Chapter One  
Points, Lines, and Infinity:  
Aristotle's Physics Zeta and Hellenistic Philosophy  

by David Konstan

In his essay entitled "Conjugal Precepts," or, more loosely, "Advice on Marriage," Plutarch distinguishes three kinds of conjugal union. "Philosophers say," he writes, "that among bodies, some are made of parts that stand separate, such as a fleet and an army, some of parts that touch, as a house and a ship, while some are unified and fused together, such as the various animals. A marriage of those who love each other is unified and fused together too, more or less, that of those who marry for a dowry or children is made of people who touch, while a marriage of those who [merely] sleep together is made of people who stand separate, whom one might regard as living together but not sharing a life." (Gamika parangelmata 142e-143a)¹ For present purposes, we may neglect the high esteem that Plutarch accords to marriages based on love, though this is certainly an interesting fact in its own right, and observe rather that, in establishing his classification of marriages, Plutarch invokes an analogy with spatial relations that obtain among objects: they may so fuse with one another as to be a single continuous entity; they may stand adjacent side to side; or they may be separated by some interval. The passage is included in

Willy Theiler's edition of the fragments of Posidonius,² but whether Plutarch found the inspiration for the analogy with Posidonius or an earlier stoic writer, the classification of spatial and other linear relations among things into three mutually exclusive and exhaustive types—continuous, contiguous, and consecutive—goes back ultimately to Aristotle, and above all to the opening chapter of the sixth book, or Zeta, of the Physics, where it serves as the introduction to Aristotle's analysis of motion and the refutation of Zeno's paradoxes.

I. Aristotle: Infinite Division

Aristotle exploits his classification of the spatial relations among things to analyze the problem of how indivisible entities, such as points in a line or instants in time, are assembled in continuous stretches. His answer, in terms of his three-fold classification, is: none of the above. For he defines both continuity and contiguity as a relation between the extremes or limits of things—continuous items share an extreme, that is, in Aristotle's terminology, their extremes are one, while contiguous or touching things have their extremes together, i.e., adjacent. But indivisibles, that is, things without parts, like a point, have no extremes by definition, since an extreme must be different from that of which it is the extreme, so that, if something has an extreme, it has parts, namely, the extreme and that of which it is the extreme, and hence is not indivisible. If two partless things touch, then, they touch not at their extremes, but rather as whole to whole, and hence must overlap entirely. But it is impossible to assemble a continuous stretch out of entirely overlapping partless entities, since however many you lay on, there results the same magnitude, equal in size to the indivisible minimum. Finally, partless or indivisible entities cannot form a continuum by being arranged consecutively, since, according to Aristotle, consecutive things have, by definition, some stretch of a different sort of thing in between, but between