Review

Proof, Knowledge, and Scepticism: Essays in Ancient Philosophy III
By Jonathan Barnes
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Proof, Knowledge, and Scepticism is the third volume of Jonathan Barnes's collected papers and spans five decades of his distinguished career. At just over 700 pages, this is a substantial tome. It focuses on certain topics in ancient logic and epistemology (and their intersection) and its major themes are: Aristotle on proof; Galen on proof, logic, and language; and Pyrrhonian scepticism. All of the material has been previously published, but many papers have been at least slightly revised (some significantly so) and several essays appear in English for the first time.

Before discussing this volume's contents, some groundwork is necessary. While the following characterisations are not entirely without exegetic controversy, I take it that for Aristotle:

> a *sullogismos* (Barnes renders it as 'Deduction'; 'syllogism' is probably best avoided) is a valid deductive argument in which the conclusion follows necessarily from the premises and which meets certain conditions (more on this below);
> a syllogism (no single Greek term is uniformly used) is a kind of *sullogismos* constituted by one major premise, one minor premise, and a conclusion. Each of these three elements is a proposition or sentence (*protasis*) wherein one term is predicated of one term by means of an appropriate connective ('... holds of every ...', '... holds of no ...', '... holds of some ...', or '... does not hold of some ...' – usually abbreviated as 'a', 'e', 'i', and 'o' respectively); and
> a demonstration or proof (*apodeixis*) is a kind of *sullogismos*, the premises of which are true, universal, better known than the conclusion, and (seemingly explanatorily) prior to the conclusion. Further, the premises of a demonstration are 'immediate' and 'primitive' principles (*archai*) or are themselves demonstrable from such principles. In virtue of having a demonstration, one attains (a special kind of) knowledge (*epistēmē*).

Finally, it should be mentioned that in the *Prior Analytics* (A 23), Aristotle seems to argue that every *sullogismos* can be expressed in one of the three major figures of his syllogistic.

In 'Aristotle on knowledge and proof', Barnes probes a number of questions concerning the sort of knowledge afforded by demonstrations, what 'having' a demonstration amounts to, and how this sort of knowledge is related to other forms of cognition. In 'Proof and the syllogism', Barnes examines Aristotle's conceptions of syllogism and demonstration, the relation between them, and whether Aristotle's account of demonstration presupposes syllogistic. In 'Aristotle's theory of demonstration', Barnes argues that the account of demonstrative science in the *Posterior Analytics* 'does not describe how scientists do, or ought to, acquire knowledge: it offers a formal method of how teachers should impart knowledge' (145). Finally, in 'Aristotle, Menaechmus, and circular proof', Barnes outlines the regress of reasons as it applies to demonstrative knowledge, describes Aristotle's response to certain (anonymous) proponents of 'circular' demonstration (those who deny that that the premises of a demonstration need be prior to the conclusion), discusses the relation between circular demonstration and geometrical analysis, and argues that Menaechmus (a leading Academic geometer of the time) was most likely the proponent of circular demonstration targeted by Aristotle.

Aristotle's so-called 'categorical syllogistic' examines the logical relations between terms. The logic developed by the Stoics, which some ancients termed 'hypothetical syllogistic', was instead concerned with the logical relations between sentences or propositions. Galen took there to be a third, distinct kind of syllogistic which he called 'relational syllogistic'. Galen did not leave a clear account of relational syllogistic in his surviving works, but arguments such as 'A is equal to B, B is equal to C, therefore A is equal to C' seem to be among the more helpful examples he offers. (When one looks at this example, relational syllogistic looks like categorical syllogistic, but it uses a novel connective: 'is equal to'.)

In 'Galen and the utility of logic', Barnes discusses the thoughts of Galen and Alexander of Aphrodisias on the instrumental value of logic and the sorts of inferences which were regarded as useful (or not). In 'Proofs and syllogisms in Galen', Barnes examines whether certain arguments which Galen took to be exemplary proofs are best construed as relying upon 'categorical', 'hypothetical', or 'relational' syllogistic, or some hybrid of the first two (his preferred option). Along the way, he offers some discussion of what, precisely, Galen took 'relational syllogistic' to be. In 'Galen on logic and

therapy', Barnes offers an extended and broad-ranging piece on Galen's conception of proof, medical methodology, the uses to which he put deduction, why he thought doctors should have a thorough grounding in logic, and how Galen's medical practice compared with that of other medical schools in antiquity. On Barnes's account, Galen's demonstrations are grounded in first principles (something akin to the axioms of an axiomatised medical science) and, consequently, his medical practice is more thoroughly grounded in fundamental natural sciences. In 'Language in Galen's *simp med temp*', Barnes examines what Galen has to say about synonymies, catachresis, homonymy, and terminological exactitude.

Much of the rest of the volume is concerned with Pyrrhonian scepticism. 'Proof Destroyed' examines the Stoic account of proof and the criticisms of the Stoic indemonstrables we find in Sextus Empiricus. In 'Sextan scepticism', Barnes discusses some of the puzzling features of Sextus' portrait of philosophical investigation and Pyrrhonism at the opening of the *Outlines*. 'Pyrrhonism, belief, and causation' is an extended piece which examines the scope and nature of Pyrrhonian suspension of belief and analyses Sextus' arguments against the coherence of causal concepts and the existence of causes. In 'Scepticism and the arts', Barnes discusses the case against the 'liberal arts' made by Epicureans and Pyrrhonists (as reported in *M*. 1–6). In 'Scepticism and relativity', Barnes examines the portrait of Protagorean relativism we find in Sextus, the Pyrrhonist's use of relativist tropes, and, finally, the ancient notion(s) of relativity at work when something is said to be relative (*pros ti*). 'Scepticism and scandal' examines two responses to scepticism – that of Hume and that of Wittgenstein – and finds them wanting. 'An Aristotelian way with scepticism' considers what Aristotle would say to a sceptic and proposes that his response would rely on the optimistic thought that nature does nothing in vain.

