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Ethnography Knowledge in Islamic Astronomy:

Conceptual Framework of Ethno-*Falak*

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Abstract---*Until today, there has not been a clear use of the term ethno-falak in the study of falak. However, preliminary investigations on existing research reveal that a few similarities between the concepts of ethnoastronomy and ethno-falak have been discussed. This is mostly because the same definition of astronomy and falak has been used by a number of falak scholars. Ethnoastronomy is a specific term that defines the textual and ethnological study as well as the interpretation of ancient iconography for the purpose of reimagining the lifestyle, astronomical techniques, and religious ceremonies of a community. Ethnoastronomy study uses myths as its main source. On the other hand, falak encompasses various aspects, including religion, social, science and the dynamics of a society. Since falak is evidently a broader field, it follows that ethno-falak is a larger study compared to ethnoastronomy. However, what exactly is the conceptual framework of ethno-falak? Are there differences between ethno-falak and ethnoastronomy in the Western scholarship? This paper aims to answer these questions by first identifying the differences between ethno-falak and ethnoastronomy, and second, by analysing the fundamentals and elements of ethno-falak, which distinguish it from ethnoastronomy. Document review is chosen as the data collection method, and this research is done qualitatively. This study concludes that there are three criteria that differentiate ethno-falak from ethnoastronomy. Firstly, the sources for ethno-falak do not disagree with the Qur'an and hadith. Secondly, ethno-falak discusses the tauhid relationship between man and Allah. Thirdly, ethno-falak must include the connection between man and nature.*

Keywords---*Islamic astronomy; ethno-falak; ethnoastronomy; conceptual framework*

I. Introduction

Until today, there has not been a clear use of the term ethno-*falak* in the study of *falak*. However, preliminary investigations on existing research suggest that a few similarities between the concepts of ethnoastronomy and ethno-*falak* have been discussed. This is mainly because the same definition of astronomy and *falak* has been used by a number of *falak* scholars. Ethnoastronomy uses myths as its source. This study was first introduced by Baity et al., (1973). He states that ethnoastronomy is the most accurate term to define the textual and ethnological study and the interpretation of ancient iconography for the purpose of reimagining the lifestyle, astronomical techniques, and religious ceremonies of a community. This study was pioneered by Western scholars, while the conceptual study of it concerns the religious aspects of a civilisation

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and community. However, what exactly is the conceptual framework of ethno-*falak*? Are there differences between ethno-*falak* and ethnoastronomy in the Western scholarship? This paper aims to answer these questions by first identifying the differences between ethno-*falak* and ethnoastronomy, and second, by analysing the fundamentals and elements of ethno-*falak* which distinguish it from ethnoastronomy. Document review is chosen as the data collection method, and the research is done qualitatively. In summary, this article is divided into four main sections; first is ethnoastronomy and the related research, second is fundamental of ethno-*falak*, third, analytical elements of ethno-*falak*, and fourth, conclusion.

II. Ethnoastronomy and the Related Research

Ethnoastronomy is one of the branches in the study of cultural astronomy (Campion, 1997). Cultural astronomy is a study that uses astronomical knowledge, beliefs, and theories to give inspiration and information or to influence ideology and the shaping of social or any aspect of human behaviour (Campion, 1997). Besides ethnoastronomy, archaeoastronomy is also another branch of cultural astronomy (Holbrook, 2016). Ethnoastronomy is defined as one of the branches in the field related to astronomical beliefs and practice of a culture (Holbrook, 2016). It primarily uses the native's tradition as the primary source in its research (Milbrath, 2009:170-171). According to Ruggles (2005:152), ethnoastronomy is a field that looks into the beliefs and practices of the knowledge of the sky as held by the modern community and the natives, as well as the applicability of this knowledge. The term "ethno" does not only refer to the group of natives or the minority group in a community. On the contrary, it refers to the specific approach which studies all social groups and may also include to any approach that refers to any group of the community (López, 2011).

