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Time: Avicenna, Aristotle; Two Perspectives or One?

(زمان: ابن سینا، ارسطو، دو دیدگاه یا یکی؟)

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absolute is more general than necessary and the later is more general than possible. That is because, each step become more particular in relation to the above (Avicenna, 1912, p. 17). This argument lies in the Aristotelian principle of non-contradiction (Aristotle, *Metaphysics*, IV, 3. 1005b, 18-22).

6- For further reading see: *Directives and Remarks*, ch.3.

7- Shaygan explicitly explains Avicenna's reasons for this distinction. Interested readers can find the distinction on the pages 235-245.

8- See Aristotle, *Physics*, IV.4. 234b.

9- Shaygan explicitly proves this claim from both ontological and epistemological argument. Interested readers can find these issues on more details on the pages 237-240.

10- Some philosopher like Hussey believes that this claim constitute Aristotle's view of "grand design" of time.

11- Medial motion is defined as "the first perfection of what is in potentially inasmuch as potentiality. Terminal motion is defined as the gradual passage from potentiality into actually continuously in time (Shaygan, 1986, pp. 28-30).

12- For example, a line can only be reduced to points, as non-dimensional object, in mind. In real, a line can only be divided into smaller pieces of lines, due to the continuity of the spatial magnitude.

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is, from non derivative notion, we can say time is nothing but the continuity of the past and future which is only potentially divisible in mind to the parts. This notion also explains the priority and posteriority of time. Because of the essence of time, it depends on nothing except on its own right. Consequently, priority and posteriority of time can be understood without relying on parts.

Conclusion

Avicenna as a commentator of Aristotle, firstly, explains the concept of time from Aristotle's view, then, he uses the same techniques for the elaboration of time as those Aristotle did, and finally, he elaborates his own theory to this concept. While Aristotle's idea about the existence of time is not clear enough, the existence of time from Avicenna's view is explained in three ways: 1- the absolute existence of time or the existence of time without qualification; 2- the existence of time in mind; and 3- the existence of time in reality. In addition, while Avicenna believes that one way of explaining time is through motion as suggested by Aristotle, he believes that the time can be independently (non-derivatively) explained in itself.

In contrast to Aristotle, the motion is categorized in Avicenna's view: the temporal motion, and the medial motion; each of these two types creates a different viewpoint towards the concept of time. The medial motion brings about the divisibility of time whereas the temporal motion suggests the indivisibility of time.

Notes

- 1- For further discussion, see Taheri, "Time from Aristotle to Sadra".
- 2- See also Aristotle, *Physics*, 218a 8-30.
- 3- The theory of truth relies on the principle of truth in contradictory situations. Based on this theory, in two contradictory phrases; one must be true and the other must be false. Aristotle in the book of metaphysics (VI.4.1027b 25; 1028a2) indicates that "falsehood and truth are not in actual things" but they "are in thoughts". Therefore, from Aristotle's view, "being as truth is not relevant to metaphysics" (Shaygan, p. 229). For further discussion, see the distinction between "truth" and "true" and the relation between truth and existence in Stoic sources.
- 4- Avicenna discusses this issue in *Directives and Remarks*, ch. 4, 5.
- 5- According to Avicenna, in the hierarchy of the prepositions; the

priority and posteriority are in terms of spatial magnitude. For the close relation between time and motion, this meaning stretches from time to spatial magnitude (Aristotle, 1936, pp. 120-123).

From Aristotle's view, there are three continual aspects: time, motion and spatial magnitude. These aspects depend on one another. In other words, motion depends on spatial magnitude and time depends on motion. The structure and property of time is derived from that of motion, and those of the latter are derived from those spatial magnitudes (Hussey, 1983, p. 142).¹⁰

4-3 Continuity of Motion: Avicenna

The concept of motion from Avicenna's view is different from that of Aristotle. To better understand Avicenna's perspective, we should consider the meaning of motion from his view point. According to Avicenna, the concept of motion is twofold: the medial motion (*tawassot*), and the terminal motion (*qbat*). Both of the conceptions are potentialities (*bel-ghova*) (Avicenna, 1886, p. 128).¹¹

The medial motion "is a form of the moving things which is in the "now"... every "now" that one assumes, has a limit in the middle, neither before nor after" (Avicenna, 1886, pp. 135-136, in Shaygan, 1986, p. 29). This form of motion only exists in the mind. Based on this concept, the medial motion is indivisible. The terminal motion is divisible and its divisibility is potential. The divisibility of time is given from the divisibility of spatial magnitude. However, the divisibility concept of spatial magnitude only exists in the mind rather than in the real world¹².

