TRANSFORMATION OF *RUKYAT AL-HILÂL* METHOD (Postmodernism Analysis of Hilal Image Processing)

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Abstract

The usage of devices in performing of rukyat al-hilâl whose function is to make objects (hilāl) from outer space appear as bright, contrasty and large as possible isnot direcly give a solution. The view of fiqh on using devices in rukyat al-hilâl become an obstacle in the development of the rukyat method with technology. The technology of rukyat al-hilâl is improving rapidly and developing significantly, in reverse with it's legal developments. Therefore, there must be a transformation of the rukyat al-hilâl method as well as development of the times, without leaving it's validity to fiqh. This study analyzes the views of postmodernism in hilal image processing. This research focuses on hilal images processing in the view of postmodernism. The research method used was library research with descriptive analysis. The results show that first, postmodernism considers that image processing is a development of method in rukyat al-hilâl that is needed. This is caused by limitations in the current method that has not been able to provide a solution, but the use of technology in rukyat should not leave its validity according to fiqh. Second, Restrictions on using devices in rukyat al-hilâl will obstruct it's main purpose which is to confirm the existence of the new moon and blocked the broadest development opportunities as a form of subjectivity and a plurality of knowledge.

Keywords: Transformation, Rukyat al-Hilâl, Postmodernism, Hilal Image.

Abstrak

Mengacu kepada penggunaan alat bantu dalam rukyat al-hilâl, yang hanya terbatas pada memperbesar dan memperdekat objek hilâl, tidak semerta-merta memberikan solusi. Pembatasan hukum fiqh terhadap penggunaan alat bantu dalam rukyat al-hilâl selalu menjadi titik lemah pengembangan metode rukyat dengan menggunakan teknologi. Teknologi rukyat terus menerus mengalami perkembangan yang signifikan, jika dibandingkan dengan keberlakuan hukumnya. Dalam hal ini, harus ada transformasi metode yang lebih sesuai

dengan perkembangan zaman, suatu metode yang mampu memberikan paradigma baru dalam rukyat al-hilâl dan memiliki legalitas hukum. Penelitian ini menganalisa pandangan postmodernisme dalam pengolahan citra hilâl. Metode penelitian yang digunakan adalah penelitian kepustakaan (library research), dengan analisis deskriptif. Hasil penelitian ini menunjukkan bahwa, pertama, postmodernisme memandang pengolahan citra dalam rukyat al-hilâl sebagai suatu pembaharuan metode yang sangat dibutuhkan, hal tersebut disebabkan oleh keterbatasan dalam metode saat ini, sehingga penggunaan teknologi dalam rukyat harus didukung dengan legalitas hukum Islam dalam penggunaannya. Kedua, Pembatasan penggunaan alat bantu dalam rukyat al-hilâl akan menghambat tujuan utama dari rukyat (memastikan keberadaan hilâl) berdasarkan pengamatan yang empiris, dalam hal ini memberikan peluang pengembangan seluas-luasnya sebagai bentuk subjektifitas dan pluralitas pengetahuan.

Kata Kunci: Transformasi, Rukyat al-Hilâl, Postmedernisme, Citra Hilal.

A. Introduction

Science does not merely judge a truth objectively, but is also subjective. In this case, humans have a role to determine the truth of a knowledge based on their needs and circumstances. The development of science forces humans to take on the role of controlling. That is, a science does not have to be fixed on one truth, but must always be examined its truth based on empirical facts.

In the *rukyat al-hilâl*, there is no longer a process of observation or observation that purely follows the text of the *hadith* about *rukyat*. But has experienced significant development. The use of tools is limited to enlarge small objects or bring objects far away can no longer be applied as the views of previous scholars. In this case, technology needs to take a very important role in the appearance of the new moon.