Research in ethnography and astronomy was first introduced by (Baity et al., 1973). He argues that ethnoastronomy is the most precise term for a field of study in astronomy concerning textual and ethnological studies, and the interpretation of ancient iconography. According to (Lankford, 2007:6), ethnoastronomy cannot be separated from the study of myths, because myths are considered an important communicator of cultural knowledge. Myths are also considered as absolute stories. There are four main objectives of ethnoastronomy. The first is to determine whether there are similarities in the traditional knowledge of astronomy of some aboriginal groups and other tribes, especially with regards to constellation. This usually leads to the formation of a logical and rational cultural group. This justifies why the study of the history must be according to analysis that is based on myths (Lankford, 2007:6). The second objective is to understand some of the extraordinary astronomical phenomena observed by some tribes (Lankford, 2007:6). In general, some phenomena may not be witnessed by every tribe because of limitations like different geographies (Lankford, 2007:6-7). The third objective is to figure out the origin of a constellation observed by a community. For instance, which constellation was first observed in Mesopotamian age, and which constellation comes from the Mesoamerican age? Moreover, which society is influenced by these myths (Lankford, 2007:9)? The fourth objective is to reconstruct the lifestyle, astronomical techniques, and religious ceremonies of a community (Baity et al., 1973).

Each society understands astronomy according to its culture and community. According to (D. W. Hamacher, 2012), astronomical knowledge is used to manage time, to indicate the change of season, food resource, and navigation, and also to predict the tide. Existing research in ethnoastronomy shows that there are three elements identified in this field of study. Firstly, ethnoastronomy cannot be separated from study of myths. Secondly, there exists a relationship between man and nature, which drives the daily activity of a society. Thirdly, there exists a relationship between man and religion in a community.

Looking into the first element of ethnoastronomy, it is important to understand that myths are an important communicator of knowledge when it comes to culture and are considered absolute stories (Lankford, 2007:6). For example, in a research done by D. Hamacher (2014) at the southern part of Torres Islands, the culture and lifestyle of the community there is very closely related to stars. The most popular myth is of *Tagai*. *Tagai* is a constellation that crosses the southern sky. For the people of the Torres Islands, they believe that *Tagai* is a skilful fisherman and plays an important role in navigation. This star tells the residents of the Torres Islands the best time for farming, the time to hunt for turtles and *dugongs*, the arrival of the monsoon, the time when the direction of the wind changes, and a few other importance. When the left hand of *Tagai* points to the sea, for example, the residents of the Islands would know that the rainy season has arrived.

At the Island of Siquijor, where fishing is also the community's main activity, (Bucol, 2016:10) states that every year in May (in between monsoons), most fish at the Island of Siquijor in the Philippines die. The sea during that period is also noticeably calm. This phenomenon is known as *tubli sa bulan*, known among the people to mean poisoned by the moon (Bucol, 2016:10). According to the belief, the fish are poisoned mystically when they look at the moon (when it is full moon). This comes from the animism belief held by the previous generation.

A community in the Northern European country Lithuania also had a myth involving the moon. This community believes that the moon has an influence on a newborn before, while, and after it is born. For example, a baby delivered during full moon looks young while a baby born during other phases of the moon looks older. This goes to show that the lunar phase is not only used as a calendar for this ancient community, it also guides them on a daily basis on how to achieve the best quality of life (Vaiskunas, 2006).

This brings to the second element of ethnoastronomy, which is the relationship between man and nature as a guide for daily activities. A community in the Easter Islands, for instance, uses the moon, stars, and the sun to assist them on their day-to-day activity. According to (Gonzalez, 1984), phases of the moon help them in their fishing and agriculture. Every moon has its own name, and each becomes a guide for the local community. For example, January is the best month to catch the fish. Meanwhile in March, planting the tapioca must be done in the morning while fishing is done in the afternoon. Other than the moon, the stars are also used as guides for fishermen when fishing in the summer (Gonzalez, 1984).

