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The Concept of Thermodynamic Law in The Perspective of Islamic Philosophy

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Abstract

*This article aims to analyze the concept of thermodynamic laws in physics through the lens of Islamic philosophy, particularly in relation to the concept of Tawhid or divinity. The analysis focuses on identifying the intersections and contrasts between the principles of thermodynamics and the Islamic concept of **Tawhid**, especially in explaining the existence and nature of energy. This research is a literature-based study utilizing secondary data obtained through an extensive review of scholarly texts and relevant literature. The findings indicate that there is both convergence and divergence between the empirical understanding of thermodynamic laws and the Islamic concept of Tawhid. For instance, the first law of thermodynamics, emphasizing the conservation of energy, aligns with certain philosophical interpretations of Tawhid. However, contrastingly, Surah Al-Ikhlâs underscores the uniqueness and incomparability of Allah, affirming that nothing can equate to Allah in meaning or substance, thereby distinguishing the concept of divine energy from empirical understandings. This study contributes to the discourse on the integration of science and religion by providing a philosophical framework to explore how scientific principles can intersect with Islamic theological concepts. It highlights the potential for dialogue between empirical evidence and absolute belief, fostering a deeper understanding of both domains.*

Keywords: Islamic Perspective, Islamic Philosophy, Thermodynamics Law

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INTRODUCTION

The development of science in turmoil of thought has given effort to answer various abstract problems regarding the universe. Thus, there have been many great scientists with various disciplines, who have greatly determined the development of science. Furthermore, a series of influential figures such as Aristotle, Al-Farabi, Al-Kindi, Einstein, Harun Yahyah, Charles Darwin to Joule and Thomson should be appreciated for their efforts to study and contribute to the development of scientific disciplines. However no matter how carefully the efforts are made, it still requires and must be ready to go through a process of testing, justification, criticism.

Therefore, it does not rule out the possibility of reaping various scientific objections or facing various public speculations. Furthermore, if we look at debates around science in biology and religious views, it seems that it has become commonplace, such as Charles Darwin with the Theory of Evolution that obtain various objections, rebuttals, criticisms to harsh criticism from various Muslim scientists with various intellectual figures on behalf of Muslim intellectuals. Next, Harun Yahyah who has various contributions of thought to break Charles Darwin's theory of evolution considered to weaken the concept of creation and does not have sufficiently strong evidence to support the theory that is carried. Furthermore, Herdianto Arifin said.:

The debate about the theory of evolution is still ongoing today and it is unlikely to end. This debate has been globalized to the point of entering into the world of Islam. The suitability of the theory of evolution with Islamic creeds as the benchmark for discussion in the debate. The polemic using arguments based on the Al-Qur'an for supporters and opponents seems never ending (Arifien, 2010).

Based on the framework of thought by prioritizing aspects of scientific validity in substance and scientific principles, the thoughts of Prescott Joule and William Thomson on the law of conservation of energy used in physics, can be considered to have hardly been touched by Muslim scholars seriously and thoroughly studied the various aspects of thermodynamic law in its relation to the concept of creation and divinity in Islamic beliefs. The concept of law and thought that was promoted by Joule and Thomson, in formulating the first law of thermodynamics, stated, "energy cannot be created and destroyed". It actually has a conflict with the concept of Islamic universality, especially in exposing the terminology of creation, eternity, and destruction where the three This terminology can be said to be the core substance of the concept of divinity in Islam.

According to some previous thoughts and assumptions, the authors are interested in studying and examining more deeply the aspects of Thermodynamic law in Islamic views/perspective from various perspectives, with a focus on the study of the thoughts of Prescott Joule and Wiliam Thomson in uncovering the law of conservation of energy.

This research was a qualitative research in the form of literature study. The data in this research were obtained from written sources such as physics books, chemistry books, commentaries, Qur'anic ulumul, text research documentation, articles, journals, and audio visuals. Data collection was conducted by summarizing, organizing and formulating expert

opinions contained in written documents such as books, journals, articles, YouTube, e-books and others. Analysis of the data in this research used Gibb's research model, "making the holy book as a basis for thinking (Nata, 2006).