Scholars who adhere to a rukyat method with the use of assistive devices and with certain restrictions will also continue to experience difficulties in its application.[1] The factor is the new moon will still be present at the time, but the existence of a tool whose function is limited to zoom in and get closer to the object, is considered not enough to find the new moon. The low factor of the hilal contrast with the background of the sky and the condition of thin clouds that always stretch can not be avoided.

This condition requires a renewal in the rukyat al-hilâl method, too fixated on the hadith text will hamper the development in Rukyat al-hilâl. Because the need for

[1] See Ahmad Izzuddin, *Fiqh Hisab Rukyah; Menyatukan NU & Muhammadiyah dalam Penentuan Awal Ramadhan, Idul Fitri, dan Idul Adha*, (Jakarta: Penerbit Erlangga, 2007), p. 6-7.

more qualified technology is already very much needed. In this case, the logic that can be raised is the development in the use of tools in the rukyat al-hilâl it self.

If we trace the history of the use of tools in the Rukyat al-hilâl, initially the observation of the new moon is limited to the use of the naked eye, without any assistance, even the use of glasses is not permitted. In the next phase, the use of tools in the rukyat al-hilâl is permissible as long as they only magnify small objects and bring objects farther away. Until now, the function of the telescope is no longer limited to enlarging and closer, but also able to reduce objects, refine objects with certain components, and so forth.

The development of the use of the rukyat al-hilâl tools above is greatly influenced due to the limitations of the eye, and these tools. Causing the difficulty of observing the new moon. The method of observation should change according to their needs. Currently the need for better tools can be applied. However, because it is limited by the current fiqh law, it is necessary to do a transformation of the rukyat al-hilâl method by analyzing the postmedernism's view of hilal image processing.

This research is a qualitative study with a library research approach. Using legal sources that are developing about the use of tools in the rukyat al-hilâl for later review based on glasses. The analysis used in this research is descriptive analysis. Analyzing a particular law with a new thought or paradigm so as to produce a global view to correct restrictions on the use of tools in hilal observation.

There are several studies similar to this research, including:

1. Dhani Herdiwijaya regarding Simple Procedure for Image Processing for Hilal Observation, as one of the materials presented at the Hilal Seminar 2009. This paper examines building a database in the development of hilal research in the future. On the other hand, conditions in the field often leave little time to report observations as a material for the ISBAT hearing, so there is no time for image processing. Simple image processing procedure from the evidence of recording the new moon image using free software needs to be done, especially for the very young new moon.[2]

[2] Dhani Herdiwijaya, "Prosedur Sederhana Pengolahan Citra untuk Pengamatan Hilal", Paper Seminar Nasional Hilal 2009, (Lembang: Observatorium Bosscha, 19 Desember 2009), p. 109.

2. S. Farid Ruskanda on Objectively Rukyat Technology a scientific paper presented at the Rukyat Technology Panel Discussion Beginning in the Month of Ramadan and Shawwal.[3] In the paper explained that there are three technology choices that can be used when the sky is bright for Rukyat al-hilâl, including: passive systems for visible light, passive systems for infrared, and active systems. In addition there are also technologies that can be used in cloudy skies, the radar system.[4] This research gives the option of using technology in two circumstances for Rukyat al-hilâl, where its validity still considers the opinions of the ulama.
3. Ma'ruf Amin on Rukyat for Determination of the Beginning and End of Ramadan According to Shari'a Views and Science and Technology Spotlight a scientific paper presented at the Rukyat Technology Panel Discussion Beginning in the Month of Ramadan and Shawwal. This paper explains the principle of sharia which does not reject the participation of science and technology in the process of determining the beginning and end of Ramadan, as long as it does not conflict with the Shari'a or ignores the instructions given by the Shari'a. The objective use of rukyat technology as a companion to rukyah bil fi'li without tools, as has been done so far, can be carried out.[5] But indeed until now there has been no agreement of the scholars about whether or not the results of rukyah bil fi'li using tools, further studies are needed.

