THE ARISTOTELIAN VIEW OF TIME IN ISLAMIC PHILOSOPHY*

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Time, as we use it in our everyday language, is self-evident, and no one doubts its existence. But when we try ot know its quiddity and essence, al explanations and attempts must fail. In this attempt, all the paradoxes inherent in the concept of time manifest themselves. As Sextus Empiricus, when criticising the various definitions of time, says, **«if we rely on appearances, time seems to be something but if we depend on the various arguments about it, it appears to be unreal».**[1] St. Augustine is aware of the difficulty in giving a satisfactory answer to the question **'what is time?'**. He says **'what, then, is time? If nobody asks me, I know; but if I try to explain it to one who asks me, I do not know'.**[2] In modern philosophy Whitehead reflects the same difficulty when he says, **«it is impossible to meditate on time and the creative passage of nature without an overwhelming emotion at the limitations of human intelligence».**[3] Therefore, no attempt is final in explaining the nature of time.

Time is generally considered as a passage and as something ever-renewing itself, never remaining the same. How, then, does something constituted of successively fleeting **'nows'** which are, in themselves,

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1. Sextus Empiricus, Adv. Math., X, 169; see also, A. H. Croust. The Meaning of Time in the Ancient World, in the New Scholasticism (jan., 1947), p. 50.
2. St. Augustine, Confessions, XI, 14.
3. Whitehead, The Concept of Nature, (Cambridge, 1920), p. 73.

without extension and consequently have no actual existence exist? Many seized upon this point in order to prove the unreality of time. This and other difficulties concerning the reality and unreality of time were made the subject of a discussion by Avicenna,[4] and later by Fakhr al-Dîn al-Râzî.[5]

—Difficulties concerning the reality and unreality of time—

Avicenna, in his systematic treatment of the subject in which he mainly follows Aristotle, makes mention of two factions: One group, according to him, accepted the unreality of time, though others held the contrary view. The former group he further divides into those according to whom time has no external existence whatsoever, and into those who granted a kind of existence to time, not because it exists in external reality in any way, but because it exists in the estimative faculty ('amr mutawahham)[6]

Those who denied existence to time are known as the Sceptics (4th Century, B.C.). The representatives of this philosophical school are Pyrrho, Arcesilaus, Carneades, and Sextus Empiricus. They questioned the possibility of objective knowledge of reality. As in other problems, they set themselves the task of proving the paradoxical nature of our knowledge of time. The difficulties mentioned both by Aristotle and Avicenna are indicated by Sextus Empiricus[7] who subjects to criticism various views on time propounded by different philosophers. The Sceptics found their arguments for the unreality of time on the fact that time has no existence in the 'now'. They argue that if the time existed it would either be something divisible or not divisible. If it were indivisible, it would not be possible that years, months, hours, past, and future should proceed from it.[8] But if it

4. Avicenna, al-Shifâ' vol. I, (Teheran 1886) pp. 68-72.
5. Fakhr al-Dîn al-Râzî, al-Mabâhith al-Mashriqiyyah, (Hyderabad, 1343 H.), vol. I, pp, 642 ff.
6. Avicenna, al-Shifâ', op. cit., vol. I, p. 68; cf. Aristotle, Physics, IV, 10, 217 b.
7. Sextus Empiricus, Adv. Math., X, 169 ff.; cf. Chroust, op cit., pp.50-57.
8. Avicenna, al-Shifâ', op. cit., vol. I, pp. 68 f. There exist variations between Avicenna and Fakhr al-Dîn al-Râzî who says that if time were indivisible, there would be no difference between the time of the event which has occured to-day and that of the event which occured at the time of inundation; and between Avicenna and Aristotle who argues that if what is before and what is after are in the same 'now', things which happened ten thousand years ago would be simultaneous with what has happened to-day. There also exists a difference between the account of Avcienna and that of Sextus Empiricus, though the point they want to make is substantially the same. al-Râzî, op. cit., pp. 642 f.; Aristotle, Physics, IV, 10, 218a, 25-30.

were divisible, it would either exist with all its parts or with some of them. The first alternative is absurd, because, then, past and future time would exist simultaneously. The second alternative is also absurd, because no parts of time exist actually. Supposing, however, that the 'present' actualy exists, then it would either be divisible into past and future which were shown to be non-existent, or it would be indivisible and called 'now' and not time. In any case it can not exist actually. But if 'now' exists actually, it must either endure or become non existent. If it endures, then one part of it is prior and the other posterior. But both together do not constitute the 'now', since past and future would then be in one 'now', which is absurd. If it becomes non-existent, this must either happen in an adjoining now there intervening no time between them, or in a now there intervening a time between them. If the second alternative is accepted, there follows the fact that the 'now' in the time has a duration which we have already disproven. If it becomes non-existent in an adjoining now there intervening no 'time' between them, one 'now' will follow the other continually, but this is one of the things which those who affirmed the existence of time denied.[9] Consequently there is no way out of this difficulty.

