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CURRENT STATUS OF THE PHILANTHROPIC PRACTICES IN ASTRONOMY

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Abstract

The purpose of the philanthropic practices in Islamic tradition is not only about Islamic ethics and fiqh, but to enhance the efficiency of welfare distribution and development of the ummah, including the community intelligence. This paper reports the current status of the philanthropic practices that have been utilised in the astronomy field and their effects in buttressing the advancement of Islamic astronomy (falak syar'ie), astronomy, and space science. This paper acts as a preliminary study as part of a bigger research therefore, it is limited to a review of philanthropic practices that have been and are being implemented in astronomy and the extent of their impact in this field. The inductive and deductive approaches were used in analyzing the research data obtained from the literature review. This paper found that philanthropy is a practical mechanism that could be applied in sustaining the development of astronomy and space science knowledge. In Malaysia, the practice of philanthropy from individuals funds in supporting the field of astronomy is seen as quite positive. Nonetheless, this practice is seen as less encouraging within the government, non-profits and corporations. Therefore, it would be great if philanthropic institutions along with strategic fund planning could be established. More structured fund management will lead to intelligible planning for the growth of the astronomy field in this country.

Keyword: *Astronomy, donation, infaq, philanthropy, waqf*

INTRODUCTION

Philanthropy term is derived from the Greek word which etymologically meaning love of mankind. According to Payton and Moody, philanthropy is a

concept related to goodness and love for human beings, so that one is willing to donate one's property to help others (Payton & Moody, 2008). In other words, philanthropy term can also be synonymous as generosity.

The term of philanthropy in early Islam is unknown, howbeit some Arabic terms refer to the similar meaning have been used, such as *al-'ata al-ijtima'i* (social giving), *'ata khayri* (giving for good), *al-takaful al-insani* (human solidarity), *al-birr* (good deeds) or *al-sadaqah* (alms) (Ibrahim & Sherif, 2011). As for the practice of philanthropy in Islamic tradition that widely covers the dimensions of goodness such as zakat, donation, charity and waqf are the terms that show the form of Islamic philanthropy. These terms can help the discourse of Islamic philanthropy to broader issues, not only in terms of traditional discourse such as Islamic ethics and *fiqh*, but also can improve issues of social justice, community intelligence and the welfare of ummah. In al-Quran, the term of *infaq* has been used to describe donation, *hibah*, *zakat* and *waqf* (Uyun, 2015). All forms of expenditure or spending of property for matters prescribed by Islam can be said as *infaq*.

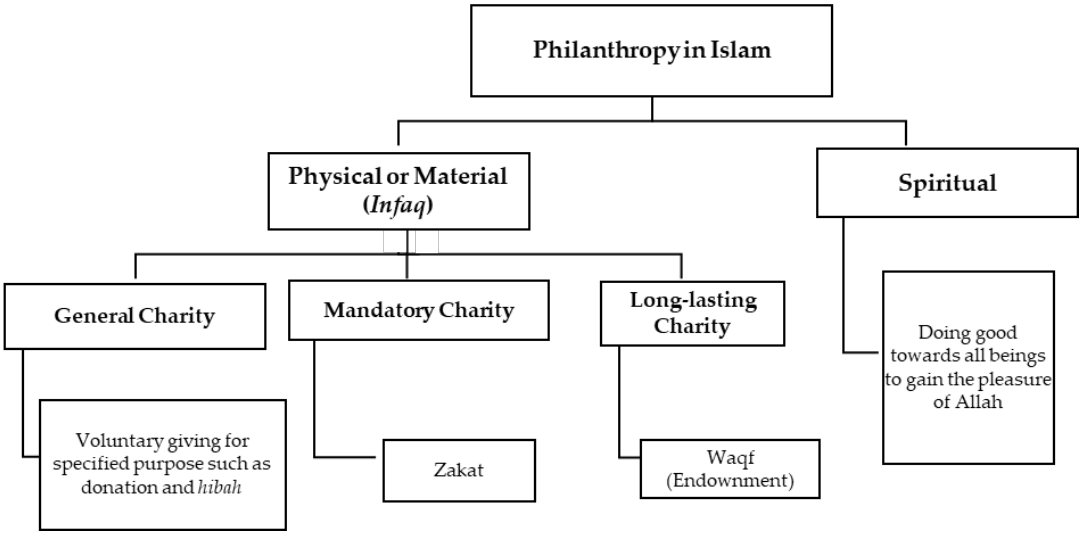
As one of the verses in al-Quran that states about the *infaq* command is found in surah al-Baqarah verse 195:

وَأَنفِقُواْ فِي سَبِيلِ ٱللَّهِ وَلَا تُلۡقُواْ بِأَيۡدِيكُمۡ إِلَى ٱلتَّهۡلُكَةِ وَأَحۡسِنُوٓاْۛ إِنَّ ٱللَّهَ يُحِبُّ ٱلۡمُحۡسِنِينَ

> And spend in the way of Allah and cast not yourselves to perdition with your own hands, and do good (to others); surely Allah loves the doers of good.