B. Postmodernism Review of Science

The view of modernism assumes that the truth of science is absolute and objective, meaning that there is no value from humans. It was here that a new understanding was born in which one of the characters named Jean Francouis Lyotard, was a continuation and correction of modernism to provide a new thought and solution in his view of science.

[3] Diskusi Panel tersebut diselenggarakan oleh ICMI (Ikatan Cendikiawan Muslim Indonesia) at Jakarta on4 September 1993.

[4] S. Farid Ruskanda, ect, *Rukyah dengan Teknologi; Upaya Mencari Kesamaan Pandangan tentang Penentuan Awal Bulan Ramadan dan Syawal,*(Jakarta: Gema Insani Press, 1994), p. 32.

[5] S. Farid Ruskanda, ect, *Rukyah ...*, p. 74.

Daniel Bell interpreted it as the growing tendency of back-to-back tendencies, which together with increasingly instinctual powers and increasingly soaring pleasures and desires, finally brought the logic of modernism to its poles. That happened mainly through intensification of community structural tensions.[6] Fredic Jameson defines postmodernism as a cultural logic that brings transformation in the general cultural atmosphere. Postmodernism emerged based on the dominance of reproductive technology in the current global network of multinational capitalism.[7]

As for Jean Baudrillard, if modernity is characterized by the exploitation of commodification, mechanization, technology, and markets, then postmodern society is characterized by implosion (the explosion in) aka the fusion of all boundaries, regions and differences between high culture and low culture, appearance and reality, and all other binary opposition that has been maintained by social theories and traditional philosophy. For Baudrillard this shows the end of all forms of positivity, major references and forms of finality from previous social theories such as reality, meaning, history, power, revolution, and so forth.

It can be said that modernity can be called a process of increasing the differentiation of the fields of life along with social fragmentation and their aliases, postmodernity can be interpreted as a process of de-differentiation and the fusion of the fusion of all fields.[8]

Modernism views positive empirical sciences or science as the highest standard of truth. This means that an objective and positivistic view of modernism results in moral and religious values losing authority. Then arises moral-religious disorientation towards violence, alienation, and life disorientation.[9]

Adherents of postmodernism admit that there is an approach in science that is a methodological approach including the interpretation of anti-objectivity and

[6] Daniel Bell, "Beyond Moderenism; Beyond Self", dalam *Sociological Journe,* (Oxford:Manchester University press,1984), p. 34.

[7] Frederic Jameson, "Postmodernism otr the Cultural logic of Late Capitalism", dalam *New Left Review 146,* 1984, p. 85-87.

[8] See Jean Baudrillard, *Simulations,* juga *in the Shadow of the Silent Majorities,* (New York: Union Pers, 2001), p. 56.

[9] Chistopher Norris, *Membonkar teori dekonstruksi Jacques Derrid*, (Yogyakarta: Arruss, 2003), p. 312.

deconstruction. Understood as unlimited interpretation.[10] Thus in the view that science is subjective. The implication is that there is no value-free science. Whereas modernism considers objective science free from values.[11]

Postmodernists do not recognize universal rationality, but only relativity from plural existence. Therefore, the change in the way of thinking from totalizing to pluralistic and open democracy. Or in other words, postmodernism emphasizes the principles of plurality, difference, heterogeneity, local / ethnic culture, and daily life experiences.

For adherents of postmodernism, they do not view modern science as universal, harmonious, or consistent, but rather are particular and local. The prominent character of this era raised the concept of pluralism, the emphasis on empirical conceptions in the sense of the emphasis on the individuality of human beings as autonomous.