Finally, two other noteworthy papers deserve mention. 'Epicurean signs' is a careful study of the Epicurean account of 'sign-inferences' (inferences which proceed 'from the known to the unknown' [311]) and of the 'way of similarity' (e.g. inferences of the form: all *F*s we have seen are *G*, therefore all *F*s are *G*) as found in Philodemus's *On Signs*. Against the orthodoxy, Barnes argues that Philodemus is best construed *not* as dealing with inductive inferences (326–30) because sign-inferences were taken to necessitate their conclusions. 'Socrates and the jury' offers a detailed rebuttal to Myles Burnyeat's argument that, in the *Theaetetus*, Plato's seemingly odd remarks about *epistēmē* (e.g. that it cannot be transferred by testimony) make sense if we construe *epistēmē* not as *knowledge* but as *understanding*. Barnes suggests that, *contra* Burnyeat, knowledge and

understanding may be not be distinct in kind; instead, one might reduce the sort of understanding in question to causal knowledge.[1]

The papers included here cover an impressively broad range of material and many have played a significant role in advancing our understanding of ancient philosophy. Barnes's work on Aristotelian conceptions of deductions, syllogisms, demonstrations, and the differences between them marked a very significant advance on the earlier literature. Equally, the considerable attention Barnes has given to Hellenistic and late antique figures has shed considerable light on previously peripheral figures and encouraged their study. To my mind, the standout piece is 'Pyrrhonism, belief, and causation'. This excellent essay (417–511) – the culmination of extensive research into Pyrrhonian scepticism – offers a wealth of insight and is required reading for anyone interested in ancient scepticism.

Barnes's work is characterised by close and careful exegesis combined with clarity (he often offers a formal or semi-formal gloss of important principles or arguments), candour (Barnes comes not to praise the figures, views, or arguments he discusses, but, often, to bury, or perhaps dissect them), and erudition. Finally, it deserves mention that Barnes is a masterful writer. The back cover remarks that these essays are written 'with brio' and that is correct: they are a pleasure to read and frequently hilarious (not, I believe, something often said of writings on Galen or ancient notions of proof).

One will no doubt disagree with Barnes here or there (for instance, it was not altogether clear to this reader why Barnes, who rarely sugar-coats his criticisms, has a soft spot for Galen), and one might complain that the papers are somewhat more discursive than papers nowadays tend to be (though the digressions are often richly rewarding), but it is not easy to find fault with Barnes's scholarship. Nonetheless, there are a few issues which this reader thought merited further discussion on Barnes's part (especially given that the papers have seen revision). Thus, for instance, Barnes (99) characterises a *sullogismos* as follows:

> A Deduction is an ordered pair, $<\{\alpha_1, \alpha_2, \ldots, \alpha_n\}, \sigma>$ such that (1) σ follows necessarily from $\{\alpha_1, \alpha_2, \ldots, \alpha_n\}$, and (2) σ holds (if it holds) because of each α_i.

However, this semi-formalistic gloss seems incomplete. For instance, it does not capture Aristotle's emphasis that, in a *sullogismos*, the

[1] I have said more about these matters elsewhere. See T. Nawar, 'Knowledge and True Belief at *Theaetetus* 201a–c', *British Journal for the History of Philosophy* **21** (2013), 1052–1070.

conclusion must be distinct from each of the premises (e.g. *APr A* 24b18–20) (and perhaps even from the conjunction of the premises, cf. *Topics* 163a10–11). Barnes offers a brief remark or two recognising that Aristotle imposes this distinctness requirement (100n10, 133), but the issue deserves greater attention than he grants it.[2] For this distinctness requirement reveals that necessary truth-preservation is not sufficient for an Aristotelian *sullogismos*, and, perhaps, that syllogistic consequence (i.e. the consequence relation in a *sullogismos*) differs from logical consequence as traditionally understood (i.e. necessary truth-preservation). It makes Barnes's choice to render *sullogismos* as 'Deduction' seem slightly misleading and, when read alongside other parts of Aristotle, it suggests that there is an important pragmatic or dialectical dimension to Aristotle's thinking about *sullogismos* which doesn't receive its due from Barnes. It also has significant implications for some of the issues touched upon in the volume, such as the so-called 'scandal of deduction',[3] and for one of the major themes of the essays in this volume: proof.

In sum, there is much here to stimulate those interested in ancient philosophy. The papers are frequently technical and the subject matter often esoteric, so non-specialists may find many of these papers hard-going. But, despite the occasional provocatively worded remark about whether contemporary philosophers have anything of philosophical value to learn from the serious study of ancient philosophy (e.g. 608–10), Barnes's work brilliantly illuminates the intrinsic interest of ancient philosophy to non-specialists. For specialists, these papers offer a wealth of insight and bear careful rereading. Since many of these essays were previously not readily accessible even to those with access to well-stocked libraries, this excellently produced volume performs a considerable service in giving them a home. The revisions undertaken ensure that future scholarship should refer to the versions collected herein.

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[2] For recent discussion, see M. Duncombe, 'Irreflexivity and Aristotle's Syllogismos', *The Philosophical Quarterly* **64** (2014), 434–452.

[3] Deductive inferences, the thought goes, are not ampliative but, at best, merely explicative. They offer us knowledge which we already had under a different mode of our presentation but do not straightforwardly lead us to know new things. This, the thought goes, renders logic less than useful; hence, the 'scandal of deduction'.