As a whole, what Avicenna means by the concept of motion is that motion is something indivisible in reality. It cannot be divided into past and future. It is between the past and the future permanently. In real world we cannot divide time to the past and the future. It is dividable to the past and future potentially and only in mind, where there is a potential to imagine magnitude divisibility. In Avicenna's perspective, the essence of the continuity of motion is derived from time and the existence of its dividable being is derived from magnitude.

In sum, based on the derivative notion, the continuity of motion depends on the continuity of spatial magnitude and the continuity of time depends on the continuity of motion. Consequently, ontologically, time depends on motion and spatial magnitude. This way of thinking is similar to what Aristotle says. However, if we want to answer what time

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depends on spatial magnitude. Therefore, time follows and measures the motion. In this account, since the spatial magnitude is a divisible quantity, time can be considered as a divisible quantity as well. Spatial magnitude also causes the continuity of time as we will discuss in the following section. On the other hand, time can be considered as a non-derivative concept. In this account time can be considered as a quantity which stands on its own right.

4- The Ontological Argument of Time

After proving the existence of time, Avicenna describes the Ontological argument of time. As mentioned before, from his view point, time exists as a measure of motion. Therefore, there is a relation between motion and time. In other words, time measures the speed of the movement. Therefore, ontological study of motion paves the way to achieve an understanding of time.

4-1 Continuity of motion: Aristotle, Avicenna

Avicenna elaborates the Aristotelian concept of the continuity of motion in two respects; the one is in respect of spatial magnitude and the second is in respect of time.⁸ Avicenna explains the continuity of motion and its relation to time as follow: "continuity of motion does not exist, because spatial magnitude is continues and the continuity of spatial magnitude become the cause of existence of the prior and posterior in motion" (Avicenna, 1960, p. 331, in Shaygan, p. 238). Additionally, "motion is continued because the prior and posterior in motion is the cause of motions having a number which is time" (Avicenna, 1960, p. 331).⁹

4-2 Continuity of Motion: Aristotle

According to Aristotle, the necessity of the presence of time is to understand the meaning of the motion. When something changes or moves, it moves from the prior point to the posterior point. In other words, time measures the measure of the priority and posteriority of the motion. In order to prevent the vicious circle, he does not mean the priority and posteriority in terms of time (Avicenna, 1363AH, p. 156). That is due to the definition of time, it is not correct to consider the time itself (Poor-Jabbar-Jahed, 1385AH, p. 100). In Aristotle's account

Based on the first definition, "time considered in itself as a continues and successive quantity that has no actual parts; it is but a formal succession of the potential parts of motion" (Avicenna, 1886, p. 76). Additionally, he defines time in itself as "the measure of the possibility of changes" (ibid, p. 73).

3-3 The Continuity of Time

Avicenna looks at the continuity of time from two aspects: first in its coincidental and second in itself. The coincidental continuity of time is derived from the continuity of motion. This notion will be described in more detail in the next sections. This notion is considered as a derivative notion. That is because the continuity of time is derived from the continuity of motion.

On the other hand, Avicenna indicates that the continuity of time is in itself. In other words, the continuity of time can be found in its essence. He indicates that the continuity of motion is not the cause of continuity of time, rather the time is continues in its own. This notion is considered as a non-derivative notion. That is because this notion is based on the idea that the continuity of time is not derived from the continuity of motion.⁷ Moreover, based on the notion of the continuity of time, Avicenna makes a distinction between the existence and the essence of time. He believes that the continuity of time is a part of its essence which essentially means that it does not require a cause. Therefore, the continuity of motion cannot serve as the cause of the continuity of time.

3-4 Time: Divisible Concept or Indivisible

Razi as a commentator of Avicenna indicates that when we consider the essence of time, its divisibility does not depend on the motion. In other words, it is mind that represents the priority and posteriority, and they do not rely on anything. According to Razi, if one looks at the time as a divisible concept, so he considers parts for time, the part can be past and future, yesterday or today. Therefore, the mind would judge that yesterday is prior to today and today is posterior to yesterday (Razi, 1958, p. 92).