DISCUSSION

1. Law of Conservation of Energy Concept

In the laws of thermodynamics carried out by Joule and William Thomson, the essence of energy is claimed to be an eternal element of the universe, that can't be destroyed, but can be converted into other forms of energy. Joule and William Thomson's belief was based on several experimental tests and observations of heat and energy to determine their equivalences.

The word kekal/eternal in the Indonesian dictionary is defined as something that has no end. Furthermore, in terms of conservation that is absorbed into the big Indonesian dictionary, it is defined as "the immortality of physics, which is known as the law of conservation (Taupik, 2010). Besides, If we look at the eternal analogy that Islam believes, eternity that applies to living things is a condition that humans will experience when they rise from the dead. Thus, eternity is interpreted as a condition of "neither dead nor alive." (Al-Maraghi, 1993). Discussing about the law of conservation of energy universally in physics, it is necessary to underline that the conservation referred to in the law of thermodynamics is the conservation of energy in the scope of the universe. Furthermore, in addressing the debate on the concept of eternity, Ija Santana in one of his articles wrote:

Seyyed Waqar Ahmed Hosein, The Director of Institute of Islamic Science, Technology and Development (IISTD), California, stated that the debates of theologians around nature are closely related to the discussion of energy. As objects created by Allah, according to most Ash'ariyyah theologians, energy is limited in life time (end) and usefulness and they will experience absence. Meanwhile, according to Mu'tazilah theologians such as Al-Jubai and Al Nizham, energy has no origin, or can be considered to come from nothing and it is infinite, thus, it is eternal and eternal. Energy does not experience disappearance but simply changes from one form to another (Suntana, 2018).

In addition, In the laws of thermodynamics, energy can't be destroyed, but it can be converted into other forms. For example, heat energy can be converted into propulsion energy and the amount of energy is always the same. Based on results of such experimental tests, they made Joule and Thomson really believe in the law of conservation of energy. Before we go further, we need to know that energy is "the ability to do work or can be called energy (Taupik, 2010). " In other words, every energy and something that produces work can be considered to be energy, either the volume of heat, cold, wind, motion, force or the like.

According to some of the previous thoughts and explanations, it become something interesting to answer about the Islamic perspective in understanding the terms of eternity and the terms of energy in accordance with the rules of literature study of Islamic thought and text. Furthermore, in Surah Al-Furqon verse 16 and Al-Bayyinah verse 1, the term eternal is also used in several places in the Qur'an.

Translation: for them, everything they desire is in it (heaven), they are eternal (in it). That is the promise of your Lord who deserves to be asked (to Him)(Kementrian Agama Republik Indonesia, 2006).

From some of the descriptions and explanations above, we can understand that the universal terminology of eternity in an Islamic perspective has the meaning of eternal existence that also applies to living things, humans. In other words, the Al-Quran indicates that there is a potential space for material existence and energy to become permanent. However, the immortality in question is not absolute, but it is bound to the law of the purity of tauhid totality, with the assumption that the space for the potential annihilation of the totality for all elements of the universe is also tied to the conservation of energy and matter. It is perhaps the cross between the law of conservation in the law of thermodynamics that is empirical and the law of conservation in the Islamic perspective that has Absolute belief.

Furthermore, if we analyze the two perspectives, the terminology of conservation in the law of thermodynamics takes the basis and analogue of circulation in the observation of potential objects that can produce energy. However, if we observe and think using simple logic, empirically the volume of energy is bound and determined by matter as a potential object.

Further, If we review Joule's and Thomson's law of conservation of energy, both of them assume that this law applies in closed space. In other words, it concludes that the earth and the universe are a closed space, again, this assumption is contrary to some scientists who believe that nature of the universe is an infinite empty space, by observing that the universe is constantly expanding.