This argument is supported by another argument of a different kind which comes very close to C.D. Broad's objection to Aristotle because the latter considered time as a quality of events. Broad says, **"We can not reduce changes of time to changes in time, since time would then need another time to change in, and so on ad infinitum."**[10] The gist of the argument mentioned by Avicenna and al-Râzî is this: Every motion must have a specific time, as it has a specific place. Supposing that certain motions took place at the same time, all these times would need another time to comprehend them, and so on ad infinitum. In this case, an infinite number of times would imply an infinite number of motions, time being consequent upon motion; an infinite number of motions would imply an infinite number of movables, motion depending upon the movable; and an infinite number of movables would imply an infinite number of places, every movable inhering in a place. But this is absurd because an infinitude of dimensions is impossible.[11]

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9. Avicenna, al-Shifâ', op. cit., vol. I, pp. 68-69; cf. Aristotle, Physics, IV, 10, 218a, 3-30.
10. C.D. Broad, Scientific Thought, (London, 1923), p. 65.
11. Avicenna, al-Shifâ', op. cit., vol. I, p. 69; al-Râzî, op. cit., vol. I, p. 645.

Another faction who denied external existence to time are those who believed that time has existence only in the estimative faculty. In holding this view, they were urged by the above mentioned difficulties on the one hand, and by the necessity that time should have some kind of existence on the other. According to Ibn Sînâ, this faculty perceives the meaning of the particular sensible objects and helps to differentiate between the right inferences and the wrong ones. Our beliefs and judgements are related to this faculty.[12] Judgements formed by this faculty are, according to Ibn Sînâ, generally unreliable. It is, therefore, in the estimative that the form of the motion which has taken place between the two points is perceived as a whole, and consequently the notion to measure this passage is formed in this faculty.[13]

The difficulty which derives from the grammatical analysis of the instant (waqt) is manifested in the view that time is a mere aggregate of instants (awqât). When, for example, we say that such and such an event will occur two days later, we mark an instant, because it announces an imagined event by means of a well-known event, namely, after the sun has risen twice. Time is, then, according to this view the aggregate of such instants determined by the relation between two events, one imagined and the other well-known.[14]

Those who accepted the reality of time regarded it as an eternal substance existing necessarily (wajib al-wujud). This view was held by Iranshahrî and Abû Bakr Zakariyya al-Râzî. According to them, every attempt to remove time must in fact establish its reality, since such removal would imply either a prior or a posterior period of time. From this they infer that time must be eternal and exist necessarily by itself, without depending on motion. They, then, go on to distinguish between **absolute time (dahr) and limited time.** Absolute time is that which is abstracted from motion, whereas relative time is that which exist together with motion, in which respect it is the measure of motion.[15] We see here a reconciliation between two concepts which were sharply distinguished by the Aristotelians.

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12. M.Wali-ur-Rahman, The Psychology of Ibn Sînâ, in **Islamic Culture,** vol. IX, (Hyderabad, 1935), p. 354; see also S. Pines, Nouveles Etudes sur Awhad al-Zamân Abu l-Barakât, (Paris, 1955), pp. 47-50.
13. Avicenna, al-Shifâ', op. cit., vol. I, pp. 69-70.
14. Ibid., vol. I, p. 70; al-Râzî, op. cit., vol. I, p. 647; see also Louis Massignon, Time in Islamic Thought, in **Man and Time,** (Papers from the Eranos Yearbooks), ed. by J. Campbell, (London, 1958), p. 111.
15. Avicenna, al-Shifâ', op. cit., vol. I, p. 70; al-Râzî, op. cit., vol. I, pp. 651-652.

— Various Untenable Definitions of Time—

Various attempts to give a satisfactory definition of time were made in Antiquity. Avicenna subsumes them under four categories: (a) Time is identified with motion, (b) Time is the motion of the celestial sphere (harakat al-falak), (c) it is one complete revolution of the celestial sphere, (d) it is the celestial sphere itself.[16] At is appears, the first there definitions of time are substantially the same in that they all identify time with motion.

Those who held the first view argued that among the existing things around us motion is the only thing which is divided into past and future. That which has this description must be time. They further said that time exists only when we perceive motion. When, for example, we are distressed, we find the time hanging on because motion lingers on in our memory owing to such distress. But in a state of happiness, motion passes away quickly in our recollection. He who is not aware of motion is not aware of time This was just the case with the Companions of the Cave (Ashâb al-Kahf). They had no consiousness of the intervening time when they woke up. In Aristotle this is exemplified by the fabled sleepers of Sardinia. Avicenna mentions Aristotle saying that Aristotle's sleepers are historically before the Companions of the Cave (Ashâb al-Kahf).[17] Avicenna in al-Najâh,[18] and Aristotle in Physics,[19] cite this example for a different purpose. Their aim is to prove the connection between time and change, not to identify time with motion.

