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The Concept of Paradox Architecture in the Design of Hisab Ru'ya Observatory in Indonesia

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Article Info	ABSTRACT
Article history:	There are two kinds of methods in determining <i>hijriyah</i> and <i>qamariyah</i> calendar that is used by Indonesian Islamic organizations. Some of them use <i>hisab</i> method, and the others use <i>ru'ya</i> . The difference of the methods makes people has different time to start their ritual religious activities such as Ramadhan fasting and eid, while this activities are the most important moment for muslim to do their religious activities together. To solve this problem, a hisab-ru'ya observatory needs to be built to receive the Islamic Organizations' aspiration in determining the hijriyah and qamariyah calendar. The concept design of this building is paradox architecture that will combine two different things into one to achieve one goal. This concept design is suitable with the issue and the object that needs to combine two methods to achieve one goal. The aim of this study is to apply the principle of the paradox architecture concept in the design of Hisab Ru'ya Observatory.
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INTRODUCTION

In Indonesia, the conflict among muslim in determining the beginning and the end of Ramadhan become tradition. The same thing also happens in Syawal and Dzulhijjah. This problem happens because there are some ways in determining the beginning of month, and some organizations use different ways (Azhari, 2006). The methods used in determining islamic calender are *rukyatul hilal* and *hisab wujudul hilal*. The hadith used by the adherent of *Ru'yatul Hilal mazhab* is "*I heard Allah's Messenger* (

(of the month of Ramadan), start fasting, and when you see the crescent (of the month of Shawwal), stop fasting; and if the sky is overcast (and you can't see it) then regard the month of Ramadan as of 30 days." (Al-Bukhari, 1901). Meanwhile the Quran verse used by the adherent of hisab wujudul hilal mazhab is "It is He who made the sun a shining light and the moon a derived light and determined for it phases - that you may know the number of years and account [of time]. Allah has not created this except in truth. He details the signs for a people who know" (QS. 10:5).

It can be understood from the hadith that both opinions have a strong scientific reason. u'ya means the sighting of a new moon. The Hambalis, Malikis, and Hanafis state that If the sighting (Ru'yah) of the new Moon has been confirmed in a particular region, the people of all other regions are bound by it regardless of the distance between them; the difference of the horizon of the moon is of no consequence. The Imamis and Shafi'is observe: "If the people of a particular place see the new Moon while those at another place don't, in the event of these two places being closed by with respect to the horizon, the latter's duty will be same; but not if the horizons differ"(Jawad, 1995). Meanwhile, hisab is an astronomical calculation. Astronomical Calculations, in the view of the majority of the jurists, rest on mere assumption and are hypothetical in nature.

صلى الله (صلى الله) saying, "V

Therefore, significant act of worship such as the beginning and end of Month of Ramadan cannot be base on probabilities and uncertain presumptions. Consequently the Month connected with the act of Islamic acts of worship (*Ibadat*) such as Ramadan, Shawwal and Dhul-Hijjah, can only be determined either by practical sighting (*Ru'yah*) or by completion of 30 days. The majority of classical Scholars argued that actual sighting is required by the Qur'an, Sunnah, *Ijma* (consensus of the jurist) and the linguistic meaning of the word *Hilal* (Crescent). This four main argument were usually presented to substantiate the claim that actual sighting by the naked eyes is a prerequisite to the fasting of the Month of Ramadan (Akilu, 2011).

From the explanation above, it can be seen that ru'ya is about the observation of the sky. It can be understood by an astronomy science where the sophisticated technology is needed. This science needs an observation place and tool in every activity. That is why the observation place like an observatory is needed. There are only few active observatory in Indonesia as an observation place of sky in Indonesia. It is because there are no renewal in the facility and the technology. That makes the observatory can not be optimized used.

In the design of this hisab-ru'ya observatory, the issue is the different opinion among the Islamic Organizations in determining kamariyah calendar. The differences occur because of the differences of the method used, that sometimes produce a different result. The methods are *hisab* and *ru'ya*. The *hisab* method only use a brain, so the *kamariyah* date is determined by counting. Meanwhile the *ru'ya* use *burhani* (brain), *bayani* (vision), *irfani* (intuition), and *tadjribi* (empiric). The different methods produce the paradox architecture design concept. The aim of this study is to apply the principle of the paradox architecture concept in the design of Hisab Ru'ya Observatory.