Another similar example is found in Japan. The residents of the Island of Ryukyu use celestial objects and natural phenomena to predict the weather, as well as for agricultural and fishing purposes (Goto, 2011). This is before the Chinese calendar Feng Shui is introduced, although the weather prediction using celestial objects is continued even after. A different ancient community in Lithuania, on the other hand, really refers to the phases of the moon to guide their daily activities (Vaiskunas, 2006). They believe that every phase has its own wisdom. For example, the period between the new moon phase and the first quarter phase is when crops are beginning to sprout. These indicators are evidently very essential to ensure the viability of their agricultural activities.

The third element of ethnoastronomy is the relationship between man and religion. An example of this can be seen in a community called *Pueblos*, which resides in the south-western part of the United States. They have a unique culture, where they observe the sun to assist them in their daily activities. According to Zeilik (1985), apart from the daily activities,

observation of the sun is also used to produce a calendar specifically for their religious ceremonies. This shows that religion is the basis of the spiritual life of the *Pueblos* people. It was also found that the relationship between religious ceremonies and agriculture is of a dependent nature. This is evident through existence of religious ceremonies held for rain and for ensuring abundance of harvest. From these three elements discussed, Table 1 below summarises existing studies in ethnoastronomy and their relation to the elements being discussed.

Table 1: Existing Research in Ethnoastronomy

No.	Research	Elements
1	Lankford (2007). *Reachable stars: Patterns in the ethnoastronomy of eastern North America*. University of Alabama Press.	Myths as primary source
2	D. Hamacher (2014). A shark in the stars: astronomy and culture in the Torres Strait. *The Conversation.*	
3	(Bucol, 2016:10). Diminishing sustainability of traditional fishing practices in Siquijor Island, Central Philiphines. *Traditional Marine Resource Management and Knowledge*. April, 36, 3-12	
4	Vaiskunas (2006). The moon in Lithuanian folk tradition. *Folklore: Electronic Journal of Folklore*, (32), 157-184.	Relationship between man and nature
5	Goto (2011). Archaeoastronomy and etnoastronomy in Ryukyu Islands: a preliminary report. *"Oxford IX" International Symposium on Archaeoastronomy Proceeding IAU Symposium,* 278, 315-324.	
6	Zeilik (1985) The ethnoastronomy of the historic pueblos, 1: calendrical sun watching. *Journal for the History of Astronomy Supplement*, *16*, 1.	Relationship between man and religion

Based on the research listed in Table 1, three elements are evident and identified. First, studies on ethnoastronomy cannot be separated from myths. Second, there is a relationship between man and nature which then guides the daily activities of a community. Third, there exists a relationship between man and religion in a community.

III. Fundamentals of Ethno-*Falak*

Until today, there has not been a clear use of the term "ethno-*falak*" in the study of *falak*. The term was only used in a work by Ismail (2015:232), which discusses an old manuscript concerning the religious scholars or *ulama*' of the Malay world or *Alam Melayu*. Another mention is in a research by Hanapi & Hassan, (2017), which studies the relationship between ethno-*falak* and maritime activities. This section will identify and discuss the elements of ethno-*falak* especially based on these researches. This is to distinguish ethno-*falak* from ethnoastronomy, which is a field pioneered by Western scholars.

In "ethno" research, a group of community is chosen to be the target group of a study. According to (López, 2011), he defines the term "ethno" to not only generally be about a group of natives or minority. Instead, the term covers the specific approach of looking into a social group, including any that refers to a community. Meaning, the target group of ethnographical study can refer to any social group, including fishermen, farmers, hunters, and others. Thus, a redefinition of ethno-*falak* can be offered, which would differentiate it from ethnoastronomy; ethno-*falak* studies the relationship between *falak* and the social system of a community. In other words, ethno-*falak* study looks into how *falak* has an influence on the

social system of a community in terms of preserving the community's viability. To further differentiate ethno-*falak* from ethnoastronomy, the research must be based on Islamic *tasawwur,* and the Qur'an and hadith must be the epistemology of the study.

