Zeitschrift: Entretiens sur l'Antiquité classique
Herausgeber: Fondation Hardt pour l'étude de l'Antiquité classique
Band: 57 (2011)

Artikel: The last philosophers of late antiquity in the Arabic tradition
Autor: Adamson, Peter
DOI: https://doi.org/10.5169/seals-660682

Nutzungsbedingungen
Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. Mehr erfahren

Conditions d'utilisation
L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. En savoir plus

Terms of use
The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. Find out more

Download PDF: 26.11.2025

ETH-Bibliothek Zürich, E-Periodica, https://www.e-periodica.ch

I

PETER ADAMSON

THE LAST PHILOSOPHERS OF LATE ANTIQUITY IN THE ARABIC TRADITION

The classical texts of Greek philosophy reached the Islamic world through a double filter. One filter was the Syria tradition, which is discussed by Prof Hugonnard-Roche in the present volume. A second filter was provided by late antique Greek authors immediately preceding, and in some cases contemporaneous with, the scholars who produced a philosophical literature in Syriac.[1] One could point to a similar historical continuity in the case of Latin medieval philosophy, where late ancient authors like Boethius and Augustine exercised enormous influence for many centuries. But at least some of the differences between Arabic and Latin philosophy of, say, the 9th-10th centuries CE, can be ascribed to the very different fortunes of the late antique philosophical corpus in the Latin- and Arabic-speaking worlds. Whereas the output of the Greek commentators was largely unknown in Latin, it was to an amazingly large extent retained in Arabic. This was thanks to the translation movement of the 'Abbāsid era. Without going into great detail about the translation movement in general, I will begin this paper by recalling a few basic and well-known points about the reception of the commentators. I will then focus on two topics which display how late antique philosophy was received in the Islamic world: the question of how logic

[1] Consider that Sergius of Resh'aynā died in 536 CE, only 7 years after the closure of the Platonic school in Athens.

relates to philosophy and the dispute over the world's eternity. In both cases, I will not only highlight the decisive influence of late ancient philosophy on authors writing in Arabic. I will also try to show how these authors reacted to contemporary cultural pressures by reshaping, extending, and departing from their Graeco-Arabic sources.

The Commentators in Arabic

The *Commentaria in Aristotelem graeca* (*CAG*), a monumental edition of the commentators produced in Germany over a century ago, was read rather sparingly until relatively recently. A renewed interest in this corpus has represented one of the biggest shifts in the study of ancient philosophy over the past 30 years. Largely this has been instigated by the Ancient Commentators Project led by Richard Sorabji. As a result, now in 2010 we can say that we have just about caught up with, and perhaps even surpassed, the knowledge of late antique philosophy that was achieved in Baghdad in the 10th century CE. Not coincidentally both endeavors involved a huge effort of translation, as well as thoughtful analysis of the commentators' ideas. If we consider the fruits of the Graeco-Arabic translation movement, we can see immediately how keen was the interest taken in Greek commentaries under the 'Abbāsids.[2] Medieval book lists, above all the invaluable *Fihrist* of Ibn al-Nadīm, tell us of numerous translations of commentaries by Alexander of Aphrodisias, Themistius, Porphyry, and members of the Alexandrian

[2] See the very useful table provided by D. GUTAS, "Greek Philosophical Works Translated into Arabic", in *The Cambridge History of Medieval Philosophy*, ed. by R. PASNAU, 2 vols (Cambridge 2010), vol. 2, 802-814. See also C. D'ANCONA, "Greek into Arabic. Neoplatonism in Translation", in *The Cambridge Companion to Arabic Philosophy*, ed. by P. ADAMSON and R.C. TAYLOR (Cambridge 2005), 10-31, with a table at 22-23 focusing specifically on Neoplatonists; and further ID., "Greek Sources in Arabic and Islamic Philosophy", in the online *Stanford Encyclopedia of Philosophy*, ed. by E.N. ZALTA: http://plato.stanford.edu/entries/arabic-islamic-greek.

school like Ammonius, Simplicius, Philoponus and Olympiodorus.