2. Reinterpreting the Terminology of Creation

An ambiguous problem in the terminology of the law of conservation of energy that is developed by Joule and Thomson in the first law of thermodynamics, is the use of the word creation. The term meaning of the word creation, which Joule and Thomson used, has no true relevance. It is true that it can universalize the existing concept of creation. Furthermore, before getting to the main problem in this research, it is better if we review the explanation of various points of view in understanding the word "creation". In the Indonesian dictionary, the word creating is popularly understood as an activity "to create something or a new idea" (Taufik, 2010). If we shift to terminology by looking at a broader view, Herdianto Arifien's thought, can help us understand the word creation as a continual process that occurs continuously and never stops. Thus, every activity of the universe is understood as a process of creation:

....Every stage of occurrence of the human individual is an activity of creation. Even after being created, it is inseparable from the activity of creation. This brings the meaning that every substance created is changed continuously by Allah. If we look at a more micro scale, such as organs, cells, genes, chemical compounds, atoms, and sub atoms, then in our bodies, there have been changes continuously without us knowing it (Arifien, 2010).

Herdianto Arifin's enthusiasm in reinterpreting the terminology of creation, in his work how Sufism explains the evolution of living things deserves appreciation, the various arguments that Herdianto put forward, are believed to be attempts to criticize the various ambiguities of Harun Yahyah's thoughts in understanding the terminology of creation. Furthermore, if we analyze Herdianto's work, it seems that Herdianto has based his various views on Jalaluddin Rumi's thoughts. Even though I agree, on several sides in understanding Herdianto's anti-harun yahya style creation terminology, I both disagree and reject his interpretation of QS 2: 117; 3:47; 40:68 in understanding creation, by saying that

before the creation, there was already an object to be created:

In QS 2: 117; 3:47; 40:68, there are words "told him" (yaqulu lahu). it would have two interpretations. First, these words mean that before creation, that something was to be created (Q 9:19 and 23:14), the meaning of creation is to change from something into something. Second, if at the beginning there was no existence other than him, then Yaqulu Lahu's meaning is he wills for himself. In this case, the meaning of creating is his own exploration. This means that this second interpretation brings us to mystical consciousness, namely the unity of reality of subject and object (Arifien, 2010).

Furthermore, if we analyze the case comprehensively, Herdianto's view that interprets creation is an occurrence that occurs continuously, super automatic, never pauses by the dimension of time and covers everything. However, Herdianto's premise on the other hand, beyond existing interpretations, is trapped in the area of thinking about Allah's substance, as a converse element of Energy. Next, the interpretation of the concept of creation such as Herdianto's thought can be a new dilemma and it is not in accordance with the ethics of Islamic disciplines that are very strict in providing limits that cannot be exceeded, especially in interpreting the most basic domain, namely the concept of purity of tawhid.

Based on some aspects of meaning in understanding the essence of creation can be understood that Islam has a very broad and universal view in understanding the concept of creation. For Islam, creation is not just bringing into being something new that has never existed, but every reality, process, action, response, movement, displacement, conversion or whatever the terminology is, all of that can be considered to be creation on a certain side. Furthermore, in Al- Qur'an surah annisa 126, it explains:

Translation : And belonging to Allah is what is in the sky and what is on earth (Departemen Agama Republik Indonesia, 2006).

Hereafter, in understanding the text, Nasr Hamid Abu Zaid in the textuality of the Al-quran said, "The effort to generate scientific awareness requires a scholar to be brave in raising problems and being more courageous in finding the right answer (Zaid, 1993). According to some of these thoughts that reinterpret the terminology of creation, the law of thermodynamics has become a necessity for Muslim scholars, especially confusion about the terminology used in the laws of thermodynamics. It can lead to the ambiguity of

the terminology of creation, error and even contrast to the essence of Islam, because they think energy can't be created, at the same time, Islam believes that nothing is eternal and that there is nothing that can't be destroyed unless Allah is the creator.

The law of thermodynamics I is usually called the law of conservation of energy. The principle of the law of thermodynamics I, as stated by Eugene P. Odum, is that energy can change from one form to another. Yet, energy can't be created and destroyed. This view is increasingly with theology. the Mu'tazilah regarding the existence of nature (Suntana, 2018).