Based on this redefinition, four elements of ethno-*falak* are analysed. First, epistemology of ethno-*falak* must not disagree with the Qur'an and hadith. Second, elements of ethno-*falak* put Allah as the creator. Third, the elements put man as a creation of Allah. Fourth, the elements also put nature as a creation of Allah. Based on these elements, it is clear that there exists a relationship between the Qur'an and hadith as the epistemology of this research. Meanwhile, the second, third, and fourth elements explain how ethno-*falak* is moulded by Islamic *tasawwur*. The second, third, and fourth elements, which are also the three elements of *tasawwur* (Ahmad, 2012; Hanapi, 2012), are illustrated in Figure 1 below.

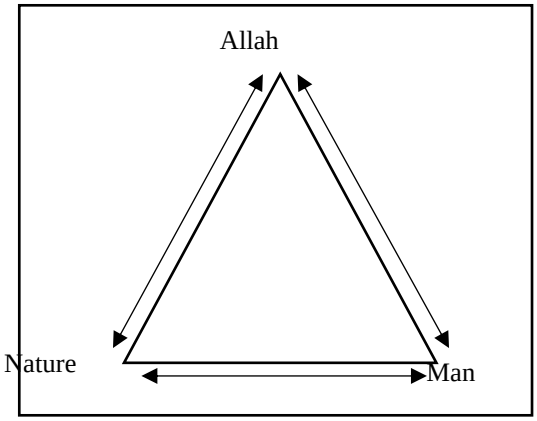

Figure 1: Elements of Islamic *Tasawwur* Related to Ethno-*falak*

Figure 1 shows the three elements in Islamic *tasawwur*, which are also present in ethno-*falak*. The connection between the four elements produces a significant relationship, which demonstrates the differences between ethno-*falak* and ethnoastronomy. This is elaborated further in the next section based on the analysis of the elements.

IV. Analysis of the Elements of Ethno-*Falak*

There are at least three things that should be analysed when looking into the elements of ethno-*falak*. First, the sources of ethno-*falak* do not disagree with the Qur'an and hadith. Second, ethno-*falak* must include the *tauhid* relationship between man and Allah. Third, ethno-*falak* must include the relationship between man and nature.

Firstly, the sources in ethno-*falak* must not disagree with the Qur'an and hadith. According to Western scholars, ethnoastronomy cannot avoid using myths as sources, because myths are understood to communicate important cultural knowledge. *Falak*, on the other hand, is considered one of the branches of Islamic science (Baharrudin, 2003:6), and as stated by Harun (1992) Islamic science must stem from the Qur'an and hadith. Therefore, to ensure that ethno-*falak* does not go against the Qur'an and hadith, mythical elements, which are the primary sources for Western scholars (Lankford, 2007:6), must also be avoided. Furthermore, Ismail (2013a:70, 2013b:192) argues that *falak* is a study of stars based on quantitative observation or a harmonious calculation with regards to *fiqh*. Meaning, *falak* differs from the interpretation of myth from past cosmology, also known as *tanjim* or astrology. *Tanjim* becomes popular when there exist communities that like to

interpret natural phenomena like the eclipse, full moon, seasonal occurrences, comets, and others using mystical interpretation. This causes the innocence of *falak* to be tainted by various *khurafat* and myths (Ismail, 2013b:69-70). In order to preserve the innocence of *falak*, which is a discipline specific to Islam, the sources of ethno-*falak* must be free from any myths or folklores that contradict the Qur'an and hadith.