A smaller number of commentaries and works by Greek commentators are preserved, wholly or partially, in their Arabic versions. Completely preserved commentaries are rare; here a prominent example would be the paraphrase of the *De Anima* by Themistius. We also have him on *Metaphysics* Book Lambda, as I will discuss later on. More common are commentaries known partially or as fragments. For instance we have large parts of the Arabic version of Philoponus' commentary on the *Physics*. Also extant are Arabic fragments of some of Alexander's commentaries, for instance those on the *Physics*, *Metaphysics* and *On Generation and Corruption*. In some cases these supplement what can be known from the Greek tradition. There are surviving Arabic versions of independent treatises from some of the same authors, especially Alexander.

In addition we can, even in the absence of Arabic versions of the commentaries, observe the direct influence of commentators on Arabic philosophy. The works of al-Kindī, the first Hellenizing philosopher to write in the Islamic world, already betray extensive influence from Greek commentators from the Alexandrian school, as well as from earlier authors like Alexander.[3] But the influence of the Alexandrian commentators peaks in the 10th-11th centuries with the so called "Baghdad Peripatetics", a group of mostly Christian Aristotelian philosophers who produced their own commentaries and treatises based on Aristotle. They often imitate the very form of the

[3] For a good example see S. FAZZO and H. WIESNER, "Alexander of Aphrodisias in the Kindī Circle and in al-Kindī's Cosmology", in *ASPh* 3 (1993), 119-153. The influence on al-Kindī from the Alexandrian tradition is clear from his use of Philoponus in treating the world's eternity (see below), and from his discussion of the nature of philosophy at the beginning of *On First Philosophy*. As detailed by A. IVRY, *Al-Kindi's Metaphysics* (Albany 1974), 115-118, this passage and the related definitions of philosophy in al-Kindī's *On the Definitions and Descriptions of Things* extensively parallel authors like Ammonius, Elias and David.

commentaries, as well as reproducing the comments made by their Greek forebears — sometimes verbatim. Among the Baghdad Peripatetics, the author who follows the Alexandrians most closely is the last representative of the school, Abū l-Farāǧ ibn al-Ṭayyib. We have extant commentaries from his pen on Porphyry's *Isagoge* and Aristotle's *Categories*.[4] Other members of the school also engaged extensively with the Greek commentators. This includes not only the famous al-Fārābī, but also his student Yaḥyā ibn ʿAdī.[5] As we will see in a moment, the logical writings of these authors provide eloquent testimony of the impact of the commentary tradition. Another fine example is the so-called "Baghdad *Physics*", which incorporates comments by numerous members of the Baghdad school, including Ibn ʿAdī, as well as excerpts from Alexander's and Philoponus' commentary in Arabic translation.[6] Also worth noting is Ibn ʿAdī's commentary on *Metaphysics* Alpha Elatton, which seems to imitate the Greek commentaries in its *theoria* and *lexis* structure.[7]

There are, then, a large number of texts displaying the impact of the Greek commentators on philosophy in Arabic in

[4] For the former see K. GYEKYE (ed.), *Ibn al-Ṭayyib's Commentary on Porphyry's Eisagoge* (Beirut 1975); trans. in K. GYEKYE, *Arabic Logic. Ibn al-Ṭayyib's Commentary on Porphyry's Eisagoge* (Albany 1979). For the latter, see C. FERRARI, *Der Kategorienkommentar von Abū l-Farāǧ ʿAbdallāh ibn aṭ-Ṭayyib* (Leiden 2006).

[5] His works are edited in S. KHALIFAT, Yaḥyā ibn ʿAdī, *The Philosophical Treatises* (Amman 1988). See further G. ENDRESS, *The Works of Yaḥyā ibn ʿAdī. An Analytical Inventory* (Wiesbaden 1977).

