

Zeno's Paradoxes. A Cardinal Problem. 1. On Zenonian Plurality

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Abstract

In this paper the claim that Zeno's paradoxes have been solved is contested. Although "no one has ever touched Zeno without refuting him" (Whitehead), it will be our aim to show that, whatever it was that was refuted, it was certainly not Zeno. The paper is organised in two parts. In the first part we will demonstrate that upon direct analysis of the Greek sources, an underlying structure common to both the Paradoxes of Plurality and the Paradoxes of Motion can be exposed. This structure bears on a correct - Zenonian - interpretation of the concept of "division through and through". The key feature, generally overlooked but essential to a correct understanding of all his arguments, is that they do not presuppose time. Division takes place simultaneously. This holds true for both PP and PM. In the second part a mathematical representation will be set up that catches this common structure, hence the essence of all Zeno's arguments, however without refuting them. Its central tenet is an equivalence proof for Zeno's procedure and Cantor's Continuum Hypothesis. Some number theoretic and geometric implications will be shortly discussed. Furthermore, it will be shown how the "Received View" on the motion-arguments can easily be derived by the introduction of time as a (non-Zenonian) premiss, thus causing their collapse into arguments which can be approached and refuted by Aristotle's limit-like concept of the "potentially infinite", which remained — though in different disguises - at the core of the refutational strategies that have been in use up to the present. Finally, an interesting link to Newtonian mechanics via Cremona geometry can be established.

Keywords: Zeno's paradoxes, cardinality, continuum hypothesis

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