

Lesson 55: Motion

The Concept of Motion

During the previous discussions the concept of motion became clear, and a simple definition of it was obtained: gradual change.

Other definitions of motion have been given, some of which were mentioned in the course of the preceding discussions, including ‘the gradual emergence of a thing from potentiality to actuality,’ and another definition ascribed to Aristotle, that is, ‘the first perfection of a potential existent qua potential,’ which was mentioned in Lesson Forty and which means that an existent which possesses the potentiality and capacity for a perfection but lacks it at present, will advance toward it under certain conditions, and this advancing is preparatory to the achievement of the sought perfection.

And the phrase ‘qua potential’ is added in order to exclude the specific form of the moving existent, because every potential existent has a specific form anyway, which may be considered its first perfection, but this first perfection is with respect to its actuality rather than its potentiality, and is irrelevant to motion. The perfection of motion for a body pertains to its potentiality, and its being ‘first’ pertains to its priority for attaining its end.

However, the first definition is to be preferred because it is more concise and conceptually clear, although none of them may be considered what in logical terminology is called a ‘complete definition’ (hadd-e tamm), because a complete definition is specific to whatnesses, which possess a genus and difference, while the concept of motion is a secondary philosophical intelligible abstracted from the manner of the moving existent, and in the external world there is no substance nor accident called motion; rather motion is the being gradual of the existence of a substance or accident and its flowing through the extension of time.

Even according to Shaykh al-Ishraq, who considered motion to be of the category of accidents, a complete definition cannot be given for it, because its category is a highest genus and does not possess genus and difference.

Another point we should mention is that instantaneous changes are abstracted from two existences, or at the least from the existence and nonexistence of a single thing, while motion is abstracted from a single existent and its extension through time. Numerical difference between something which changes and that into which it changes pertains only to its potential parts which continually become existent and nonexistent, although none of them has actual existence.

In other words, motion is not a collection of existents which come into existence one after the other, rather it is abstracted from the extension of a single existent and it is infinitely divisible, although the division of it in the external world involves the appearance of rest and the destruction of its unity.

The Existence of Motion

In Lesson Fifty-One it was mentioned that a group of ancient Greek philosophers, such as Parmenides and Zeno of Elea denied that there was gradual change or motion. This position seems strange at first, and the question immediately arises in the mind of the reader or hearer as to whether they did not observe all these various motions?!

Did they not themselves move around?! But by examining their words more carefully it becomes clear that the matter is not quite so simple. Even the positions of some of those who believe in motion and stubbornly defend it (such as some Marxists) originate with the Eleatics!

The secret of the matter is that they considered the changes called motion to be a collection of successive instantaneous changes. For example, the motion of a body from one point to another was considered to be the successive resting of the body at the points between the two assumed points. In other words, they did not accept motion as something gradual and continuous, but rather as a collection of successive rests. Therefore, if someone else holds that motion has actual parts, in reality he has joined the ranks of those who deny motion.

The truth is that the existence of motion as a single gradual thing is undeniable. Even some instances of it, such as the gradual changes of psychic qualities, can be perceived by infallible presentational knowledge. The source of the error of the Eleatics are doubts that run counter to consciousness and self-evidence, and no uncertainty remains once these doubts are dispelled.

Problems Raised by those who deny the existence of motion and their solution

Those who have denied the existence of motion in the external world and who have considered it to be a mental concept which refers to a succession of rests have resorted to dubious notions the most important of which are the following two:

1. If motion exists as a single continuous thing in the external world, it must be considered as having parts, and since each of its parts possesses extension, each of these in turn will be divisible into other parts, and this division will continue infinitely. This implies that finite motion must be infinite.

Aristotle responded to this difficulty by claiming that motion does not have actual parts which could be finite or infinite, but rather that it can be divided into two parts, for example, in which case there will be two motions, not a single motion. Likewise, each part may be divided into two or more parts, and with each division performed in the external world a number of actual existents will come about.