Following Aristotle, Avicenna refutes this argument, saying that there exists a difference between time and motion. Motion may be fast or slow, whereas time is uniform and it can only be short or long. Two motions may occur at the same time, whereas two times cannot be simultaneous. On the other hand, such expressions as «huwadhâ» (immediately), «baghtatan» (all of a sudden), 'now' and 'previously' cannot be related to motion.[20]

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16. Avicenna, al-Shifâ', op. cit., vol. I, p. 70; cf. Aristotle, Physics, IV, 10, 218 b, 30f. and 5-20; Sextus Empiricus, Adv. Math., X, 170ff.; see also for Sextus Empiricus, Chroust, op. cit., pp. 50-51.
17. Avicenna, al-Shifâ', op. cit., vol. I, p. 70; cf. al-Râzî, op. cit., vol. I, p. 653.
18. Avicenna, al-Najâh, ed. by Kurdî, (Cairo, 1357/1938), p. 116.
19. Aristotle, Physics, IV, 11, 218b, 20-25.
20. Avicenna, al-Shifâ', op. cit., vol. I, p. 71; al-Râzî, op. cit., vol. I, p. 653; cf. Aristotle, Physics, IV, 11, 218b, 15-20.

The second view, according to Simplicius, was wrongly attributed to Plato by Eudemus, Theophrastus, and Alexander. Simplicius argues that Plato, like Aristotle, held time to be only the measure of motion.[21] Those who held that time is the prime motion of the celestial sphere (harakat al-'ûlâ al-falak) believed that it is the fastest of motions, since the highest celestial sphere traverses a longer distance than the other celestial spheres during the same interval of time. According to Avicenna this simultaneity indicates something other than the celestial motions. Rather it indicates an entity to which all celestial motions are related. This entity, namely time, is, therefore, essentially different from the celestial motions.[22]

In the same vein, Avicenna eliminates the view that the concurrence of two events, one being well-known and the other imagined, is indicative of and identical with time.[23]

The identifications of time with one complete revolution of the celestial sphere is refuted by Avicenna, as also by Aristotle, by the fact that every part of time is time, whereas a part of the revolution is not a revolution.[24]

Simplicius reports that the Pythagoreans held that time is the sphere itself. He is also of the opinion that the Pythagoreans probably derived this notion from the assertion of Archytas who said that the universal time is the interval of the nature of the universe.[25] Aristotle holds this view to be too naive to require a refutation.[26] Later, the Neo - Platonist Plotinus offers a summary refutation of this view, saying that this can hardly be true if time is not the motion of the sphere, since it was thought to be the sphere on account of the motion.[27] Avicenna and al-Râzî's refutation is somewhat different. Both argue that their view depends on the premise that everything inheres both in the sphere and in time. But this premise is wrong for the fact that the sphere itself is also in time, whereas the sphere is not in another sphere.[28]

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21. H.A. Wolfson, Crescas' Cirtique of Aristotle, (Camb. Mass. 1929). pp. 634-635.
22. Avicenna, al-Shifâ', op. cit., vol. I, p. 71.
23. Ibidem.
24. Ibidem; of. Aristotle, Physics, IV, 10, 218b, 1-5.
25. H.A. Wolfson, Crescas' Critique., op. cit., p. 635.
26. Aristotle, Physics, IV, 10, 218b, 4.
27. Plotinus, Enneads, III, 8, 20.
28. Avicenna, al-Shifâ', op. cit., vol. I, p. 71; al-Râzî, op. cit., vol. I, p. 653.

The above mentioned definitions of time are variously found in Antiquity, Neo-platonists, and in Muslim and Jewish philosophical literature. Aristotle mentions two untenable view held by the earlier writers: (a) Time is the motion of the whole, (b) It is the sphere itself.[29] The former view is generally accepted to be that of Plato. This is a controversial point. Since the cosmological motive plays an important role in Plato's philosophy both the above definition and the Aristotelian one are inherent in his plihosophy. According to him, the celestial movements not only measure time, but also actually constitute it.[30]

The Sceptic, Sextus Empiricus[31] mentions the earlier views, and subjects them to a pungent criticism. He mentions (a) the Stoic view that time is the interval of the motion of the whole, (b) the view attributed by some to Plato that it is the actual motion of the universe, (c) the Aristotelian view that it is the number of 'before' and 'after' in motion, (d) the Aristotelian, Strato's view that time is the measure of motion and rest, (e) the Epicurean view that it is a contigent product of contingent products, (f) Aenesidemus' view that it is corporeal.

Plotinus[32] mentions three views, namely, that (a) time is motion, (b) it is that which is moved, and (c) it is somtehing pertaining to motion.