The concept of philanthropy in Islam can be divided into two categories as in Figure 1 (Othman, 2017). Despite the different forms of contribution, these two categories are still aimed at doing good to all beings (*qurba*) and getting closer to Allah SWT (*taqarrub)*. Interestingly, the concept of philanthropy in Islam goes beyond doing good deeds to fellow human beings, even to all made creatures of Allah, including animals and the environment.

Figure 1 The Categories of Philanthropy in Islam



The National Aeronautics and Space Administration (NASA), a space agency that serves to conduct space research and exploration, in its budget estimate, has stated that as much as USD23.3 billion estimated expenditure for 2021 to manage human spaceflight activities, robotics mission, scientific research and management (NASA, 2020). An example of another organization undertaking large-scale astronomy projects is the European Southern Observatory (ESO), for which approximately USD211 million annual budget is spent on construction, operation and maintenance of the observatories (Michelsen, 2019). While the cost of building a private mini observatory, equipped with several types of telescopes can reach from USD15 000 to USD120 000 and more (Bernama, 2017). As expenditure in astronomy spends astronomical sums, several measures such as privatization and philanthropy are feasible measures to cover this spending. However, privatization risks reducing education accessibility of STEM and education and engendering unsustainable patterns of social inequality (Rivzi, 2016). In this context, philanthropy can be concluded as the best solution as this is a healthy delegation from the government and involvement from the public sector and private company in form of corporate social responsibility (CSR).

Therefore, the purpose of this preliminary study is to report the current status of the philanthropic practices that have been practiced and their effects in supporting the advancement of astronomy, space science and Islamic astronomy (*falak syar'ie*).

RESEARCH METHODOLOGY

This qualitative research is conducted to identify the underpinning philanthropy practice in astronomy worldwide. Descriptive analysis i.e. library research strategy was adopted in order to achieve the research objective. It is the most suitable for this preliminary study provided with correct search criteria. With general-to-specific approach (deductive), this study started with general sources to find leads to specific sources. At some point of this study, specific-to-general approach (inductive) was applied to find citation to related research and theory (Douglas, 2013).

DEVELOPMENT OF PHILANTHROPY IN ASTRONOMY

The literature review has portrayed that *infaq* (donation) and *waqf* (endowment) are two philanthropic instruments that have a great influence on the advancement of astronomy, which has impacted (i) astronomical research and knowledge construction, and (ii) astronomical community and environment.

Astronomical Research and Knowledge Construction

One of the most notable examples of science philanthropy's power is its support for observational astronomy. Historically, waqf institutions play a significant role in the development of astronomical knowledge and education. During the Islamic civilization, most of the construction of the observatory was supported and funded by the government at that time. Through this initiative, astronomy knowledge has flourished and many astronomers have discovered new theories about the universe. For example, during the reign of the Abbasids, in 1577 A.D., the first observatory in that era was built, namely, Syammasiya and Qasiyun observatory said to be part of House of Wisdom (*Bayt al-Hikmah*), which was endowed by dignitaries and government leaders (Ismail, 2015). Among the activities carried out at this observatory is the solstice observation that was implemented by Yahya Ibn Abi Mansur along with al-Khawarizmi (828 A.D.). Besides, the most important study conducted during the rule of Caliph al-Ma'mun is the determination of Qibla direction.

Afterwards, in 1261-1316 A.D., the Maragha observatory, Azerbaijan which is the most successful observatory and has been a reference during the era of Islamic civilization, is the first observatory that benefits from the endowment income (Ismail, 2015), besides being fully supported and funded by the government. This observatory serves as an astronomical educational institution for students to study mathematics and astronomy as well as operate astronomical instruments. Adequate funds also help in managing human resources at this observatory with a systematic allocation of duties to the observatory director, researchers, teachers and technicians. The results of continuous observations performed here and the discussion among scientists such as at-Tusi, the first theory to refute Ptolemy's views on planetary theory

have been developed. Other studies resulting from this observatory include the research on equinox precision and Ilkhani Zij (the complete astronomical table) that has been a source of reference for astronomers. This observatory has shown that waqf income not only helps welfare institutions and improves society but has driven the development of astronomical knowledge and space science.

