh Hospital since 1899 (Halimi Mohd Khalid, 2012). According to Adi Setia, the original idea of the Islamization of knowledge was described by Syed Muhammad Naquib al-Attas and not by Ismail al-Faruqi.

## **5.0 LIFE CONTRIBUTION OF KHALIJAH SALLEH**

During the life of Khalijah Salleh, she participated in many seminars, conferences, workshops, courses, lectures, colloquia and other similar programs. For example, in 1998, she participated more than in ten seminars including the National Seminar on the Issues of National Education, Physics Education for Secondary School towards 3<sup>rd</sup> Millennium, Seminar on Women and Development and the 9<sup>th</sup> Cultural Knowledge Program. She also participated in workshops

oriented on or related to the Islamic teaching such as Wahdatul Helwa and Seminar on Mathematics and Science in the Current Islamic Society (Khalijah, 1992).

She is an academician, a scientist and a committed activist. Her death was deeply felt by Muslims in Malaysia. She was also very famous as the one who pioneered the science of Tawhid. Her excellent skill in this field had made her very respected as she had successfully proposed the relationship between science and faith as a basis to strengthen Muslims' faith. She was awarded a Special Award 'Sayyidatina Aishah'.

Khalijah Salleh joined many associations and activities such as member of the National Council for the Women Integration and Development, Malaysia Islamic Economic Development Foundation (YPEIM), IKIM Distinguish Fellow, member of Sigma-Xi Society, member of the Islamic Science Academy and chairman of the Commission of Science and Technology NCWO. She was also a member of the Muslim Youth Movement of Malaysia (ABIM) which served to introduce and uphold Islam as a way of life around the world, especially in its homeland. She often gave talks, lectures, Islamic talk, and courses about science, culture, development and especially religion. She hoped that the younger generation that would lead the country in the future would continue to protect Islam and introduced it to the world.

She was a member of Muslim professionals who wish to improve Muslims' condition through religious talks and knowledge. She was a professional fighter who was very enthusiastic in everything she did. For example, she was very committed to ABIM, knowledge and education. She would not refuse any invitation from Helwa or ABIM Education Bureau in terms of sharing knowledge, especially in science of Islam. In her final phase of struggle, she was very concerned about the need to commercialize the science among Malay people and the importance of the relationship between science and faith. Despite being diagnosed with cancer, as long as she could stand, talk and be strong, she continued her effort to Indonesia to talk about Islamic science to fulfill the invitation of the International Institute of Islamic Thought (IIIT) in Indonesia.

She still attended Helwa event in early 2011, although her health had begun to deteriorate. Her efforts were not only to ABIM but all Islamic organizations such as Yadim and IKIM. Her persistence in science was proven when she was appointed as a fellow of the Academy of Sciences Malaysia. Khalijah Salleh was a heroic and courageous woman. Apart

from her career, Islamic missionary and social activities, she was also a successful wife and mother. Although she had gone, we have to continue her efforts in educational field to strengthen the science of Islam and faith of Muslims. This is the least that we can do in recognition of her valuable services. She was an educator who did not only teach Physics, but also educate people about the knowledge of the world and the hereafter.

She was selected as the figure in this study because she was the first Malay woman to get a doctorate degree in Physics. This has proven that women are able to compete with men in education. Women are able to educate the younger generation better. Their tenderness and concerns for children makes them the most suitable educator in educational task. In addition, women also contribute towards Malaysia economic sector and have certain skills that are useful to them. At the same time, they are also able to obtain the knowledge as much as they want. Efforts to gain the knowledge make them more confident and better to various changes in technology.

The role of women in the development of the country is very important. Another example is Mother Zain. She was not willing to see her generation stay behind without knowledge so, she established a school. She was also active in associations. She was among the figures who established the Malay Teachers' Association and Johor Religious School. She was promoted as the first president of the association because of her self-esteem that fascinated the members. She became the President of the Federation of Malay Women Teachers for 19 years since 1930.

Women are often seen as the weak and always being used by the current community. However, behind their tenderness, there is perseverance that can contribute something for the development of the country. The mass media often displays about the potential of women in developing the country. Women struggle can strengthen their faith to be more pious and righteous. Women who understand the concept of Islam will endeavor to carry out all Allah's commands and stay away from all His prohibitions. As a knowledgeable and confident wife, woman can be a friend for her husband in encouraging him to do good deeds. As a mother, she carries a very big role. Mother is the only person who can educate her child to be a good and helpful person. Mother is a Muslim model for her children in terms of her manners, speech or

actions. She is also the main educator who can inculcate the spirit of Islam in the minds of her children from the beginning (Khalijah Mohd Salleh, 1992).

## **6.0 CONCLUSION**

In conclusion, this study has provided details on the response needed on the new idea of Islamization of knowledge in society especially in the Malay community and international level that must be integrated by intellectuals, scientists and Islamic scholars as a long-term practical research. In addition, it can build a new paradigm gradually to realize the real Islamic worldview and consistent in a personal and institutional level. Khalijah Salleh's contribution is also a reflection of her concern that is meaningful in shaping human development, education and Muslim thought. In addition, it acts as a fortification strong enough to prevent all forms of abuse against Islam. The basis of this methodology can be used as a solid foundation to go against liberalism and moral collapse in Islamic civilization today.

Islamization of knowledge and its influence in this civilization is like the process of filtering gold that has been mixed with soil, mud, sand, or feces. Gold will remain as gold and no longer need to make it gold, but it needs to be filtered and shaped according to the preferences. This method is essential before it is distributed to the buyer or the user. Therefore, this study specifies that this is the best time for Muslim scholars and thinkers to play their important role in highlighting the planning and carrying out the process of Islamization of knowledge, especially in physics in Malaysia as led by prominent scholars in the past. Through Malay heritage and religion, Muslim scholars and thinkers also have acquired the basis of faith and discipline to protect the Islamization of knowledge which is not easily affected by secularism and Western influence.

The Islamization of knowledge is considered important, especially to provide the Muslim Ummah a methodology in confronting the contemporary issues or modern knowledge. At the same time, it is also a crucial process in filtering the modern or western knowledge as to make them in line with the Shariah. Moreover, it is essential to have such Islamise knowledge to bring about the glory of Islamic civilization.

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