In the philosophical encyclopedia of the Ikhwân al-Ṣafâ' we encounter the mention of four views, namely (a) the popular view that time is the passage of years, months, days and hours, (b) it is the number of the repeated motion of the celestial sphere, (c) it is the duration numbered by the motions of the celestial sphere, and (d) time does not belong to the realm of existing things.[33]

The Jewish philosopher al-Tabrizî mentions four views: (a) time exists in itself, is neither a body nor anything belonging to body, but is something which has necessary existence in virtue of itself, (b) it is the duration which becomes numerically determined by the motion of the celestial sphere, (c) it is the body that encompasses all the

29. Aristotle, Physics, IV, 10, 218b, 1.
30. Plato, Timaeus, 37e, 1ff; 38b, 6fr; 39b, 2ff; see also F. Solmsen, Aristotle's System of the Physical World, (Ithaca-New York, 1960), p. 145.
31. S. Empiricus, Adv. Math., X, 170ff, see also Chroust, op. cit., pp. 50-53.
32. Plotinus, Enneads, III, 7, 6.
33. Rasâ'il Ikhwân al-Ṣafâ', (Beirut, 1376/1957), vol. II, p. 17.

bodies of the universe, namely the celestial equator (dâ'irah mu'addil al-nahâr), and (d) it is the motion of the celestial equator.[34]

Abû'l-Barakât differentiates ten views: (a) time is a term without meaning (innahu ism la ma'nallah), (b) it has an entity perceived by the senses, namely motion, (c) it is not perceived by the senses, but is conceived in the mind as the measure of motion (miqdâr al-harakah), (d) it is a substance, (e) it is an accident, (f) it is neither substance nor accident (g) it exists, (h) it does not exist, (i) it has a permanent existence, (j) it has an unenduring existence (lahu wujûdan ghayr qârr).[35]

I. The Aristotelian View[36] of Time—

a) Time and Motion.

Two motions within the same distance and at the same velocity take place simultaneously, but with a diferent velocity one traverses less and the other longer distance in the same period of time. Or one may start earlier and the other later at the same velocity, and the former, then, reaches the terminating point before the latter in the same period of time. Therefore there exists the possibility of their moving with greater, equal or less velocity, and consequently of their traversing longer, equal or less distance. This possibility has a corresponding measure and is connected with motion. This measure may be that of distance, or that of movable. It can not be the measure of distance, for otherwise equal distances would always be traversed at the same time. It can not be the measure of the movable either, for, otherwise, with the increase and decrease of this measure, there would be a corresponding increase or decrease of the movable. Then it is neither the measure of that which is moved nor that of distance. On the other hand, it is commonly known that this measure is not the motion itself, nor is it the fastness or slowness. Similarly it can not subsist by itself, since it is liable to elapse and everything which is liable to elapse is corruptible (fasâd). Therefore this measure needs a substratum. We have already shown that its prime substratum cannot be the matter of the movable. It must, then, inhere in a

34. Wolfson, Crescas' Crituque.., op cit., pp. 635-636.
35. Abûl'l-Barakât, K.al-Mu'tabar, vol. III, (Hyderabad, 1357/1938) p. 36.
36. For the deta'led analysis of Aristotle's view of time see J.F. Callahan, Four views of Time in Ancient Philosophy, (Cambridge, Massachusettes, 1948), pp. 38-86.

substratum through the medium of a disposition. It is not the measure of a permanent disposition following matter. It is, then, the measure of an unenduring disposition ,namely motion.[37] In this connection Avicenna mentions the Companions of the Cave.

Ibn Sînâ is very emphatic on the fact that time has no connection with rest, nor does it measure it except accidentally ('ammâ al-sukûn fa'l-zamân la yata'allaqu bihi wa la yuqaddiruhu 'illâ bi'l-'arad). As we have seen, both in Avicenna and Aristotle, rest is not the absolute privation of motion. Something is said to be at rest when it is deprived of motion, though it is capable of motion. It is, therefore, this kind of rest which is measured by time.[38]

Motion is divisible into prior and posterior. Prior and posterior are manifested in distance by means of motion, since prior and posterior in motion are irreversible, though it is not so in distance. In so far as motion possesses prior and posterior, it is numerable. It is this numerable aspect of motion that is called time. Therefore time is the number ('adad) of motion in so far as the latter is divided into prior and posterior. Motion and time are, according to Ibn Sina, inseparable; time would not exist without motion, and motion without time.[39] As in Aristotle, motion implies every kind of change. Ibn Sînâ even goes so far as to say that the natural bodies (al-jism al-tabi'î) are in time not in virtue of their essences but because they are in motion.[40]

b) Time as Measure and as Number.

Aristotle generally uses in his definition of time the term 'number'[41] and occasionally the word 'measure'.[42] His use of the term 'number' was made the subject of criticism. His disciple, Strato of Lampsacus argues that any number as such is definite and finite quantity; time, however, is a continuous and, hence indefinite quantity or relation which for this very reason cannot be counted in the same manner as we count, for instance, finite and definite numbers.[43]

In Muslim Philosophy, the Ikhwân al-Ṣafâ', among the various definitions of time, cite the one which conforms to the Aristotelian definition, namely, that it is the number of the motion of the celestial