In general, conceptual discourse about postmodernism is covered by the following ideas, among others: 1) ideas that require great respect for nature as a critique of the modernism movement that exploits nature, 2) ideas that emphasize the importance of language in human life with all concepts and complex analysis, as an antithesis to the conditions of modernism that glorify the "engine" of the bureaucracy of science, 3) big ideas to reduce the admiration for science, capitalism, and technology that emerged from the development of modernism. On the grounds that all of this has given birth to human construction as a dead object in the reality of his life, thus alienating humans from their own humanism; 4) the idea of the importance of inclusiveness in accepting the challenges of other religions over dominant religions so that the emergence of dialogue space. This arises as a result of the mushrooming and growth of modernist reality which places ideology as a means of justifying each; 5) attitudes that tend to be permisive and accepting towards ideology and also other religions with various interpretations; 6) casually the emergence of the idea of shifting white domination in the western world; 7) ideas that encourage the rise of oppressed groups, such as socially excluded racial, gender,

[10] Soetriono & Rita Hanafie, *Filsafat Ilmu dan Metodologi penelitian*. (Yogyakarta: Andi, 2007), p. 31.
[11] Jalaluddin, *Filsafat Ilmu Pengetahuan*, (Jakarta: Rajawali Press, 2013), p. 67.

minority classes; 8) ideas about growing awareness of the importance of radical interdependence from all parties in a way that can and might be thought of by humans as a whole.[12]

The most dominant characteristic of the above thought refers to the basic idea that wants to reduce admiration and criticize science. This can be interpreted as showing a significant shift from the era of modernity to the era of postmodernism. He questioned "what is true knowledge" in genealogical and archaeological terms.[13]

C. Hilal Image Processing in Rukyat al-hilâl

Image processing aims to improve the quality of the image so that it is easily interpreted by humans or machines (in this case computers). Image processing techniques transform images into other images. So, the input is the image and the output is also an image, but the output image has better quality than the input image.[14]

In the rukyat al-hilâl that uses astrophotography, taking an image is a first step, to arrive at a satisfying image, it must deal with things like noise reduction,[15] contrast and brightness increase, and color correction.[16]

There is no astrophotography that performs the exact same image processing. A good program has a tutorial that explains how to operate, users will find the most suitable combination for each image, especially if the aim is to produce the "best

[12] Muhlisin, "Posmoderenisme dan Kritik Ideologi Ilmu Pengetahuan Modern". *Jurnal Okarra,* II. Vol 1 No 1 Tahun 2000, p. 6-7.

[13] Muhlisin, " dan Kritik Ideologi Ilmu Pengetahuan Modern". *Jurnal Okarra* II. Vol 1 No 1 Tahun 2000, p. 7.

[14] Priyanto Hidayatullah, *Pengolahan Citra Digital; Teori dan Apklikasi Nyata*, (Bandung: Informatika Bandung, 2005), p. 5.

[15] Noise is a term used by time series data analysts to describe random fluctuations that might obscure the true signal. The sequence of errors, in successive observations, consisting of random values free from normal distributions in the sense of zero is called white noise. See http://www.oxfordreference.com, the keyword "noise". Noise is briefly referred to as interference with the image. Accessed September 20 2019, 08.45 WIB.

[16] Robert Reeves, *Introduction to Digital Astrophotography; Imaging the Universe with a Digital Camera,* (New York: Congress Cataloging, 2005), p. 353.

image". Scientific imagery must follow a strict step-by-step processing, which can be documented and does not endanger the data.[17]

Many use more than one program to complete the image to be processed, ranging from brightness, contrast, color correction, and others. Therefore, it is difficult to lay down universal rules or steps in image processing. So it really needs special expertise.[18] For consideration, it is necessary to know the scientific limitations in image processing.

1. General principles in Astronomy Image Processing

In The Handbook of Astronomical Image Processing (HAIP), Richard Berry and James Burnell relate "astronomy image processing laws." This law is not only based on mathematics or methodology, but also recognition of the reality of image processing, which is studied for hours at a telescope that obtains images and on the computer that processes it. This is true in the art of digital astrophotography.[19]

Some basic principles in astronomical image processing are as follows:

a. Image processing is not a magical process; but it is a process of applying mathematical numerical manipulation of rules.
b. Image processing removes some form of image information to enhance other forms of image information.
c. Photo calibration is needed to remove the noise sensor signature from the final image.
d. Brightness scaling is done to eliminate unwanted background sky and excessive star brightness to more effectively display galaxies and nebulae.
e. Unsharp masking[20] and deconvolution[21] are applied to remove unwanted blurry portions from images that hide desired details.