Secondly, ethno-*falak* must include the *tauhid* relationship between man and Allah. Ethno-*falak* is also about observing natural phenomena, and this process shapes the experience and changes the behaviour of individuals and communities. Studying these phenomena helps man to know more about their creator and solidify their *tauhid* (Baharrudin, 2003:7). Additionally, ethno-*falak* treats natural phenomena as a laboratory, where man finds that, at times, part of the findings does not give them a convincing result. This in turn makes man feels small, which in return humbles them and makes them aware of their shortcomings (Zainal 2003:8-9). This humility is a manifestation that there exists a *tauhid* relationship between man and Allah when conducting the study of ethno-*falak*. According to (Ismail, 2013c:286), in research led by Muslims, *tauhid* should be the main paradigm, and this is a clear contrast to researches by Western scholars.

Thirdly, ethno-*falak* must include the relationship between man and nature. Nature, in this context, encompasses everything that is in the sky and on earth, and this agrees well with *falak* as it includes every activity that shows the connection between man and nature. Man observes every phenomenon in the sky and takes lessons from it (Baharrudin, 2003:2).

In ethno-*falak*, the relationship between man and nature is a demonstration of how the two interact with one another in carrying out a research in the way that it agrees with the reason Allah creates natural resources. Hanapi (2014:120-122) claims that there are three reasons Allah creates natural resources. First is to build the spirituality of man by proving the existence, one-ness, mightiness, wisdom, and vastness of Allah's mercy. Second is to build man's intellect. Third is for the use and benefit of man and all other creations.

According to Zainal & Ismail (2013:1), among the earliest thoughts understood by man is with regards to the existence of matters in the sky, like the stars, planets, the moon, the sun, and also constellations of which each society has its own unique illustration. Man, at this point in time, likes to associate every observable thing in the sky with some powerful elements or some cosmos influence, and they worship these "spiritual" elements in exchange for protection (Baharrudin, 2003:1). This is evident in the ethnoastronomical study of the *Pueblos* community. They regard the sun as the guide for their religious ceremony (Zeilik, 1985). The ceremony is done to pray for rain to ensure bountiful harvest. The relationship between man and nature in the study of ethno-*falak*, however, is different. In ethno-*falak*, the relationship between man and nature is harnessed to ensure the viability of life of Islamic communities. This takes place without worshipping or having a belief in the objects in the sky, because everything that happens naturally is according to the laws of *tabie* (sunnatullah). It is the systematic exploration and the answer to how natural *tabie* happens that instead becomes the guide to man's activities. This is what increases man's faith and also the quality of man's life (Baharrudin, 2003:11). Therefore, in the context of ethno-*falak*, the relationship between man and nature allows man to understand that every study related to what is in the sky and on the earth has its limit, and it must be learned in parallel with *syarak*.

Based on these four elements of ethno-*falak*, it can be concluded that the Qur'an and hadith are the primary sources of the study, while man and nature are the subjects of the research, and *tauhid* for Allah is the goal of the field. Ismail

(2013c:285) also discusses this, asserting that the Qur'an is the *wahy* of Allah which is a written book, while nature is the book of Allah which is open to be investigated, contemplated, and studied with a pure and deep state of mind. The Qur'an and nature must be studied in consistent with one another, in integration, completing each other, without any conflict, and in relation to one another. This in turn allows for the studies to achieve the ultimate goal, which is to please Allah and ends with the recognition of Allah's majesty as it is He who created the world.

Based on the analysis of elements above, it is clear that ethno-*falak* encompasses ethnography, *falak*, science, and also religion. Figure 2 shows the relationship between the elements in ethno-*falak*.