METHOD

The analysis design method used in this study is linier design method, combining the *hisab ru'ya* observatory object, the design concept (paradox architecture), and the integration with the islamic value. The data sources are from literature and from field study. The data is analyzed to get a design criteria of a *hisab ru'ya* observatory that can solve the problem of determining the islamic calendar.

DISCUSSION

Paradox Architecture as the Design Concept

Paradox also called antinomy means fighting the law. Paradox as a way to the architecture creativity gives discretion, their liberating is his limiting, his weakness is his strength, gain is his loss, and in order to build you must not build (Erdiono, 2014). The examples of paradox are: The presence of absence or the absence of presence, to construct is to de-construct, to compose is to de-compose (Antoniades, 2008).

The design principles of paradox architecture are (Erdiono, 2014):

- 1. Gives priority to the look in the architectural form that has meaning as a manifestation from metaphysic contemplation.
- 2. Gives rooms that do not form room, open in one side and close in the other side. Gives a contradiction in understanding an architecture.
- 3. Gives a visual form with the emphasis in the interior as a media to explain things that can not be felt.
- 4. Puts forward the strength of the concept.

The Concept Design of the Hisab-Ru'ya Observatory



Figure 1. the Basic Concept of the Hisab Ru'ya Observatory Design



Figure 2. the Form Concept of the Hisab Ru'ya Observatory Design



Figure 3. the Site Concept of the Hisab Ru'ya Observatory Design





Figure 4. the Room Concept of the Hisab Ru'ya Observatory Design

The Application of Paradox Architecture Principle in the Design of Hisab Ru'ya Observatory

The existance of the facility to accomodate the both method of hisab-ru'ya that is used by the organizations

The facilities of the observatory are observation area, tourism education, and service area. The arrangement of room zonation is based on the urgency of room function where the observatory area is placed in the area close to the beach (west side) for *hilal* observation. The design of room and the form of the building is also based on the concept of hisab vs ru'ya. It is explained in the figure 5-8.



Figure 5 Basement Plan Source: Author's Design, 2017

In the basement floor, the function of the rooms are for the private area of the observatory staff, especially the technician, for the mobility of the worker from the basement to the first floor (office area), and the storage room. The technician worked in the basement area is the technician for operating the transformers for the big LED screen in the ramp. A part of the basement area is also used as the parking area for staff and for the visitor.



Figure 6. First Floor Plan Source: Author's Design, 2017

The first floor has a part of public facility and a part of office facility. The rooms available on the first floor are preface hall area as the main entrance to the building, office area, and vvip room. It also provides some gallery for astronomy collection, imax theater, ancient falakiyah gallery, library, science mall, and musholla. There is also rooms that are divided according to the function, like classroom.



Figure 7. Second Floor Plan Source: Author's Design, 2017

The second floor have the area for the tools, and the visitors can see and try to use them. This room does not have a partition, only a zonation, because it is like a gallery that showing off things related to astronomy like a telescope, big galaxy picture, world miniature, moon miniature, etc. Beside that, there are also press room and restaurant.



Figure 8. Observatory Plan Source: Author's Design, 2017

The third floor is the observatory area as the main function of the building. In this area, the activity of rukyatul hilal and hisab is done. The placement of observatory is on the third floor because the activity of rukyatul hilal has to be free from boundary, so the sighting will be clear from highest trees and building surrounding. This area has rooms for researchers and not open for public. The public area is only in the outside or balcony side, where the visitors may see the nature phenomenon by their naked eyes.

The concept of hisab-ru'ya helps to solve the problems

The building form on the site is dominated by the abstract form combined with the symmetrical and measurable form. The abstract form represent the ru'ya concept, while the measurable form represents the hisab concept. This is how the design apply the paradox architecture concept. This design uses two opposite things as the basic concept of design, i.e. hisab and ru'ya.



Figure 9. The Representation of 'counted' (hisab) in the planetarium Source: Author's Design, 2017

Figure 8 shows the counted (hisab) concept is representated to some parts of the building in an invisible appearance, one of them is planetarium which has a symmetrical ball shape. The paradox is in the exterior where the planetarium is in the dome shape, so the ball form is can only be seen from the interior. This will make an ambiguity in this building. The manifestation of the metaphysic is felt in the interior of the wide dome as if put the visitor in the outer space enjoying the show of limitless space. In this planetarium, the visitor will also get a spiritual journey about how tiny a human in front of God in the comparison of human and the universe.