[17] Robert Reeves, *Introduction to Digital* ..., p. 353.

[18] Robert Reeves, *Introduction to Digital* ..., p. 353-354.

[19] Robert Reeves, *Introduction to Digital* ..., p. 354.

[20] Unsharp masking is a photo and image processing technique to reduce overall brightness variations in an image. Negative masks are made from the original, with low density and a little out of focus. This is then squeezed with the original, thereby reducing the original brightness range while maintaining fine detail. The result allows small variations in brightness to be seen in the image with a slight reduction in contrast. See

f. Image information is always lost during processing and addition. The end result might be better, but it will have less raw data. [22]

2. Astronomy Image Processing (Astrophotography) according to Berry and Burnell.
   a. Unlimited astronomy photos. In short, if there are enough photos that arrive at censored imagery, then the target will not be discriminated against from the background of the sky or the sound sensor. The nature of astronomical targets, atmospheric conditions, the size and optical configuration of the instrument used for imaging, and the response characteristics of the imaging sensor all come into play, and at some point will limit the ability to obtain the desired image.
   b. The occurrence of Artifact. Artifacts are imperfections in images caused by external factors such as dust on the sensor, optical system illustrations, optical imperfections, focus errors, reflections in the optical system, electron noise on the sensor, and others. Then it is necessary to suppress or eliminate artifacts during image processing by calibrating the image with a dark frame. But keep in mind that any image will still have many artifacts despite efforts to eliminate them.
   c. Never trust one picture. This law does not apply if the object only makes the best image. In fact, freedom and license are often taken in image processing intended only for visual enjoyment. If doing science or deliberately searching for something new, the accuracy of what is recorded in the image becomes very important. Digital images are very vulnerable to various types of artifacts that mimic astronomical objects. Cosmic ray strikes, noise sensors, or even the wrong processing applied can create realistic appearances on images that are not displayed on popular star charts. There is always the possibility that something

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http://www.oxfordreference.com, the keyword "Unsharp masking". Accessed on 20 September 2019, 11.00 WIB.

[21] Deconvolution is a computational method used in signal processing to partially correct the effects of widening or blurring instruments or the atmosphere. The deconvolution method is used extensively in aperture synthesis to reduce the distortion effect of the telescope beam pattern. See http://www.oxfordreference.com, the keyword "deconvolution". Accessed on September 20, 2019, at 11,35 WIB.

[22] Robert Reeves, *Introduction to Digital* ..., p. 354.

new will appear in the sky, but the motto is proof and verification. If it appears in two pictures in a row, the possibility of reality increases but is not real proof of its existence. If something appears in two pictures taken by separate instruments, the possibility of reality increases significantly until the verification search from another source.

d. Image processing always discards information, it doesn't matter whether the processing collects knowledge by measuring position or quantity or only provides pictorial information about the subject. The nature of calibrating a digital image by reducing the dark frame will change it for the better. Further processing, or refinement, removes more information to increase the visibility of other image information.

e. A well-processed image cannot be repaired. The sky background that is set to black has discarded image information about the dark parts of the image, while bright stars to meet pure white no longer store actual brightness information. Increasing contrast to increase visibility of large-scale faint detail has also reduced the range of available data contained in raw images. After processing, it can see better what is available, but in a more limited range of colors and tones than those contained in the original image.[23]

The principles above are used when processing images. Changes can occur in the image, but must balance between raw data and new data / images obtained by mathematical processing. Image over-processing cannot replace the lack of raw data.[24]

3. Stages of Hilal Image Processing

The computer functions in Rukyat al-hilâl, among others, functions as a telescope controller as an instrument for digital data acquisition from electronic detectors, as

[23] Robert Reeves, *Introduction to Digital* ..., h. 354-356. See to Richard Berry & James Burnell, *The Handbook of Astronomical Image Processing,* (USA: Willmann-Bell, 2005), p. 133-155.