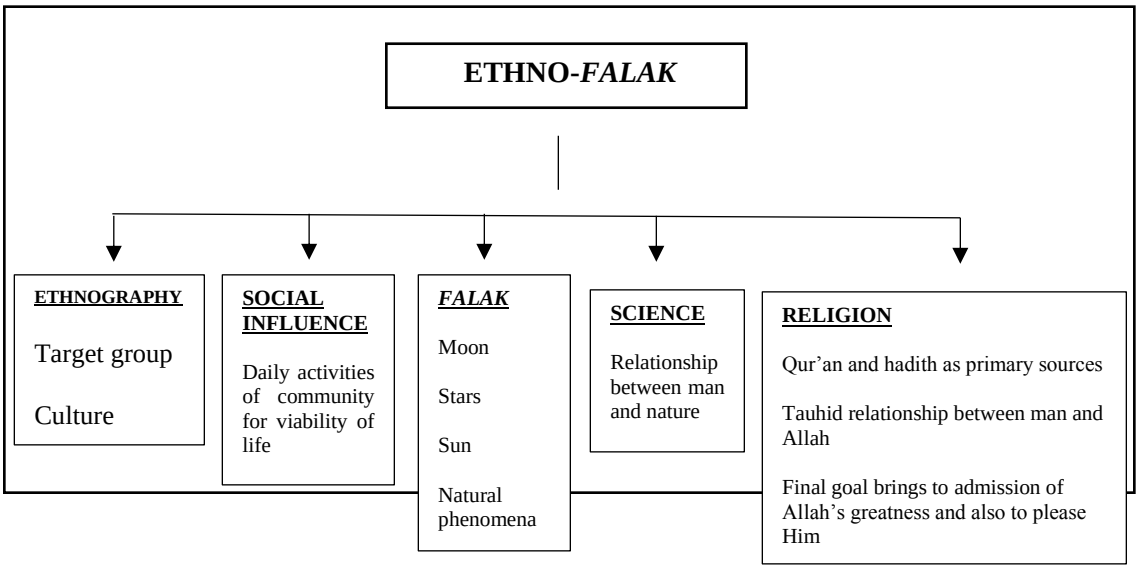

Figure 2: Relationship between Elements in Ethno-falak

Figure 2 also shows that the relationship includes the elements in Islamic *tasawwur*, as explained before. It is also summarised in Table 2 below.

Table 2: Relationship between Elements of Ethno-*falak* and Islamic *Tasawwur*

Elements of Islamic *Tasawwur*	Relationship between elements
Allah as the creator	Religion
Man as a creation	Ethnography and social influence
Nature as a creation	*Falak* and science

The elements of ethno-*falak* can also describe, as an example and as detailed in the study by Hanapi & Hassan (2017), the relationship between ethno-*falak* and maritime activities. This is as shown in Figure 3.