Figure 10. the Representation of hisab vs ru'ya in the tower Source: Author's Design, 2017

Beside the planetarium, another part of the building that apply the hisab concept or 'counted' is the observation tower. The plan of this tower has a circle form that represents an infinity symmetrical form. This infinity character is also a paradox of some limit in the limitless or vice versa. Meanwhile the top of the tower has a square form that has a symmetrical form in the smaller size than the circle form plan in the ground floor. The combination of both form produces an abstract form in the middle of tower. This can manipulate the building facade to bring up some ambiguity perception for someone who see it.



Figure 11. the representation of 'counted' form (hisab) that is shrouded by the abstract form (ru'ya) that is exposed clearly in the tower

Source: Author's Design, 2017

The perception of ambiguity is shown in a 'counted' form that is not obviously seen. The form that represents this hisab concept is shrouded by the abstract form that represents ru'ya. This abstract form is clearly shown in the building exterior that cause the ambiguity for every person who see this building.



Figure 12. Building Pattern is lines that continue connected represents a paradox about a limitless in a limit

Source: Author's Design, 2017

The representation of paradox can also be seen in the building pattern as a continue lines. These lines is designed continue as a representation of a limitless to a limit where the lines is connected to each other like limitless, but limit only to the building.



Figure 13. The exterior of the Observatory of Hisab Ru'ya Source: Author's Design, 2017

Figure 10 shows the building exterior that expose the shape from the concept of hisab vs ru'ya where both have different methods, which are a calculation method (measurable) and a clearly abstract. This building is a single building with the main function as an observation area. The building form looks like an abstract object to actualize the outer space that looks abstract.



Figure 14. Site Plan of Hisab-Ru'ya Observatory Source: Author's Design, 2017

From the site plan in figure 14, it can be seen that this building is stand out because the surroundings are forest area. It is like the outer space that is full of stars, but only one object is needed for the hilal observation.

The paradox design concept also can be seen in the building fasade that is shown in figure 15-16. The figures show the ball form in the middle of the building is surrounded by the abstract form. The ball form represents the hisab as the calculation method, and the abstract form represents the ru'ya method.



Figure 15. West and South Facade Source: Author's Design, 2017



Figure 16. East and North Facade Source: Author's Design, 2017

The concept of hisab vs ru'ya is also applied to the interior design where the measurable characteristic and abstract form exist in the interior design. It is applied in the observatory and planetarium room. It shows in figure 17.



Figure 17. Interior of Observatory Source: Author's Design, 2017

Figure 17 shows the application of paradox concept in observatory interior room where the abstract yet symmetrical form can be felt while doing some observation. The concept of limit in the limitless can also be felt in the interior of observatory room where people can see the limitless sky in the limit room.



Figure 18. Interior of Planetarium Source: Author's Design, 2017

Figure 18 shows the planetarium where the form is like a ball. Different with the observatory room, the planetarium is closed by the dome. But when the show begins, the room will look like an open sky.

Conclusion

Paradox architecture is one of the ways to approach a creativity in architecture. The principle of paradox architecture concept can be applied in the site, room, and form concept. It needs at least two opposite things to be the basic concept where the principle of this two things are used as a basic concept. Just like in the design of hisab-ru'ya observatory that used the principle of hisab-ru'ya themselves as the basic concept. The principle of hisab is counted or measurable and has a limit, while the principle of ru'ya is uncounted and limitless because it depends on the sky. Those opposite character becomes the basic concept of the design.

REFERENCES

Akilu, A. S. (2011). An Assessment on the Problem of Sighting the Crescent of Ramadan in Zamfara State. Ahmadu Bello University Zaria, Nigeria.

Al-Bukhari, S. (1901). Hadith.

Antoniades, A. C. (2008). Poetic of Architecture. New York: John Wiley & Sons.

- Azhari, S. (2006). Karakteristik Hubungan Muhammadiyah dan NU dalam Menggunakan Hisab dan Rukyat. *Al-Jamiah*, 44(2), 453–485.
- Erdiono, D. (2014). Kreativitas Berarsitektur Melalui Saluran Paradoks dan Metafisika (A Controversial Attitude Toward the Generally Accepted). *Media Matrasain*, *11*(1), 1–15.

Jawad, M. . (1995). Fiqh Ala Madhahib al-Khamsa. Ansariyan Publishers.