In Avicenna's account, the only indivisible "now" can exist in the reality. As we have mentioned before, for Avicenna, time can be considered in two accounts: a derivative quantity and a non-derivative quantity. Based on the first account, time depends on motion which

not need to refer to the “before” and the “after”. But at the second stage, when the mind explicitly judges the cognitional existence, it analyses the implicit object: the temporal existence by synthesizing the “before” and the “after.” In other words, according to Avicenna, “the mind judges” means that the mind judges the cognitional existence of time based on the temporal existence of time (Avicenna, 1960, pp. 71-79).

3-1-3 The Existence of Time in Reality

The second sense of judgment (*tasdiq*) involves the cognition of real temporal existence. In other words, the mind judges the existence of time in itself, and then it judges the existence of time in the reality. The mind compares these two judgments (*tasawwur* and *tasdiq*); if they are true, it concludes that time exists in the real world (Avicenna, 1947, p. 239). But since the past is past, the future has not come yet, and the present is not known exactly, (as Aristotle mentioned too), it is hard to accept that time actually exists.

3-2 The Essence of Time

Avicenna’s definitions of the essence of time in all his three books, i.e., *Deliverance*, *Directives and Remarks*, and *The Book of Healing* are similar (Poor-Jabbar-Jahed, 1385 AH, p. 93). However, in *Directives and Remarks*, he explains the concept more explicitly⁶. For him, time is a quantity that measures changes. In other words, time measures motion not in terms of spatial magnitude but in terms of priority and posteriority that cannot gather together (Avicenna, 1364 AH, p. 197). According to Nasir al-din Tusi as a commentator of Avicenna, time, motion and spatial magnitude, all have parts. However, in contrast to time, the parts of distance exist and can be gathered. Due to the divisibility of spatial magnitude, the motion can be divisible, as well. In addition, some parts can be prior to the others. But the priority and posteriority in motion cannot gather together as they do in time (Poor-Jabbar-Jahed, 1385 AH, p. 95). Therefore, Avicenna’s definition of the essence of time is related to the motion as well.

On the other hand, in order to define the essence of time, Avicenna divides the notion of time into: a) what the nature of time is without referring to the motion, b) what the definition of time regards to something else, that is, the measure of possibility of changes.

absolute, the necessary, and the possible.⁵ The absolute's meaning is more or less similar to the meaning of *qua* itself (*be-la-shart*). In other words, he states that time exist in general.

To prove the absolute existence of time, Avicenna asserts that the "existence of time is prior to anything else". That means the existence is presupposed to be prior to the thing, whether the thing be in the mind or in the real world. That is because the being is prior to anything. So in this concept, before we prove the movement is relevant to time, we should accept the existence of time.

Avicenna believes that any judgment about the existence is based on the self-evidence of the existence of time. That means that the existence of time must be prior to the existence of the other things that exist in time. In other words, Avicenna argues that given the existence of time in an unqualified sense, [in general sense without considering past and future], is prior to anything in time and given that its notion is self-evident" (Shaygan, 1986, p. 22). Razi, as a commentator of Avicenna, indicates that since the existence of time is self-evident, therefore, the existence of "before" and "after" in time is self-evident as well (Razi, 1958, VIII, p. 88).

Avicenna concludes that "... for existing a thing in the mind or in the real world, it first has to be. Existence is presupposed and prior to any determination of being. He further emphasizes that this kind of existence and truth do not depend on the mental representation" (Avicenna, 1910, p. 71).

3-1-2 The Existence of Time in Mind

After proving the absolute existence of time, Avicenna tries to prove the existence of time in the mind and in the reality as well. In order to prove the existence of time in mind, Avicenna raises two senses of judgment (*hokm*); the first one is connected to the "conception" (*tasawwur*), and the second is connected to "assent" (*tasdiq*). According to him, "conception" refers to the existence of time in mind and "assent" refers to the real temporal existence of time.

In addition, he also distinguishes two modes of temporal existence: cognitional and real. There are two stages of apprehension for the existence of time: the unqualified and implicit stage and also the explicit stage. For him, judgment belongs to the second stage, i.e., the explicit stage. The object of cognition is the existence of time. At the first stage, mind has an implicit sense to the existence of time. Therefore, it does

3 Theory of time: Avicenna's Perspective

Avicenna distinguishes between the essence and the existence of time. In chapter four and five of *Directives and Remarks*, he explains the meaning of the existence and the essence of time.

