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### PROJECT

## Causality and Logical Derivation in Late Neoplatonism

Neoplatonic thinkers inherited from Aristotle the requirement that demonstrative proofs should be based on *aitiai* (causes). Yet the incorporation of this requirement into Neoplatonism involves a modification of Aristotle's notion of logical derivation. Whereas Aristotle's notion of causality is tantamount to explanation and hence provides logical grounds, the Neoplatonic notion of causality holds for entities that bring about certain effects by being active. The Neoplatonic notion of cause, then, though compatible with explanation, is distinct from the notion of logical ground. Consequently, it calls for an analysis of demonstrative proofs, which takes into account not only the transitivity of the predicative relations stated in the premises, but the causal relation between productive causes and their effects.

My research is aimed at accounting for this transformation of Aristotle's theory of demonstration by addressing the following questions: 1) what problems does the causal account of logical derivation aim to solve; 2) what conceptual characteristics of this notion of cause facilitate its application to the logical domain; and 3) does this account reflect a shift in the attitude toward logic in late antiquity? This study may explain how Aristotle's theory of demonstration, which can account for a limited range of logical relations, served from late antiquity to the modern era as the paradigmatic model for carrying out research in a variety of different sciences.

### Recommended Reading

Harari, Orna. *Knowledge and Demonstration: Aristotle's Posterior Analytics*. Dordrecht: Kluwer Academic Publishers, 2004. (The New Synthese Historical Library.)

\_\_\_. "Methexis and Geometrical Reasoning in Proclus' Commentary on Euclid's Elements." *Oxford Studies in Ancient Philosophy* 30 (2006): 361-389.

\_\_\_. "Proclus' Account of Explanatory Demonstrations in Mathematics and its Context." *Archiv für Geschichte der Philosophie* 90/2 (2008): 137-164.

# Aristotle's Theory of Demonstration Expanded: The Ancient Commentators on Proofs in the Natural Sciences

In this paper I try to reconstruct the rational behind the introduction of proofs that establish the principles of physics on the basis of empiric evidence (tekmeriodes apodeixis) into the Aristotelian theory of demonstration in late antiquity. I focus here on one of the two formulations of this type of proof that we find in the late commentary tradition: Simplicius' (6th century AD) formulation found in his commentary on Aristotle's Physics. In the first part of my presentation, I trace Simplicius' notion of sign-based proofs to Alexander of Aphrodisias - the peripatetic philosopher and commentator (late second and early third century AD). Through an examination of Alexander's view, I show that the expansion of the theory of demonstration results from two assumptions, which are absent from Aristotle's theory: (1) the principles of demonstration should be evident and (2) moving causes, rather than essences provide us with genuine explanations. I further show that these assumptions led Alexander to qualify the priority of universals and ascribe unqualified priority to moving causes. In the second part of my presentation, I show that Simplicius shares these assumptions with Alexander, but attempts to restore the unity of universals and causes, which Alexander set apart. The major consequence of my argument is that the notion of sign-based proofs did not emerge in late antiquity from concerns regarding the empirical foundation of the natural sciences, but from qualm regarding the explanatory worth of universals.

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## PUBLICATIONS FROM THE FELLOW LIBRARY

Harari, Orna (Amsterdam, 2012)

Simplicius on tekmeriodes proofs

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=1665217340>

Harari, Orna (2006)

Methexis and geometrical reasoning in Proclus' commentary on Euclid's Elements

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=828821143>

Harari, Orna (Dordrecht [u.a.], 2004)

Knowledge and demonstration : Aristotle's Posterior analytics

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=476284961>

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