

Old Things Made New: Aristotle's Proof for a First Unmoved Mover in the Context of Modern Theories of Physical Law

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One of the delightful surprises that a contemporary reader of ancient Greek philosophers will encounter is just how 'modern' these thinkers are. Sometimes this is obvious, as when one reads Democritus and marvels at the similarities between Greek Atomism and our modern atomic physics, or when one reads of the 'evolutionary' theory of Empedocles, which even Darwin cited as a remote precursor to his own theory. In the case of the 'physics' of Aristotle, the applicability to modern discussions is less easily seen. In this article, however, I will make the argument that Aristotle's investigations of the nature of motion and the existence of a first mover are of great relevance to contemporary discussions about physical law and its connection with a creating and governing God.

This paper will be divided into four sections. In the first, I will give a brief overview of the problem of motion in ancient Greek natural philosophy, up to the time of Aristotle. In the second part, I will give a more detailed description of the Aristotelian arguments for the existence of a first unmoved Mover, followed by an examination of the ways in which Aristotle's classic proof has lost its power to convince as a result of modern developments in the physical sciences. In the third section, I will explore the relevance of the ancient conversation on the origin of motion to present-day issues in the philosophy of nature, in particular the degree to which physical law, as described by contemporary physics, can be interpreted as requiring the postulate of a first unmoved Mover. In the fourth section, by way of conclusion, I will highlight a number of philosophical problems that remain to be addressed before claiming that a genuine 'proof' has been achieved.

Within the Western intellectual tradition, the ancient Greek *phusiologoi*—or natural philosophers—were the first to attempt to 'de-theologize' explanations of natural regularities. Their very lack of basic scientific tools forced Greek thinkers to develop explanatory models based strictly on observation and rational analysis, which nevertheless at times bear strong similarities to those proposed by modern theories. As part of this development of a 'rational physics,' the Greek natural philosophers were able to identify

key questions and problems that haunt both science and the philosophy of nature even today.

One of these questions concerned the origin of motion. The *phusiologoi*, from Anaximander to Democritus, proposed theories that explained the development of the present-day universe through a theory of ‘necessity’ (*ananke*) that eliminated the need for a designing intelligence in order to explain the appearance of complex natural beings. While some of their proposals had—for the time—significant explanatory power, their proposals for the origin of motion itself were less than satisfactory. Indeed, it is in response to the problem of motion that we see the reintroduction of divine agency into the *Peri phuseôs* accounts developed by certain natural philosophers who were not content to leave the origin of motion as an unexplained ‘brute fact.’ This process of developing a ‘natural theology’ culminated with Aristotle, who, in his influential *Physics*, develops a series of classic proofs which together demonstrate the existence of a First Unmoved Mover, which I discuss in the second section of this paper.

The Mover that Aristotle proposes is a being which is pure act and thus perfect, and which moves the celestial spheres through their ‘desire.’ In this way, Aristotle is able to account for the existence of motion in the cosmos, while remaining able to produce scientific accounts for the specific kinds of motion characteristic of the multitude of different kinds of mobile beings which the cosmos, in its various levels, contains. His proof depends on establishing that it is impossible for genuine material self-movers to exist, and that furthermore it is impossible for infinite causal chains to produce motion (pace Democritus). In all causal chains, there must therefore be a first unmoved mover. Furthermore, in order that motion be present today, the ultimately first Mover (and the motion it produces in the cosmos) must be eternal, for otherwise—in the eternal universe that Aristotle posits—motion would at some time have ceased. But nothing material can be a truly unmoved mover, and thus the unmoved mover of the universe must be immaterial, and *qua* eternal (versus merely incorruptible), pure act.

For centuries, Aristotle’s proof was widely considered to be fundamentally both valid and sound (particularly within the tradition of Greek commentators and the Arab and Latin scholastic philosophers). Nevertheless, the development of post-Renaissance natural science undermined many of the basic suppositions on which his proof relied. One such development was the new model that viewed natural beings as being composed of inert matter that obeyed universal natural laws, in place of Aristotle’s theory of ‘natures’ that were the principles of the motion characteristic of each kind of natural being. Another severe blow came with the discovery that the propagation of action in a causal chain cannot be simultaneous, but rather is limited by the speed of light. For these and other compelling reasons, Aristotle’s proof for an eternal, immaterial, unmoved first Mover was considered to be consigned permanently to the dust-bin of historical oddities in the philosophy of nature.

It is thus ironic that developments in modern physics may well give a new life to

the ancient quest to demonstrate the existence of an unmoved first Mover (which theists will easily identify as also being the divine Creator of the universe). In the third section of this paper I will explore one such approach which appears to lead us to the necessity for such a Mover, based on the universality and necessity of physical law. This is made possible because the laws of physics are precisely laws about the *motion* of physical objects, and thus imply the entry of causation into a space-time system which would be static, absent their application. There exist numerous (more or less well-accepted) theories to explain the mechanisms behind the various physical laws that characterize motion in our universe. These theories, like the ancient cosmic models proposed by the *physiologoi*, remain unable to explain why, precisely, these mechanisms actually result in *movement*: how, exactly do these ‘laws’ acquire their lawlike character, making them able to oblige?

The nucleus of my paper will consist of the attempt to show that the universal causality implicit in physical law offers the opportunity to derive a new proof for a first unmoved Mover. One such avenue derives from the absolute unity of given physical laws, which apply univocally in all points of space and time; this in turn implies that a unitary physical law will apply simultaneously (i.e. at space-time points describable as simultaneous from the point of view of a single observer) despite being separated by a distance which can only be traversed at the speed of light. While (as Feynman [1965] notes) physical law can be identically described by more than one functionally identical explanation, whatever explanation we use to explain law-following phenomena such as gravity (i.e. a description in terms of forces, or in terms of local response to fields, as in General Relativity) we are led to the requirement for postulating a first unmoving cause for the motion that results, thus effectively resurrecting Aristotle’s ancient proof in modern terms.

In the final section of this paper, I will briefly discuss a number of difficulties that can be raised to counter the arguments I have raised, and I will indicate possible ways of responding. In particular, there are issues regarding the epistemological status of causal propositions: is it in fact possible to derive knowledge of a cause from knowledge of an effect, especially when such causes are by definition beyond the realm of possible experimental confirmation? Does motion really exist, or is space-time fundamentally a sort of static ‘block’ wherein motion is a trivial product of change of perspective? How can one respond to alternative explanations for the universality and necessity of physical law which do not require the postulation of any sort of immaterial first Mover, such as the Kantian position and the Lewisian theory of infinite possible worlds? Given the focus of this paper, however, I will not enter into great detail on these issues, but merely indicate them as projects for future research.