3-1 The Existence of Time

Avicenna deals with the argument of the existence of "time" from two perspectives. Firstly, he discusses the nonexistence of time in the past and in the future and then, the nonexistence of time in the "now". This part of his argument is a reflection of the Aristotelian thought. Secondly, he argues that although time does not exist in the past, in the future and in the now, there is an "absolute existence" for time. This notion is different from what Aristotle says.

Through chapter 13 of *The Book of Healing*, Avicenna proves the existence of time. His discussion around this issue can be considered as having three modes: first mode is the existence of time without qualification that is the existence of time in general. Second one is the existence of time in mind as a continuous succession. And the final mode is the existence of time in the reality. We will discuss each mode in separate subsections.

3-1-1 Absolute Existence of Time; Existence of Time without Qualification

Avicenna discusses about the absolute existence of time from two points of view; at the first, he defines the meaning of "the absolute existence of time" and then he indicates that "the existence of time is prior to anything else".

In order to prove the absolute existence of time, Avicenna takes advantage of "The logical theory of truth". This theory is not provided by Aristotle; rather it was developed by Stoics.³ Avicenna argues that if time did not exist, it would be true to say that there is no measurement to measure the movements. But as we see in the reality, we can distinguish between "fast" and "slow" movements which are in relation to the time.⁴ Therefore, we cannot deny the fact that time exists. For Avicenna, the admission that "time exists" is equal to say that "time is true". He also adds the term "the absolute". Before he identifies the meaning of the "absolute", he distinguishes between three notions: the

On the one hand, it seems that Aristotle explains that “past” and “future” can be considered as those parts of “time” which do not exist. He considers “now” as the beginning and the end of the future and the past, respectively, both of which do not exist, therefore, “now” does not exist either. Consequently, one might assume that since the parts of time do not exist, we can deny the existence of time. But on the other hand, Aristotle finally confesses that we are in this belief that time exists (Aristotle, 1936, pp. 168-9 in Sheikh-Shoaei, 1380 AH, p. 59).²

Kadivar says that Aristotle never explicitly indicates that the time exists, but explains various attitudes toward the issue of the existence of time. The result is that time does not exist, or even if it exists, its existence is unclear and ambiguous. That is because some parts of time existed in the past, but not now and some other parts will exist in the future, but not yet (Kadivar, 1374 AH, p. 12).

Copelstone in *A History of Philosophy* indicates that Aristotle raises this question whether or not if there is no mind, would there be the “time”? Time measures change and motion; if there is no mind to measure, consequently, there is no time. Aristotle does not answer this question clearly; he just argues that in case time does not exist, the substratum of time does exist (Copelstone, 1993, pp. 322-325).

2-2 Definition of time: Aristotle

It is true that Aristotle’s answer to the question of the existence of time is ambiguous; however, one thing is clear, that is “on Aristotle’s account time is a derivative phenomenon” (Inwood, 1991, p. 153). As Aristotle notes, most thinkers indicate time as a kind of motion (Aristotle, 1378 AH, p. 185). According to Aristotle, we encounter two propositions; the first expresses that time is motion and the second says that time is not motion, but it relates to motion. It is obvious that time is not motion; because there is just one time instead of many motions. In addition, motion can consider as “fast” and “slow”, but a phenomenon could be described as “fast” and “slow” only on the basis of the fundamental concept of time. In other words, the fast is the one that moves quickly (ibid). Consequently, time is not motion but the relation of time and motion is so tight that these two concepts define each other (Taheri, 1377 AH, p. 14).

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two definitions, Avicenna presents two dimensions for the time, i.e., the divisibility and non-divisibility of time.

1- Definition of Time: Dual Definition

Avicenna in *The Book of Healing* presents two types of definitions for the concept of time; in chapter ten, he defines the concept of time from Aristotle's viewpoint. Through the chapter twelve, he explains his own idea about the concept of time. Through these chapters, Avicenna discusses the issue in two ways: first, he regards the concept of time as a measure of something or as a derivative concept; and then, as a measure in its own right or as a non-derivative concept. When he talks considers it as a measure of something, his interpretation of time is similar to Aristotle's. Based on this derivative notion, when he talks about time and its properties, his discussion is reduced to considering properties of spatial magnitude.