[24] Robert Reeves, *Introduction to Digital* ..., p. 355-356.

an image viewer, functions as analysis, numerical, simulation, and others.[25] According to David Ratledge the sequence of operations on digital images, right after the acquisition and before it can be analyzed effectively and well documented. There are three conditions, first a reduction in offset, which is equivalent to determining the zero point for each pixel (bias or offset). The second removal of the thermal signal generated on the sensor itself (called dark current or dark frame). And the third achieves uniformity of pixels in the entire image plane (called the flat plane).[26]

In general, things done in astrophotographic image processing are as follows:

a. Image Reduction/Calibration

Image reduction (or calibration) refers to image cleaning to reveal the desired data in the best light.[27] The first step in processing exposure must be to reduce the dark field and the correction of the flat plane. Make sure the dark areas match the temperature, exposure time, and mode of the light exposure. Confirm that the plane is flat according to the optical system of exposure light. Calibrated images must be stored in a different folder from the raw images. In this way, if the image is not calibrated correctly, it can repeat the process on the raw image. The calibrated image must be almost free of scattered hot pixels that disturb the raw image. The vignette and dust shadows must be substantially increased.[28]

b. Aligning Images

After the exposure is calibrated and the size is the same size, then it's ready to adjust and combine them. A better approach, at least until it develops in the alignment process, which is to separate the two processes. Different programs will synchronize in different ways, and with varying degrees of complexity. Alignment of two stars will improve position and rotation, but not on a difference scale. Always check images after alignment to ensure that the process is successful, before continuing to merge images.

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[25] Ian S. McLean, *Electronic Imaging in Astronomy; Detectors and Instrumentation*, (California: Springer, 2008), p. 353.

[26] David Ratledge, *Digital Astrophotography; the State of the Art*, (London: Springer 2005), p. 80.

[27] Adam M. Stuart, M.D, *CCD Astrophotography: High Quality Imaging from the Suburbs,* (Florida: Springer, 2006), p. 71.

[28] Ruben Kier, *The 100 Best Targets for Astrophotography,* (New York: Springer, 2009), p. 340.

Each alignment routine composes an image, which introduces a little blur. Therefore, try to limit harmony with a set of synchronization programs. If the alignment is bad, return to the original image before modifying the alignment procedure. Do not aim the same image at several alignment steps, at the risk of reducing resolution[29]

c. Combining Images

If using filtered images, it is necessary to combine each filter channel separately. Aligned imagery can be combined with a combination of averages, hybrid / median averages, sigma combines, or insertion of standard deviations. Addition and averages provide the highest signal-to-noise ratio, because all data is used to create images. The average risk avoids making pixels with values higher than saturation. Addition may be better than average for very dim images, such as those obtained with narrow band filters. Both the addition and the average allow the cosmic ray clicks and the plane path to remain dim artifacts in the final image.

Using a hybrid method of average and median techniques to try to combine the benefits of both. This method requires at least six images to be combined, but can work with even more. The images are divided into sub groups of at least three images. Each subgroup is combined on average, which removes cosmic rays and aircraft paths. Then, combined images from subgroups are averaged. In principle, this achieves the median combined artifact emphasis, with some of the benefits of increasing the signal to noise given by the average.

Sigma works well together not only in light exposures, but also in dark areas, refractive fields, and flat fields, for dark areas, don't use normalization and don't check to ignore black boundaries. As for flat areas, use normalization around 60% but don't check to ignore the black border. If using the calibration routine at Maxim DL, make sure each dark, biased and flat frame is set to use the right combination settings before applying it to the light image.[30]

[29] Ruben Kier, *The 100 Best* ..., p. 342.

[30] Ruben Kier, *The 100 Best* ..., p. 343.