Furthermore, the ambiguity of the law of thermodynamics in using the terms copyright, creation, and creation is terminologically ambiguous, and contrasting in understanding the term creation. In other words, the term energy, that can't be created in the laws of thermodynamics, only applies to the empirical realm that can be observed using existing scientific methods. Furthermore, based on in-depth analysis, we assume that the subject of "impermanence" creates energy in Joule and William Thomson's law of conservation of energy, only applies to matter and energy subjects. Thus, every element of materialism can't create energy, whereas the laws of thermodynamics do not apply to divine substances that are believed to be the cause of everything, because divine substance in the perspective of Islam is not part of these two aspects, either as matter or energy.

3. Conflicts of Thermodynamic Law and Tauhid Totality

In Arabic, the word tauhid is "mashdar from the word Wahhda, yuwahhidu, Tauhidaa, which means to overthrow (Hanafi, 2012). According to the term, monotheism is understood to be a belief in the oneness of Allah, both in creation, maintenance and possession. In line with the case, the word Tauhid is absorbed in the Indonesian dictionary which means "to believe that Allah is one or esa" (Taupik, 2010).

Based on these two general notions of Tawhid, it needs to be underlined, that in this section, it is an attempt to analyze and study the concept of the purity of Tawhid in Islam in order to answer assumptions that can confuse faith and mistakes in understanding the concept of thermodynamics. Besides, the totality of belief in the concept of Tawhid for a Muslim is the primary foundation in various aspects, both regarding faith, life practice, basis of thought, legal guidance and benchmarks for various life problems universally. The totality of Tauhid as a characteristic of Islam can be traced

from its early history to death of Muhammad as a prophet. Furthermore, Shaykh Shafiyyurrahman Al-mubarakfuri in his *Sirah Nabawiyah* was translated by Kathur Suhardi stated:

....The Quraysh people arose because they realized that the meaning of faith that he was calling for was the denial of uluhiyah other than Allah. The meaning of the message and the Day of Judgment was total submission and surrender, so that they no longer had a choice about themselves and their assets, even more so for others. In other words, this faith would crush their leadership and superiority over all Arab nations, which previously used the label Religion (Al-Mubarakfuri, 2019).

Due to the concept of Tauhid totality, it can be understood that in an Islamic perspective, the parameters of knowledge in determining the law of the discipline of science must be in accordance with the concept of the purity of the Tauhid totality especially in uncovering the concept of creation, eternity, annihilation, as well as in revealing the existence of energy in the universe. In relation to the law of thermodynamics, there are several notes and problems as something that can confuse the concept of Tawhid in its totality.

a. The law of thermodynamics stuck in the terminology of equality

In the concept of tawhid totality, one of the purities of tawhid is "rejecting equality" (Departemen Agama Republik Indonesia, 2006). in any aspect of understanding the existence of God, whether form, form, image, volume, energy, size, power, space or so on. Furthermore, in the interpretation of Al-maraghi, it reads: Nobody equals Allah. This verse is an answer to the belief of ignorant people who think that Allah is equal in all their actions. This belief is also shared by the Arab polytheists who say that angels are allies of Allah (Al-Maraghi, 1993).

In addition, if we analyze Joule and Thomson's law of conservation of energy, that said that energy can't be created and destroyed, terminologically alone has contrasting consequences for the concept of tawhid of totality. Thermodynamic law has the implication of universally punishing all components of the universe.

A simple example, when we understand that energy is eternal, as Joule and Thomson argued, we actually believe that there is an absolutely immutable element besides Allah, namely energy, when we are trapped in Joule and Thomson's terminology.