37. Avicenna, al-Shifâ', op. cit., vol. I., p. 72; cf. al-Najâh, op. cit., pp. 115-116
38. Avicenna, al-Shifâ' op. cit., vol. I., p 80; 'Uyûn al-Hikmah, ed. by A. Badawî, (Cairo, 1954), p. 28; cf. Aristotle, Physics, IV., 12, 221b, 5-20.
39. Avicena, al-Shifâ', op. cit., vol. I, p. 73.
40. Ibid., p. 80; 'Uyûn al-Hikmah, op. cit., p. 28; cf. Aristotle, Physics, IV, 12, 221b, 25-30.
41. Aristotle, Physics, IV, 11, 219b, 1-2.
42. Aristotle, Physics, IV, 12, 220b, 15.
43. Chroust, op. cit., p. 37.

sphere.[44] Al-Kindî has the definition that time is the number which numbers motion. He, however, specifies what he means by number in this context. According to him number has two aspects. It is known to be either discrete or continuous (muttasil). Time, he says, cannot be a discrete quantity, then it must be a continuous quantity.[45]

Ibn Sînâ, in his earlier work, K. al-Shifâ' uses both 'number' ('adad) and 'measure' (miqdâr) in his definition of time. However, according to him, time is a continuous quantity. Time numbers motion by means of prior and posterior in it. Therefore, time numbers according to that which is numbered, namely, the prior and posterior in motion. Time is not a number in the way an abstract number is, for example ten.[46]

The reason for calling time as the messure or the number according to prior and posterior is that prior and posterior endows time with number or with a measure. Prior and posterior are, on the other hand, determined in relation to the present 'now'. In this respect 'now' is considered as the unit which numbers time. Avicenna, in his later books, such as al-Najâh[47] and 'Uyûn al-Hikmah,[48] drops the word 'number' and uses instead 'measure'. This is, I think, to show that time is continuous, and what is continuous cannot be numbered, but only measured.

c) Time and the Now.

As we have already indicated, for Avicenna, as for Aristotle, time, distance and motion are corresponding entities: Continuity is predicated of them. Time, being continuous (muttasil), has a limit (hadd) perceived in the imagination. This limit is called 'now'. Does the 'now' actually exist? If it has no actual existence, in what sense does it exist? These are the questions to which Avicenna tries to answer. According to him, it has no actual existence, because if time had a limit, the continuity of time would be disrupted, which is absurd.[49]

If the 'now' actually existed, the proper place for it would either be at the beginning or at the end of time. But it can not be at the beginning of time, because time would then exist after a non-existent prior (la qabla lah), which is absurd. Therefore it has a prior period with which it is continuous (muttasilan bihi). This limit, then, does

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44. Rasâ'il Ikhwân al-Safâ', op. cit., vol. II, p. 36.
45. Rasâ'il al-Kindî al-Falsafiyyah, ed. by Abû Rîdah, (Cairo, 1953), vol. II, p. 34
46. Avicenna, al-Shifâ', op. cit., vol. I, pp. 74 and 78; cf. Aristotle, Physics, IV, 12, 220b, 10-20.
47. Avicenna, al-Najâh, op. cit., p. 116.
48. Avicenna, U'yûn al-Hikmah, op. cit. p. 28.
49. Avicenna, al-Shifâ', op. cit., vol. I, p. 74.

not divide the prior and posterior, rather it connects them. Nor can this limit be at the end of time. If this limit had no posterior period, neither the Necessary Being (wâjib al-wujûd), nor the absolute possibility would have any existence. But the fact is that the Necessray Being and the absolute possibility cannot be removed. Therefore it must have a posterior period. In this respect 'now' would again be the connecting link, and not the dividing principle.[50] Time, therefore, has no actual 'now', but a potential 'now'. This potentiality of the 'now' is proximate to actuality (al-quwwat al-qarîb min al-fi'l), that is, time is always capable of being imagined as having in itself a 'now' either ex hypothesi, or by means of motion, like the beginning of sunrise and that of sunset.[51]

'Now', when considered in relation to time, is always at a beginning and an end, and it is in continuous flux, having no beginning. That which is in motion, that which is at rest, that which is generated or corrupted have no initial now in which to move or to be at rest, generated or corrupted, for time can potentially be divided ad infinitum.[52]

'Now' is encompassed by 'past' and 'future' which constitute time. And time is limited by 'now'. In this respect, now may be compared to the extremity of a moving body.[53] This extremity constituting a point is imagined to produce by its motion a line. In the same way, it may be said that in time and in motion there is something corresponding to a point which produces time and motion. As the extremity of the moving body produces a continuous motion, so the 'now' produces a continuous time. Therefore, to the extremity of the moving body corresponds a point in distance and a 'now' in time. Since the extremity of the moving body may be thought to be indivisible, the 'now' which we have considered may accordingly be considered to be indivisible. It is by means of 'now' that the prior and posterior in time can be distinguished. In this sense, 'now' is most deserving to be a unit by which to number.[54]

As we have already seen, the prior and posterior are produced by motion in relation to distance. Therefore motion numbers time by producing the number of time, namely, the prior and posterior,

50 Ibid., pp. 74-75.
51 Ibid., p. 75.
52 Ibidem.
53 Ibid., p. 76.
54. Ibid., p. 77.

and time numbers motion because it is the number of motion. According to Ibn Sînâ, time numbers motion in two ways: Firstly it endows motion with a measure, and secondly it determines more or less the quantity of its extension (kammiyyat qadrihâ). Similarly, motion measures time in the way that it determines its duration in so far as it brings into being in time the prior and posterior. This is like signifying the measure with the measured and the measured with the measure. For example, sometimes distance determines the extent of motion and sometimes motion that of distance. This is the case when we say, the motion of two parasangs and the distance of one ramyah (the distance of a bow-shot). However, one of them endows the other with a measure, that thing being essentially the measure. Since time is, in essence, continuous, it can be said to be long or short, and in so far as it is the number in relation to prior and posterior, it can be said to be much or little.[55]

d) The Reality of Time.