D. Postmodernism Analysis on Hilal Image Processing

Technological developments and reliance on the old rukyat method are considered obsolete and no longer relevant. The hilal observation process cannot be stopped by just one method. The interpretation of the hadith text must also be reviewed, bearing in mind the limitations of the traditional method of observing the new moon. This is caused by weaknesses in the method used. In this case there must be a method that can accommodate hilal observations with a better formulation.

The use of technology in rukyat al-hilâl has begun to be familiar among practitioners of astronomy, but its existence cannot yet be as a stand-alone method. Rukyat technology still requires observation support by eye (even though using a magnifying device) so that visibility can be recognized. The condition and state of the sky at the time before the ghurub is always a barrier to observing the moon using the eyes or with the help of simple tools. Not to mention the effect of the hilal contrast which is always lower when compared to the brightness of the sky.[31]

The use of rukyah technology can increase the hilal contrast so that the new moon can dominate more than the background sky at the time of observation. Image processing on the new moon is supported by methodologies that can be scientifically recognized truth. Reducing a hilal image into a better image cannot be carried out without the existence of a measured algorithm in the image processor used. But this is still not acceptable to many circles, the reason in general is in processing images, the function of the eye is not used so it cannot be used as valid or valid evidence according to Islamic law.

In this case, assessing that a scientific truth is not only objectively determined, but also subjective. Hilal observation requires justification from experts related to developments carried out, so it is not merely the normative truth that applies. The limitations of normative truth should be developed with dynamic truth.

In Indonesia, the use of image processing in the new moon is still not widely used. In addition to the limitations in understanding this image processing

[31] Riza Afrian Mustaqim, "*Image Processing* pada Astrofotografi di BMKG untuk Rukyat ul Hilal", Tesis Program Magister Ilmu Falak 2018 Universitas Islam Negeri Walisongo, p. 56.

technology, it is also caused by the not yet legalized image processing as a single method that can be evidence of the appearance of the new moon.

The need for a better method cannot be dammed anymore, this situation should also trigger the reconstruction of Islamic law regarding the use of technology in Rukyat al-hilâl. Science certainly always experiences development from year to year or from century to century. Because of the nature of humans who are always not satisfied, especially in terms of science. As a result of the results of existing thinking, they will think to be able to develop even do a retest of the findings of the past. For example in the field of philosophy we know the name Anaximander (610-546 BC) which says that the original substance is not water. In contrast to the previous philosopher Thales (624-545 BC) said that the first and main substance in the formation of something is water.[32] And so on experiencing changes and developments of course in order to lead to something more perfect along with the development and progress of human thought.

This is also the case with the development of the rukyat al-hilâl method, as time goes by, it also experiences improvement to the level of better observation in the new moon observation. Image processing is not a method without a structured methodology, but through clear processes and steps. This is not to be avoided, but must be utilized to eliminate difficulties as a form of innovation in the observation of the new moon. Of course it also requires legality both in fiqh law and through ijmak ulama. Science is not objective but subjective and the interpretation of humans themselves, so that the truth is relative. So when the need for a better method also requires legality to support these changes.

E. Conclusions

The results of this study indicate that:

1. Postmodernism views image processing in rukyat al-hilâl as a renewal of the method that is needed, it is caused by limitations in the current method which is only limited

[32] Ali Maksum, Pengantar Filsatfat, (Jakarta: Ar-ruzz Mmedia, 2012), p. 44-45.

to enlarging and closer objects. The problem at the time of observation is far from just enlargement and approach of the object, but the state of the sky at the time of ghurub to the hilal contrast is always dimmer than the background of the sky. So the use of technology based on hilal image processing in rukyat must be supported by the legality of Islamic law for its use.

2. Restricting the use of tools in rukyat al-hilâl will hamper the main purpose of rukyat (ensuring the existence of the hilal) based on empirical observations, in this case providing the widest development opportunity as a form of subjectivity of knowledge. This can be a consideration for giving birth to a new transformation in the rukyat al-hilâl method.

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