Similarly, the concern, awareness, and support of the ruler to channel donations and allocate state funds for astronomical development is a major factor in the advancement of astronomy and space science of a civilization. For instance, the caliph Abu Ja'far al Mansur (754-775 A.D.) had issued a number of state funds to finance the work of translating astronomical works into the Arabic language for purpose of developing astronomical knowledge. Other than that, Sultan Murad III has also shown his support by willingly financing the construction of the Istanbul observatory (Roberts, 2013), of which numerous studies have been successfully conducted by Taqi ad-Din here. These include the development of a giant armillary sphere for measuring the astronomical objects' position and the significant innovation of mechanical clocks that are accurate enough for astronomical purposes.

The tradition of large-scale support as an initiative to encourage more in-depth exploration into the cosmos continues today in Western countries, by funding astronomy projects that have transformed knowledge and understanding of our universe. For instance, Carnegie Institution has funded the world's first large telescope, the 60-inch reflector installed on Mount Wilson, California in 1904 as well as a 100-inch telescope – which has been the site of significant astronomical discoveries for decades, such as the expanding universe. The son of NR founder Narayana Murthy was also not left behind to show his support in the astronomy field by donating USD1 million to run the unique robotic astronomy project at the Kitt Peak National Observatory (India Bussiness Insider, 2015). To date, the practice of philanthropy still ongoing and growing, as more underway telescope projects, such as the construction of the Thirty Meter Telescope in Mauna Kea Observatory, Hawaii which the Gordon and Moore Foundation has donated USD250 million. Similarly, the Charles and Lisa Simonyi Fund who want to make a positive difference in astronomical research has contributed USD30 million towards the Large Synoptic Survey Telescope in Chile (The Funding Frontier, 2018). For the space telescope projects, although usually such projects will be financed and developed through national space agencies because their projects are too costly and have very long development times, there is still room for philanthropists to contribute. Project to survey exoplanets, the Transiting Exoplanet Survey Satellite (TESS) which was launched in 2018, its expenditure of USD337 million has been funded by NASA, was initiated with USD2.5 million from philanthropic seed money (Maresi & Marchi, 2020).

Astronomical Community and Environment

In addition to concentrating many funds on space science research to explore outer space, in the United States, they also practice philanthropic practices on environmental sustainability in the context of astronomy. The National Park Foundation has been able to actively move to protect and enhance America's national parks including efforts in preserving the night sky from light pollution. Armed with the fund supports from various foundations and individuals until there is up to USD1 million for each donation, their efforts in reducing light pollution inside the park and engaging the local youth for educating the public are seen as successful (National Park Foundation, 2012). The application of such philanthropic culture can help to increase public awareness about the importance of preserving the night sky and minimizing light pollution in order to improve wildlife protection and natural habitats, energy efficiency, human health, and the nighttime sky experience for park visitors.

Meanwhile, in Indonesia, Imah Noong, a private observatory with an education concept, owned by Hendro Setyanto, was established gradually from 2012 to the end of 2014 using private funds and donations from several institutions. Among the sources of funds for the continuation of the observatory, apart from generating its own income from several efforts and collaborations with the local community, Imaah Noong also receives regular contributions from companies such as the Indonesian Oil Company Pertamina. The result of *infaq* practice from the owners and various parties to this observatory caused the community in the surrounding area to benefit from the economic point of view and attract more people to the astronomical knowledge (Hardianto et al., 2018; Misran, 2019).

Another interesting philanthropic practice to highlight was done in Saadat Shahr, Iran, an agricultural city, where the people were so fascinated with astronomy and stargazing that they clubbed together to finance the construction of an observatory there and the purchase of telescopes, even though they were not wealthy individuals. Just because of their deep passion for astronomy, their women are also willing to sell their jewelry to raise funds. This is one of the efforts that has made Saadat Shahr or the so-called "Astronomy Town" a place whose astronomy has been merged with local traditions and daily life (Tafreshi, 2009).

MALAYSIA'S PHILANTHROPY LANDSCAPE IN ASTRONOMY

As worldwide philanthropic practices, *infaq* (donation) and *waqf* (endowment) are also the biggest instruments that drive the growth of astronomy in Malaysia. Among the significant efforts made to improve astronomical progress in Malaysia is the construction of several observatories that can be categorized into several types, i.e., (i) National observatory, (ii) Official

observatories under the auspices of the State Mufti Department, (iii) Observatories under higher education institutions and schools, and (iv) Private observatories.