In fact, we have violated the concept. 'Tauhid totality that believes that there is no equality for Allah, equates energy as something that is eternal without limitations and an explicit character, it is the same as we have to choose two alternatives to think that energy is Allah Himself, and the second alternative, we assume that there is something of equality between Allah and energy. Furthermore, what must be known, as the author has explained in the previous discussion, is that the concept of eternity in an Islamic perspective is different from the concept of eternity in the law of thermodynamics. Islam believes in the existence of space and potential for something eternal besides Allah that will perish and dissolve in nothing, while the concept of conservation of energy a la Joule and Thomson applies without exception which can be classified as universal law.

b. The Law of Thermodynamics Limiting Power of Allah

Besides implications for equality, the law of thermodynamics with the conservation of energy also limits the nature of Allah's omnipotence in carrying out His various superpowers. Or the second possibility, that the law of thermodynamic has the implication of abandoning Allah's interference in the dimension of the universe. Before we further examine some of the important issues and problems in thermodynamic law, the author will try to be as simple as possible to re-explain the nature of Allah's omnipotence in an Islamic perspective. In addition, if we open surah Al-baqarah verse 20, "Allah has power over everything." (Departemen Agama Republik Indonesia, 2016).

Further, if we look at the main sources of Islamic teachings, there are many arguments. They can prove that the power of Allah is able to penetrate and cross the limits of reasonableness and beyond the logic and ability of human thought. For example, like the sound of Allah's verses by saying that He is able to bring the dead to life, gave birth to Isa Al-masih without going through the process of biological relations and male interference, Adam's creation from the ground which was still abstract and full of interpretation, rolled up the sun and many more. The explanation that has become common knowledge of the power of Allah beyond the limits of human thought. Therefore, from an Islamic perspective, Allah has a character that is able to do something outside the logic of human thought, including destroying or creating the energy of the universe. In the interpretation of Al-maraghi surah An-nazi'at 34-41, Ahmad Mushthafa explained in general:

In the previous verse, Allah explains that He is able to bring back the dead, just as He was able to create this universe ... don't ignore this problem and don't force yourself to search for the essence and reveal the secrets that Allah covers are forbidden acts for His creatures (Al-Maraghi, 1993).

Based on the explanation, we assume that the energy in the universe has a chance to be or can be created. However, science has not yet climaxed at its super-recent peak. We exactly believe that the incidence in the process of Adam's creation from the soil is a scientific event, not an occult one. One of the evidences that we can trace that current knowledge has not yet reached its climax. It is that humans are able to process sperm and eggs outside the uterus that we know as IVF, but people are not yet able actually process or design sperm and artificial egg.

If it can be proven that humans are capable of processing the incidence of IVF outside the womb, then the scientific implications in the creation of Adam without the womb are points that support that Adam's existence is a scientific event. Yet, we have only found little scientific knowledge at this time. Based on these simple descriptions and its relation to the laws of thermodynamics is the inability of developing knowledge, it has not been able to touch on problems that can solve how to create and destroy energy by conducting experiments, exactly with Adam's description in the description of IVF.

CONCLUSION

From various reviews the author has presented on the previous points, in simple terms, we can conclude several problems quite important in reinterpreting the terminological confusion used in the law of energy conservation, having negative implications to the totality of tawhid in an Islamic perspective. Systematically, there are some simple notes in looking at the Islamic perspective on Joule and Thomson's thought in exposing the main law of Thermodynamics:

Firstly, as an intellectual responsibility, we absolutely appreciate some of Joule and Wiliam Thomson's important contributions in providing various scientific contributions to the fields of physics and chemistry. At the same time, we criticize and argue on the other hand, especially in exposing the terminology used in the law of conservation of energy in an Islamic perspective.

Secondly, Prescott Joule and Wiliam Thomson's terminological ambiguity in exposing the term creation is a law that cannot universalize the nature of creation in religious concepts, especially in Islamic theological views that have the characteristics of tawhid totality, containing terminological ambiguity, and contrasting ambiguities in understanding the term creation. In other words, the term energy that cannot be created in the laws of thermodynamics, only applies to the empirical realm that can be observed using existing scientific methods. In addition, the subject of "non-existence" creates energy in Joule and William Thomson's law of conservation of energy. It only applies to the subject matter and energy in the space of the universe.