Leaving aside the theories concerning the unreality of time, we may, now, ask: does time have an existence in external reality? Or does it only exist in the mind? Aristotle attempts to compromise these two aspects. According to him, time is real because it exists together with motion, and it is conceptual because the soul or the mind is a means of judging the number of motion. Even when he tries to show the relation between the mind and the existence of time, he speaks in terms of change which occur in thoughts. For him, such change in our thoughts is adequate for the perception of time. However, this change in our thoughts has no better place than the change in general. Airstotle's intention is, therefore, that motion and time are inseparable whether the former occurs in the mind or in external reality.[56]

Avicenna accentuates the reality of time. For this he resorts to the relation subsisting between motion and time. If time, he says, did not exist in external reality, there would exist no possibility of motion's traversing distances at different speeds. This possibility has a corresponding measure, namely, time. Therefore, the existence of time is not due to the estimative faculty; it is real.[57]

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55. Ibid., vol. I, p. 77.
56. Aristotle, Physics, IV, 14, 223a, 25-30.
57. Avicenna, al-Shifâ', op. cit., vol. I, p. 78.

Time, however, has a weaker existence than motion, because it depends upon motion. Its existence is always in the process of becoming, in the sense that between the two imaginary 'nows' there is something we call time. Therefore, those who considered time as having an existence merely in the 'now' are in the wrong, since time in no way exists in the 'now'.[58] Nor does time exist in time, since there are things which do not exist in place, and things which do not exist in time: time belongs to the second category and place to the first.[59]

e) The Ultimate Cause of Time

As we have already seen, Aristotle and Avicenna agree on the fact that time is an accident of motion. What kind of motion is it of which time is an accident? Time does not depend for its existence on every motion, or else every motion would have a time specific to it and consequently there would exist many times. Time, therefore, depends for its existence on that motion which is uniform and has no limits.[60] By the uniform and unlimited motion Avicenna means celestial motion.[61]

Avicenna is well aware of the difficulties involved in accepting the uniform celestial motion as the basis for the existence of time. Someone may ask, he says, 'if such a motion did not exist, would not time be non-existent? (yafqidu)'. Avicenna encounters the argument by saying that the circular motion is due to a round body in virtue of which directions exist. Therefore, the remaining categories of motion, namely, the rectilinear, natural and violent motions, depend for their existence on the circular motion. If we rely, he goes on, on the imagination for the fact that we remove the circular motion in the imagination and prove the reality of a finite rectilinear motion, in this way will be established the reality of the limited time (zaman mahdûd). However, the data obtained form the imgination are not reliable and are contradictory to the facts of external reality. Therefore, time is dependent for its existence on the circular motion. It numbers this motion as well as others.[62]

58. Ibidem.
59. Ibidem.
60. Ibid., vol. I, pp. 78-79.
61. Avicenna, al-Najâh, op. cit. p. 118; cf. Aristotle, Phy sc, IV, 14, 223b, 15-24.
62. Avicenna, al-Shifâ', op. cit., vol. I, p. 79.

Is time created or eternal? Like Aristotle, Avicenna is of the opinion that it is eternal, and argues from the infinite divisibility of motion and time. Only God precedes them. But God's priority to time and motion is not a temporal priority, rather it is a priority in essence. This is like the effusion of the light from the sun, and like the movement of the key with the movement of the hand. If time were created in time, its creation would be after a period of non-existence, namely after a non - existent before. It would, then, be after a before and before an after; and what is so, is not the beginning of before, and what is not the beginning of before, is not the beginning of time. Time, then, has an original creation (ibdâ'), not preceded by anything except God. This is the case with motion, particularly with the circular motion.[63]

Aristotle, sympathising with the Heraclitean view, makes mention of the cyclical nature of time. According to him, human affairs form a circle, and that there is a circle in other things that have a movement according to nature.[64] The same opinions recur in rotation among men, not once or twice or occasionally but infinitely often.[65] The reason why Aristotle mentions this is that there is a close connection between time and the circular motion. Aristotle, therefore, differs fundamentally from Heraclitus in that the latter insists on the eternity of motion as well as the never-ceasing alternation of a cyclic destruction and regeneration of infinite, co - existing or succeeding worlds or world-periods. The universe is alternately born from fire and again dissolved into fire in rigidly fixed periods to all eternity.[66] This latter view was later incorporated into the Ismâ'ilian cosmogony.[67]

By connecting time with the circular motion, Avicenna, like Aristotle, is under the influence of the older cosmological theories derived from Babylonian astrology.