These divisions may be continued without end, and hence the supposed motion itself will be finite, although its potential parts will be infinite. No contradiction exists between these two propositions, because one of the conditions for a contradiction is the unity of the actual and the potential which does not obtain in this case, for being finite is the attribute of the motion as a whole, while being infinite is the attribute of its potential parts.

But it is better to ask one who reasons in this way what do you mean by finite motion being infinite? If what is meant by being infinite is the number of its parts, this number does not actually exist in any motion, and the appearance of any number, whether finite or infinite, in motion is due to its objective division, in which case a single motion will not exist.

Likewise, everything which is divisible into two halves is presently a unit, but whenever it is divided, it becomes two units, but this divisibility does not imply that it is both one and two!

If what is meant is that the infinite divisibility of motion implies that the continuous amount and quantity (rather than number) is finite from one side and infinite from another, because every part of its infinite parts will have a quantity, and the collection of these amounts will be infinite, the answer to this is that even if every extension is divisible into an infinite number of parts, the amount of any extension will still be a fraction of the amount of the whole. Hence, the sum of the quantities of the infinite fractions of motion will be the finite amount of the motion itself: $(1/n \times n = 1)$.

It must be mentioned that this problem is not specific to motion, but covers all extensions, such as line and time. For this reason, those who raise these doubts consider every limited line to be composed of a limited number of extensionless points, and every limited portion of time to be composed of a determinate number of instants.

They believe that although the points are not extended, a collection of several points could bring a line into existence: though an instant has no length or extension, a set of several of them brings about a portion of time; likewise, a collection of rests brings about motion; in reality, that which has objective existence are points, instants and rests. Line, time and motion are concepts abstracted from their collections.

In other words, they believe in 'indivisible parts' (juz' la yatajazza), that is, every extension is capable of being divided into limited parts, and they believe that the last division leads to parts which are no longer divisible.

This is a problem about which philosophers have spoken much, and they have given numerous reasons

for the invalidity of the notion of 'indivisible parts,' but this is not the place to review them.

2. The other problem is that when a body moves from point A towards point C, for example, at the first instant it is at point A, and at the third instant it is at point C, so, there is no other alternative but that at the second instant it must pass some point B which is between the other two, otherwise there could be no motion.

Now, if it is assumed that the above-mentioned body is at point B at the second instant, this would imply that its motion is a collection of three rests, for rest is nothing but the residence of a body in a place, and if it did not reside there this would imply that there was no motion, for motion without passing the second point is impossible. Therefore, motion implies a contradiction (being and not being at an intermediate point).

The answer is that in this example three corresponding extensions are assumed: time, space and motion. If we consider three extended parts for each of them, it can be said that in the first part of time, the moving body has been in the first part of the space and that the first part of its motion corresponds to them, and likewise for the second and third parts. However, the occurrence of every part of the motion in the corresponding parts of time and space does not mean that the body is ever at rest.

However, if we take points and moments in their real meaning, as lacking extension, it would have to be said that actual instants and points do not exist in time and space, and the assumption of an actual point in a line means its division into two line segments, such that the said point is the end of one segment and the beginning of another. It is the same for the assumption of an instant in time and the assumption of a rest in motion. What it means for a body to be at a certain instant at a point in space is that if the extensions of time, space and motion were cut, their points of division would correspond to each other.

This does not imply the existence of rest in the midst of motion, just as it does not imply the existence of points in a line or the existence of instants in time. In reality, the source of this problem is that, on the one hand, being is considered to be equivalent to fixation, rest and residence, while on the other hand, time is assumed to be composed of instants and line composed of points.

They attempted to present the extension of motion as a composition of atoms of rest by means of a comparison to the extensions of time and space, while being includes both fixed and flowing beings. Moments and points are ends of extensions of time and line, and are not considered to be parts of them. Likewise, rest appears as the stopping of motion, not as something that exists in the midst of a single motion so as to be considered a part of it.

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