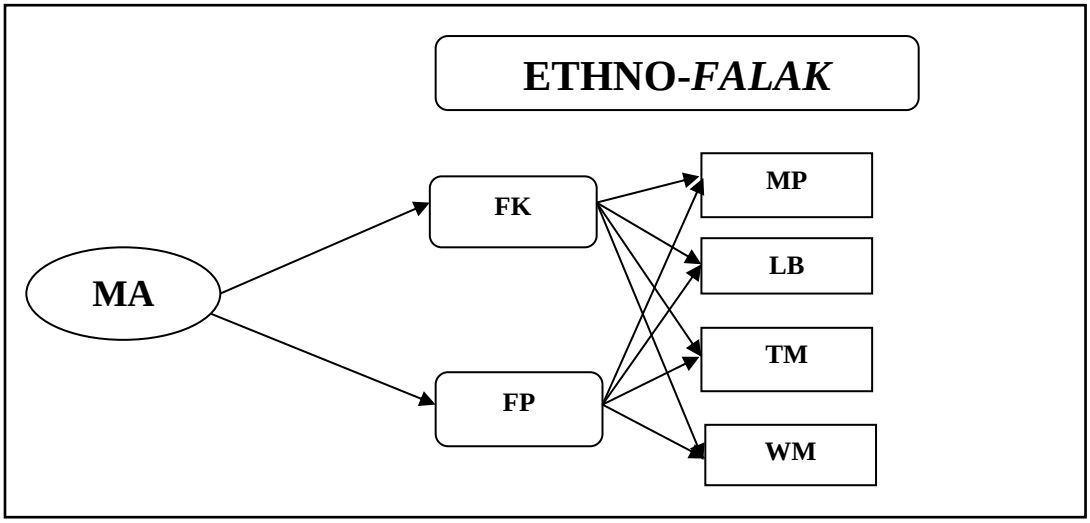

Figure 3: Relationship between Ethno-*Falak* and Maritime Activities

Reference:
MA = Maritime Activities; FK = Fishermen Knowledge; FP= Fishermen Practice;
MP= Moon Phases; LB = Lunar Brightness; TM= Tidal Movements; WM = Wind Movements

Based on Figure 3, the relationship between ethno-*falak* and maritime activity shows that the elements studied in this research has close ties with the elements of ethno-*falak*, as discussed before. The elements in Figure 4 cover ethnography, social influence, science, *falak*, and religion. For instance, for ethnography, the target group is the social community of fishermen, and the culture concerns the Malay community that has their own knowledge genealogy. Besides that, also from the ethnography standpoint, a few terms or rational names can be identified for certain stars or moon as used by the community. This is based on the story or myth that came about in the community.

Secondly, the social influence aspect refers to the daily activities of the fishermen to ensure the viability of the community life. The fishermen group chooses maritime activity to be the main activity of the community. This also includes coastal and deepsea fishing. Thirdly, the *falak* aspect. From this aspect, the relationship between the fishermen knowledge and their practice of *falak* phenomena in maritime activities becomes more evident. A few examples are the phases of the moon, the brightness of the moon, the tide, and the wind blow. This relationship allows for ethno-*falak* perspective and its connection with maritime activities.

Fourthly, the science aspect refers to the relationship between man and nature. This relationship includes looking into how the culture of the fishermen community associates *falak* with their maritime activities. Indirectly, it can be seen that everything that happens in the nature is according to *sunnatullah*. Therefore, based on this relationship, the maritime activity can be analysed and checked if it is in parallel with scientific perspectives. If it does not, this gives clues to the kind of knowledge that exists in the community.

The fifth aspect is of religion. Ethno-*falak* does not only involve ethnography, social influence, *falak*, and science, but also matters about religion. Ethno-*falak* brings man back to Allah and in the process, brings to the admission of Allah's greatness and pleasing Him. Besides that, ethno-*falak* also takes into account of whether or not the sources agree with the Qur'an and hadith.

V. Conclusion

Finally, this article concludes that there are three criteria in ethno-*falak*, which differentiates it from ethnoastronomy. First, the sources of ethno-*falak* do not disagree with the Qur'an and hadith. Second, ethno-*falak* must include the *tauhid* relationship between man and Allah. Third, ethno-*falak* must include the relationship between man and nature. Based on these three elements, applying them to studies that are carried out locally will bring about a dimension of integrated social science that incorporates the values of Islam in it. This would, thus, distinguish ethno-*falak* from ethnoastronomy.

