Aristotle on Zeno and the now

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If we accept the textual emendations favoured by W. D. Ross in his edition of the Physics, Aristotle, we must believe, reported an argument of Zeno's and gave a reply to it in the following words (or something very like them) in Z, ch. 9 (239 b 5-9):

'Zeno's argument is unsound. For he says that if (1) everything is always at rest when it is over against what is equal to it, and (2) the moving object is always in this condition in the now, then (3) the moving arrow is motionless.

But this is false, since (4) time is not composed of indivisible nows, any more than any other magnitude is composed of indivisibles.'

Aristotle briefly recapitulates both argument and reply later in the chapter (239 b 30-33), where he says: 'The third argument is the one I have just mentioned, that the moving arrow is at rest. This conclusion follows from the assumption that time is composed of nows. If this is not granted, the argument will not go through.'

What exactly did Aristotle think Zeno's argument consisted in? And what was his reply? I shall try to determine the answers to these questions. To do this is not to determine what Zeno's argument was, but it is intimately related to it.

The answer one gives to these questions depends in part on the way in which one interprets the expressions 'in the now' (ἐν τῷ νῷ) and 'of indivisible nows' (ἐκ τῶν νῶν τῶν ἀδιαμόρφων) that occur in the main passage, and the expression 'of nows' (ἐκ τῶν νῶν) that occurs in the recapitulation. Are they intended to refer to extensionless points in time, time-instants, or to atomic periods of time, or are they vaguer, referring to indivisible time-elements whose nature, as extended or extensionless, is not specified?

Professor Vlastos supports the second interpretation. (See 'A Note on Zeno's Arrow' in Studies in Presocratic Philosophy, vol 2, edd. R. E. Allen and D. J. Furley, p. 187 and notes 13 and 21 on pp. 196-7). In favour of this view he argues that there is at least one other passage in the Physics (Z, ch. 1, 231 b 18-232 a 24) where it is reasonable to suppose that Aristotle uses the expression 'τῷ νῷ' to refer to an atomic period of time.

If we accept Vlastos' interpretation, our answers to the two questions that
I posed will be along the following lines: 'Zeno argues, according to Aristotle, from (1) and (2) to (3) by means of an intermediate step which Aristotle has suppressed, that (5) the moving object is at rest in every atomic period of time. And Aristotle's reply, in (4), is to the effect that the atomic, i.e. extended but indivisible, elements of time in which Zeno believes, and on propositions about which he bases his argument, do not exist.' The second answer can be backed up by a reference to Aristotle's view, expressed in Z, ch. 1 and elsewhere, that every magnitude is divisible ad infinitum.

But this interpretation, and the reading of the passage that naturally goes with it, must be wrong. There are two reasons. (a) There is no doubt that in his full-scale discussions of the now in Δ, chs. 10, 11, and 13 Aristotle portrays it as an extensionless limit of periods of time, and this is reflected elsewhere in the Physics, e.g. Z, ch. 3, 233 b 33 - 234 a 3. The passage Vlastos mentions does not seem to fit into this picture. In it Aristotle, who has been arguing against the possibility of indivisible magnitudes, declares: 'If length and motion are indivisible, equally time must be so and consist of indivisible nows (καὶ συγκεῖσθαι ἐκ τῶν νῦν ὀντων ἁδιωρέτων).'

Now it is hard to believe that Aristotle could have thought that, if length and motion were indivisible, it followed that time was composed of indivisible instants. But the passage cannot bear Vlastos' interpretation, either. For it is equally hard to believe that Aristotle could have thought that what followed was that time was composed of indivisible time-atoms. What does follow, and Aristotle must surely be pointing this out, is that time is composed of indivisibles of some kind or other, perhaps instants, perhaps atoms. If we do not understand Aristotle in this way, the content of this passage will stand in glaring contrast with that of the earlier part of the chapter. For this has been given over to the refutation of the quite general thesis that magnitudes are composed of indivisibles, not the more specific one that they are composed of atomic extensions. So it seems that Vlastos has not given us any evidence of the occurrence of τὸ νῦν in the sense of 'the time-atom' in other passages than the one under discussion.

(b) Vlastos' interpretation and the reading of the passage 239 b 5-9 that goes with it cannot be reconciled with certain features of its context. For the passage that immediately precedes it (239 a 23 - b 4) involves reference to the now, and this is described as τὸ πέρας τοῦ χρόνου (a 35). That the two passages are linked is shown by the fact that Aristotle takes what he later (239 b 30) calls 'the third argument' out of order, considering it at the very beginning of ch. 9. This can only be because he thinks that there is a special link between it and what he has said at the end of ch. 8. Anyway, that there

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