Avicenna, like Aristotle, goes on to stultify the mythological theories that time is the great changer and destroyer.[68] This idea is

65. Avicenna, al-Najâh, op. cit., p. 117.
64. Aristotle, Physics, IV, 14, 223b, 24-30.
65. Aristotle, Meteorologica, I, 33, 339b, 28ff.
66 Chroust, op. cit., pp. 4-5.
67. H. Corbin, Cyclical Time in Mazdaism and Ismailisim, In **Man and Time**, (Papers from the Eranos Yearbooks), ed. by J. Campbell, (London, 1958), pp. 115ff.
68. Aristotle, Physics, IV. 14, 222b. 15-25; Avicenna, al-Shifâ', op. cit., vol. I, p. 5:

found in Greek mythology as well as in Iranian philosophico-religious systems. In Greek mythology Chronos, who is identified with the infinite time, devours his own children.[69] In Iran, Zurvan, the Supreme Deity, is identical with the Infinite Time who creates Ohrmazd and Ahriman. But Zurvanism has a touch of optimism, since Ohrmazd, who is the principle of Good, will reign in eternal futurity.[70]

Time, according to Ibn Sînâ, is not the cause of anything. Since a thing exists and becomes non-existent with the subsistence of time, and since people see no manifest cause for it, they relate it to time. If that thing is praiseworthy, they praise time; but if it is blameworthy, they blame time. However, things existing in external reality have, in most cases (fî akthar al-'amr), manifest causes (zâhirat al-'ilal), whereas non-existence and destruction have hidden causes (khafî al-illah). It is for this reason that most of the things which they relate to time are transitory things, like, for example, forgetfulness (nisyân), ruination, old age, destruction, and so on.[71]

f) Things that are in Time.

In what sense is a thing in time? This question is the starting point of both Aristotle[72] and Avicenna. According to Avicenna, a thing is in time in so far as the motions of prior and posterior are predicated of it. That which possesses the prior and posterior is either motion or something involving motion. If it is motion, the motions of prior and posterior belong to its essence, if it is something which possesses motion, its being prior and posterior is due to motion. Since sometimes the species, parts and end of a thing are said to be in that thing, 'prior' and 'posterior', 'now', 'hours' and 'years' are also said to be in time. 'Now' in time is like the unit in number,

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69. Chroust, op. cit., p. 2.
70. R.C. Zaehner, Zurvan, a Zoroastrian Dilemma (Oxford 1955), p. 107.
71. Avicenna, al-Shifâ', op. cit., vol. I, p. 8-. There exists a striking similarity between him and a seventeenth century philosopher, Gassendi who states that if time is not a source of destruction, it cannot be a source of fertility or a power that ripens and reveals either. The most probable reason why in the seventeenth century time itself was regarded as a cause provoking admiration or horror according as the results of its alleged agency were beneficial or harmful was that knowledge of the real causes of events was often lacking. See W. von Leyden, Seventeenth Century Metaphysics (London 1968), p. 239.
72. Aristotle, Physics, IV. 12, 221a, 5ff.

and prior and posterior are like the odd and even numbers, and hours and days are like two, three and ten in number.[73]

Rest is also in time. Avicenna distinguishes two kinds of rest. First, it is persistent, enduring and eternal, and second the prior and posterior occur to it accidentally, because prior and posterior to rest there exists motion. In the latter sense, rest is not an absolute privation of motion, but is the privation of the motion of a thing of whose function it is to be in motion. Therefore such rest is more likely to be in time accidentally.[74]

Various kinds of changes wihch resemble locomotion in that they have a beginning and end are in time, because they have the prior and posterior.[75]

The things in which exist no prior and no posterior are not in time, though they co-exist with time, just as the world is co-existent with a mustard-seed (al-khardalah), but is not in it.[76]

A thing may be in time in one respect, that is, in so far as it has prior and posterior, and not in time in another respect, that is, in so far as it is an essence or a substance.[77]

That which is co-existent with time but not in time is said to be the eternal duration (dahr). Unchangeable beings subsist in eternal duration.[78] Here, Avicenna, like Aristotle relates time to eternity, as it had already been done by Plato according to whom time is the moving image of eternity.[79]

The relation subsisting between the permanent things and their co-existence with each other constitutes a notion above eternal duration. It is fitting to call it sarmad (perpetuity). In other words, the subsistence of every being without any change and without any relation to time-period is called sarmad.[80]

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73. Avicenna, al-Shifâ', op cit., vol. I, p. 80; al-Najâh, op. cit., p. 118.
74. Avicenna, al-Shifâ', op. cit., vol. I, p. 80; Aristotle, Physics, IV, 12, 221b, 5-19
75. Avicenna, al-Shifâ', op. cit., vol. I, p. 80; cf. Aristotle, Phys., IV, 14, 223a, 1-15
76. Avicenna, al-Shifâ', op. cit., vol. I, p. 80.
77. Avicenna, al-Shifâ', op. cit., vol. I, 80; cf. al-Najâh, op. cit., p. 116; 'Uyûn al-hikmah, op. cit., p. 28.
78. Avicenna, al-Shifâ', op. cit., vol. I, pp. 80-81; cf. Aristotle, Physics, IV, 12, 221b, 3-5.
79. Plato, Tim., 37d, 6f.

g) The Attributes of Time.