Avicenna's definition of time in this context is as follows: "time is the number of movement when it is divided into prior and posterior, not in respect of time but in respect of spatial magnitude; otherwise the explanation will be a definition by way of vicious circularity" (Avicenna, 1886, pp. 73-75).

On the other hand, Avicenna raises another definition that is based on a non-derivative conception. Time can be defined as a measure in its own right "that which qua itself possesses priority and posteriority, and the prior and the posterior do not co-exist in time as they do in other modes of priority and posteriority" (ibid, pp. 74-78). Based on this definition, time has some part before and some part after. But we should consider that this divisibility into before and after is hidden in time itself. This conception of time indicates that the continuity of time and its indivisibility into before and after are not taken from Aristotle (Shaygan, 1986, p. 16). In order to clarify this issue, first we talk about Aristotle's understanding of time and then discuss the difference between two thinkers' ideas.

2 Theory of time: Aristotle's Perspective

2-1 The Existence of Time: Aristotle

Aristotle takes a dual position encountering the concept of the existence of time. This dual position have raised the problem for scholars that whether Aristotle believes in the existence of time or not.

Introduction

Avicenna as a Muslim philosopher of the 10th century explains the concept of time in various areas such as mathematics, logics, physics, metaphysics, and epistemology. His discussion about this concept can be found in *Physics*, book II of *The Book of Healing, Deliverance, The Source of Wisdom*, as well as in *Directives and Remarks*.

At first, it appears that in terms of its structure, Avicenna's book follows Aristotle's thoughts which are explained in *Physics* book IV. The method that Avicenna is used to respond to the questions which related to this subject is the dialectic method, that is the Aristotelian method. This similarity in the structure has created extensive discussions among Muslim Philosophers. Some believe that "Avicenna's notion of time in terms of bases and structures has no main differences with that of Aristotle. Hence, when we study Avicenna's conception of time, we cannot find out a totally new basic point"¹ (Taheri, 1377 AH, p. 16).

In contrast, some other scholars believe that while Avicenna's notion of time in metaphysics draws the attention of Muslim philosophers, it does not receive such an attention in logic and physics. Shaygan believes that despite the similarity in structure and method, Avicenna's concept of time is not Aristotelian (Shaygan, 1986, p. 5). In *The Book of Healing*, since Avicenna presents his own idea within Aristotelian structure and framework, it is difficult to distinguish Aristotle's notion from his own theory. Furthermore, for acquiring a better understanding of the concept of time, the other books of Avicenna such as *Deliverance*, and *Directives and Remarks* should be considered as well. In this way, the aim of the paper is to study Avicenna's notion of time and to compare this idea with that of Aristotle. Despite the resemblance in the method and structure, the main goal of the paper is to find out whether or not there is a difference between these two famous philosophers' thoughts. However, we mainly focus on the issue of the existence of time and study the ontological and epistemological assumptions about this concept.

To achieve this goal, the paper discusses the definition of time and its existence from Aristotle's view, and then it compares the Aristotelian notion with that of Avicenna. The preamble of the discussion will be the explanation of these two main ideas. According to the definition of Aristotle, the time is considered as a derivative notion which is derived from motion. Moreover, Avicenna offers another definition for time which is non-derivative (on its own right). In Addition, based on these

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Abstract

The concept of time, its existence, ontology, and epistemology are considered as a pivotal philosophical issue from the ancient Greek time up to now. Aristotle explicitly deals with this subject. His notion of time can be also seen in Avicenna's writings. This point have arisen many questions and discussions concerning that whether Avicenna as a commentator of Aristotle simply narrates Aristotle's view, or he elaborates and develops Aristotle's idea and presents his own view.

The aim of this paper is to study this issue and discuss about the viewpoints of some Muslim scholars who believe that Avicenna's idea is not fundamentally different from that of Aristotle. In addition, we study the viewpoints of those who believe that although Avicenna uses the same structure as Aristotle did, his specific considerations make his theory of time distinctive. The paper elaborates that, in some senses, there are at least two differences between these two philosophers: regarding the derivative / non-derivative conceptions of time, and regarding the divisibility / indivisibility of time.

Keywords: *time, Avicenna, Aristotle, absolute existence, non-derivative notion, divisibility*

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