Acknowledgments

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REFERENCES

[1] Ahmad, F. A. (2012). Philosophical Underpinnings of Islamic Management Method: Worldview, Epistemology and Ontology. International Journal of Humanities and Social Science, 2(20), 150–161.
[2] Baharrudin, Z. (2003). Ilmu falak: teori, praktek, dan hitungan. Kolej Ugama Sultan Zainal Abidin.
[3] Baity, E. C., Aveni, A. F., Berger, R., Bretternitz, D. A., Clark, G. A., Dow, J. W., … Loops, H. H. E. (1973). Archaeoastronomy and ethnoastronomy so far [and comments and reply]. Current Anthropology, 14(4), 389–449.
[4] Bucol, A. A. (2016). Diminishing sustainability of traditional fishing practices in Siquijor Island, central Philippines. Traditional Marine Resource Management and Knowledge Information Bulletin, 36, 3–12.
[5] Campion, N. (1997). Editorial in Culture and Cosmos. A Journal of the History of Astrology and Cultural Astronomy, 1(1), 1–2.
[6] Gonzalez, M. E. (1984). The archaeoastronomy and ethnoastronomy of Easter Island. California State University, Long Beach.
[7] Goto, A. (2011). Archaeoastronomy and ethnoastronomy in the Ryukyu Islands: a preliminary report. Proceedings of the International Astronomical Union, 7(S278), 315–324.
[8] Hamacher, D. (2014). A shark in the stars: astronomy and culture in the Torres Strait. The Conversation. Sydney: Nura Gili Indigenous Programs Unit, University of New South Wales. Retrieved from https://arxiv.org/ftp/arxiv/papers/1412/1412.1785.pdf
[9] Hamacher, D. W. (2012). On the astronomical knowledge and traditions of Aboriginal Australians. Macquarie University.
[10] Hanapi, M. S. (2012). Pembentukan Tasawur dan Kesan terhadap Pembangunan Tradisi Keilmuan Islam. International Journal of Islamic Thought, 2, 55–61.
[11] Hanapi, M. S. (2014). Tasawur Islam dan pembangunan. Kuala Lumpur, Malaysia: Dewan Bahasa dan Pustaka.
[12] Hanapi, M. S., & Hassan, S. A. (2017). The Relationship Between Ethnoastronomy and Maritime Activities. The Social Sciences, 12(12), 2206–2211.
[13] Harun, H. (1992). Daripada sains Yunani kepada sains Islam: peranan dan proses penyerapan sains asing dalam pembentukan sains Islam klasikal. Penerbit Universiti Malaya.
[14] Holbrook, J. (2016). Astronomy, Indigenous Knowledge and Interpretation: Advancing studies of Cultural Astronomy in South Africa. Journal of Astronomy in Culture, 1(1).
[15] Ismail, M. R. (2013a). Ilmu hikmah dalam kajian Etnosains dan etnomatematik alam melayu. Penerbit Universiti Malaya.
[16] Ismail, M. R. (2013b). Mencari Paradigma Sains Yang Bersepadu. In Etnosains dan Etnomatematik Alam Melayu. Kuala Lumpur, Malaysia: Penerbit Universiti Malaya.
[17] Ismail, M. R. (2013c). Retorik, balaghah, bahasa dan etnomantik Melayu. In Etnosains dan Etnomatematik Alam

Melayu. Kuala Lumpur, Malaysia: Universiti Malaya.
[18] Ismail, M. R. (2015). Kerdipan Bintang Melayu Dilangit Turki. Alaf 21.
[19] Lankford, G. E. (2007). Reachable stars: Patterns in the ethnoastronomy of eastern North America. University of Alabama Press.
[20] López, A. M. (2011). Ethnoastronomy as an academic field: a framework for a South American program. Proceedings of the International Astronomical Union, 7(S278), 38–49. https://doi.org/https://doi.org/10.1017/S1743921311012452
[21] Milbrath, S. (2009). Archaeoastronomy, ethnoastronomy, and cultural astronomy. In Handbook of space engineering, archaeology, and heritage (pp. 167–202). CRC Press.
[22] Ruggles, C. L. N. (2005). Ancient astronomy: an encyclopedia of cosmologies and myth. Abc-Clio.
[23] Vaiskunas, J. (2006). The Moon in Lithuanian folk tradition. Folklore: Electronic Journal of Folklore, (32), 157–184.
[24] Zainal, B., & Ismail, M. R. (2013). Kosmologi dan geopusatan Nurudin al-Raniri. Penerbit Universiti Malaya.
[25] Zeilik, M. (1985). The ethnoastronomy of the historic Pueblos, 1: calendrical sun watching. Journal for the History of Astronomy Supplement, 16, S1.