Thus, every element of materialism cannot create energy. Whereas the laws of thermodynamics do not apply to the divine substance believed to be the cause of everything in the Islamic perspective, because the divine substance in the Islamic perspective is not a part of these two aspects, either matter or energy. *Thirdly*, it is the conflict between the law of thermodynamics and the concept of purity of tawhid in an Islamic perspective. There are several contradictions. the theory of thermodynamics a la Joule and Wiliam Thomson can lead to an all-powerful divine nature, shackled by the law of conservation of energy and to encourage an understanding that forces the equality of the divine substance of Tauhid totality in an Islamic perspective with the concept of the law of conservation of energy belonging to Joule and Wiliam Thomson.

This study contributes to the interdisciplinary discourse between science and religion by addressing the terminological and conceptual intersections of thermodynamic laws and Islamic theology. It provides a framework for reinterpreting scientific terminology within the context of theological constructs, emphasizing the need to uphold the distinctiveness of divine attributes in Islamic thought.

However, the study is limited by its reliance on theoretical and textual analysis without empirical research to assess how these conflicting interpretations influence contemporary Muslim engagement with scientific principles. Additionally, it does not explore broader theological perspectives beyond the Islamic framework, which could provide comparative insights.

Future research should examine the practical implications of integrating scientific principles like thermodynamics with theological worldviews, using both qualitative and quantitative methods. Comparative studies across different religious traditions could further illuminate how various theological systems engage with empirical science, fostering a deeper understanding of the interplay between faith and reason.

BIBLIOGRAPHY

- Al-Maraghi, A. M. (1993). *Terjemah Tafsir Al-Maraghi*. Semarang: PT Putra Toha Semarang.
- An-Nakrawie, A. (n.d.). *Asbabul Wurud*. Surabaya : Ikhtiar.
- Al-Usairy, A. (2011). *Sejarah Islam sejak Nabi Adam hingga abad XX*. Jakarta : Akbar Media.
- Al-Mubarakfuri, S.S. (2019). *Sirah Nabawiyah*. Jakarta : Pustaka Al-Kautsar.
- An-Nakrawie, A. (n.d.). *Ahshabul Wurud*, Surabaya: Ikhtiar.
- Arifien, H. (2010). *Bagaimanakah Sufisme Menjelaskan Evolusi Mahluk Hidup, Sebuah Kritik Anti Evolusi Harun Yahya*. Jakarta: Penerbit Republika.
- Departemen Agama RI. (2006). *Al-Qur'an dan Terjemah-Nya*. Jakarta : Cv. Agung Harapan.
- Departemen Agama RI. (1994). *Al-Qur'an dan Terjemah-Nya*. Jakarta : Lembaga Penerjemah dan Pentashih.
- Hanafi. (Tanpa tahun Terbit). *Kamus Arab-Indonesia*. Jakarta: Bintang Indonesia.
- Munawir. A. W. (2017). *Kamus Indonesia-Arab*. Surabaya : Pustaka Progresif. Mandiri
- (2012). *Logika*. Jakarta : PT. Raja grafindo Persada.
- Nata, A. (2006). *Metodologi studi Islam*. Jakarta : Rajawali Pers
- Nursi, B.S.(2011). *Misteri Kehidupan Dan Kebangkitan Setelah Mati*. Jakarta : Penerbit Erlangga.
- Taupik, I. (2010). *Kamus Praktis Bahasa Indonesia*. Bekasi: Penerbit Ganeca Exact.
- Murodi. (1997). *Sejarah kebudayaan Islam*. Semarang : PT. Karya Toha Semarang.
- Poerdarminta, W. J. S. (2007). *Kamus Umum Bahasa Indonesia*. Jakarta : Balai Pustaka.

Warson, M. (1994). *Kamus Munawwir*. Jakarta : Pustaka Progresif.

Zaid, N.H.A. (1993). *Tekstualitas Al-Qur'an*. Yogyakarta: LKIS.