Among the things which are considered to be in time are the attributes (al-a'râd) of time which are represented by certain terms.

By 'now' is generally understood the term common to both past and future. 'Now', according to Aristotle and Avicenna, has two aspects: First it is every common dividing limit, though it inheres in the divisions of both past and future. Second it is the limit of time without indicating a connection (al-ishtirâk), and is rightly considered in the imagination to be the dividing term and not the connecting link. Therefore the dividing and uniting occur in the same 'now', though they are differently defined. In external reality, 'now' is the connecting link. Here Avicenna is mainly interested in the structure of time as a continuous quantity.[81]

'Now' is also used in the sense of a short time which is most proximate to the present 'now'. Sometimes the duration between these two nows are perceptible to the mind, just as the priority and posteriority of two nows to one day or to one hour. And sometimes these two 'nows' are so near to each other that the duration between them is imperceptible to the mind.[82]

'All of a sudden' (baghtatan) refers to a time in which an event occurs when it is not expected to occur, and its duration is so short that it can not be apprehended.[83]

'In no time' (daf'atan) has two meanings: (a) it refers to the occurence of an event in the 'now', and (b) it is the opposite of gradually (qalîlan qalîlan).[84]

Huwadhâ (immediately) refers to a future now in the proximity of the present now. The duration between these two 'nows' cannot really be discerned.[85]

Qubayl (just) refers to a past 'now' which is near the present 'now'. The duration between them can be perceived. Bu'ayd (presently)

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80. Avicenna, al-Shifâ', op. cit., vol. I, p. 81; cf. 'Uyûn el-Hikmah, op. cit., p. 28.
81. Avicenna, al-Shifâ', op. cit., vol. I, p. 81.
82. Avicenna, al-Shifâ', op. cit., vol. I. p. 81; cf. Aristotle, Physics, IV, 13, 222a, 10-24.
83. Avicenna, al-Shifâ', op. cit., vol. I. p. 81.
84. Ibidem.
85. Ibidem.

is the counterpart of qubayl and refers to the future.[86]

Prior (mutaqaddim) in the past refers to a past time farther from the present 'now', Posterior (muta'akhkhir) in the past is the opposite of the prior in the past. Prior in the future refers to the part of time which is proximate to the present 'now'. And posterior in the future is the opposite of the prior in the future. In the absolute sense, prior is identical with the past and posterior with the future.[87]

Al-Qadîm with respect to time is that which has a long duration. Avicenna uses this term here in the sense of 'ancient, old'. In the absolute sense, it is that for whose age there was no begining.[88]

h) Time and Avicenna's Philosophy.

Aristotle and Avicenna confine time to the Cosmos. Since the world is eternal, time and motion must also be eternal either according to essence, or with respect to time. That which is eternal with respect to essence is that whose essence has no origin from which it exists. That which is eternal with respect to time is that for whose age there is no beginning. He also differentiates between the two distinct meanings of the word 'created'. Firstly, it is that for whose essence there was an origin by which it exists, and secondly it is that for whose age there was a beginning, and there was a time when it did not exist. In other words, there was a prior period (qabliyyah) during which it did not exist, and that prior period was terminated. Everything that came to be in time must have been preceded by time and matter. The existence and the non-existence of this thing cannot be simultaneous. Therefore, its existence must be preceded by its non-existence. What constitutes this period is either a quiddity partaining to its essence which in this case is time, or a quiddity pertaining to something other than itself which is its time. In both cases it is a proof of the existense of time.[89] He does not mean by non-existence absolute privation, rather it is that which is capable of existence. Avicenna gives an ontological meaning to the logical terms such as posible, necessary, and impossible. The possibility of existence inheres in a substratum. This substratum is the First Matter (hyle). Matter is the recipient of forms. That which is not

86. Ibidem.
87. Ibidem; cf. Aristotle, Physics, IV, 14, 223a, 4-15.
88. Avicenna, al-Shifâ', op. cit., vol. I, p. 81.
89. Avicenna, al-Najâh, op. cit., pp. 218-219.

preceded by the existence of a recipient (wujûd al-qâbil) cannot come to be.[90] Therefore, matter, together with motion and time, is eternal. They are not preceded by anything except by God. God precedes matter, motion, and time, not in time, but in essence. By creation it must be underestood the original creation (al-ibdâ'). In such creation time has no place. Seperate intelligences are not in time; they precede each other only in rank and order, one being more to be preferred than the other.[91] Even in substantial things, the element of time is to be belittled, since change in substance occurs in no time.

90 Ibid., pp. 219-220.
91 Ibid., pp. 277f.