Among the observatories built from funds sourced from philanthropic instruments is the al-Khawarizmi Falak Complex, Malacca. The construction of this observatory in 2002 was carried out at the observation site which at first was privately owned by a local resident there (Jamsari, et al., 2017). Then, the land was endowed to the State of Malacca Mufti Department to be gazette as an official new moon observation site for determining the starting date of the Hijri months. With the existence of this complex, many activities that encourage the development of astronomy can be carried out, especially astronomical research that related to Muslim's worship matters. Apart from that, disseminating the understanding of astronomy to the community can also be implemented this complex as one of the attractions in the tourism industry in Melaka.

In 2009, the construction of Teluk Kemang Baitulhilal Complex was implemented in a joint venture between the Department of Wakaf, Zakat and Hajj (JAWHAR) and Negeri Sembilan Islamic Religious Council (MAINS) which is the landowner. As a governmental department that aspires to cultivate the legacy of waqf practices in Malaysia to improve the socio-economic status of the community, JAWHAR has allocated MYR18 million for this project, while the rest is borne by MAINS. This effort has made this complex an official hilal observation centre, astronomical observation and research site as well as one of the astrotourism spots. The existence of such complexes indirectly to some extent provides employment opportunities to physics and Islamic astronomy graduates in Malaysia who are still looking for jobs to practice the knowledge and skills they have learned.

As for private observatories, including the Balai Cerap Mini Dr. Rowi, the owner, Prof Dr. Mahomarawi has spent about MYR500,000 for the equipment of the mini observatory previously including 20 telescopes. Then the observatory moved and was converted to the Kota Bharu Observatory with receiving facility contribution worth MYR250,000 from the Ministry of Science Technology and Innovation (MOSTI), in line with MOSTI's main objective to develop the field of astronomy in the country (Bernama, 2017). Besides, the ShahGazer private observatory, owned by Mr. Shahrin Ahmad, located in Sri Damansara, with the design of the wheeled roof opening was built at a cost of about MYR18,000. The observatory which was originally the attic of his house also placed 6 (six) telescopes estimated to be worth about MYR40,000 (Hadi, 2011). The willingness of the owners who have spent a certain amount of funds and dedicated some space in their house for the construction of the observatory can be categorized as *infaq*, because through their initiatives and contributions,

it has opened up opportunities for the community and astronomy enthusiasts to understand astronomy and operation of telescopes and related devices.

Apart from the contribution to the construction of observatories in Malaysia, there are also efforts by certain parties to contribute astronomical equipment for encouraging astronomical knowledge in this country. For example, the support from the National Institute of Lands and Surveys (INSTUN) which has contributed sets of telescopes to Bachelor of Shariah (Islamic Astronomy) Programme at the University of Malaya and *Peminat Ilmu Falak Islam Perak* Association for teaching and learning purpose (Institut Tanah dan Ukur Negara, 2019).

Based on the philanthropic practices that have been mentioned, it turns out that awareness of the importance of astronomy in Malaysia is still unable to attract the attention of government, non-profits and corporations to funding vigorously towards astronomical works in Malaysia. The practice of philanthropy for education in Malaysia is seen to be more inclined to matters related to religion such as the construction and management of *tahfiz* centers and so on. There is a need for a party to voice this issue in order to encourage philanthropic practices and create a dedicated platform specifically to channeling the funds and contributions in the astronomy field. Above all, the practice of philanthropy for astronomical works in Malaysia is still far behind compared to worldwide.

CONCLUSION

It can be clearly seen that the determination and sincerity of the Islamic philanthropists to contribute voluntarily during Islamic civilization has become one of the factors that develop astronomy knowledge throughout the world. Given the vigorous philanthropic practice of foreign countries, so as to be able to set up dozens to hundreds of national-scale observatories and launch missions into space, it is not surprising that their astronomical and space science research is more advanced. The important role played by the two philanthropic instruments, i.e., *infaq* and *waqf* by individuals or certain organisations, in developing the astronomy field and encouraging the spread of astronomical understanding as well as produce the competent community in technology and space science, cannot be denied. There should be efforts to highlight the importance of astronomy to the governments, non-profits and corporations to boost the practice of philanthropy in this field. The advancement of astronomy can be spurred further through philanthropy. As good as any planning, without adequate funding support, will certainly not achieve maximum results.

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