[6] See the edition in A. BADAWĪ, *Arisṭūṭālīs: al-Ṭabīʿa*, 2 vols (al-Qāhira 1964-1965). The commentary's contents are summarized in P. LETTINCK, *Aristotle's Physics and its Reception in the Arabic World* (Leiden 1994). See further several studies by E. GIANNAKIS: *Philoponus in the Arabic Tradition of Aristotle's Physics*, D. Phil. Thesis (Oxford 1992); ID., "The Structure of Abū l-Ḥusayn al-Baṣrī's Copy of Aristotle's *Physics*", in *ZGAIW* 8 (1993), 251-258; ID., "Fragments from Alexander's lost Commentary on Aristotle's *Physics*", in *ZGAIW* 10 (1995-1996), 157-187.

[7] P. ADAMSON, "Yaḥyā ibn ʿAdī and Averroes on *Metaphysics* Alpha Elatton," in *DSTFM* 21 (2010), 343-374. See also C. MARTINI BONADEO, "Un commento ad *alpha elatton* 'sicut litterae sonant' nella Baghdād del X secolo", in *Medioevo* 28 (2003), 69-96.

the 9th-11th centuries CE. To some extent, their influence wanes thereafter, as philosophical commentary tends to be directed towards Avicenna rather than Aristotle. Of course the revival of Aristotelianism in Andalusia, above all in the commentaries of Averroes, constitutes a major exception. Averroes in fact preserves for us some of the fragments mentioned above, for authors like Alexander. But in what follows here I will be focusing on the early period. Before delving into specific topics, I'd like to note three points of continuity between the Greek commentary tradition and the early Arabic tradition of Hellenizing philosophy (*falsafa*). These are not novel points, but well worth repeating.

First, the Arabic tradition carries on Greek attitudes towards the prospects of reconciling Aristotle with Platonism. This is not to say that all authors take a harmonizing attitude, but rather that a harmonizing attitude is the norm, yet admits of exceptions. Good examples of harmonization (not without nuance) can be found on the Greek side in authors like Porphyry and Simplicius, and on the Arabic side in al-Kindī and the author of the work *On the Harmony of the Two Sages*, whose ascription to al-Fārābī has recently been a matter of dispute.[8] Other authors are less optimistic about the prospects for a consistent Platonic Aristotelianism. Here one might think of Alexander or Syrianus on the Greek side, and al-Rāzī on the Arabic side.

Second, the Greek tradition already involves the passing of Platonism and Aristotelianism — more or less fused into a

[8] For a skeptical view see M. RASHED, "On the Authorship of the Treatise on the Harmonization of the Opinions of the Two Sages Attributed to Al-Fārābī", in *ASPh* 19 (2009), 43-82, following the lead of J. LAMEER, *Al-Fārābī and Aristotelian Syllogistics. Greek Theory and Islamic Practice* (Leiden 1994), 30-39. On the topic of harmonization see further C. D'ANCONA, "The Topic of the 'Harmony Between Plato and Aristotle'. Some Examples in Early Arabic Philosophy", in *Wissen über Grenzen. Arabisches Wissen und lateinisches Mittelalter*, hrsg. von A. SPEER (Berlin 2006), 379-405; A. BERTOLACCI, "Different Attitudes to Aristotle's Authority in the Arabic Medieval Commentaries on the *Metaphysics*", in *AntPhilos* 3 (2009), 145-163.

single tradition, as just mentioned — from pagans to Christians. The last philosophers of Greek antiquity were mostly pagans, but the *very* last philosophers of Greek antiquity were often Christians. Most prominent here is of course John Philoponus, but one thinks also of the associates of Olympiodorus, Elias and David — who are often among the closest models for the commentaries of Ibn al-Ṭayyib. On the Arabic side, it's already been mentioned that the Baghdad Aristotelians were almost all Christians, and the central role of Christians in the translation movement hardly needs emphasis. Indeed *falsafa* was an admirably ecumenical enterprise. Not only do we find devout Muslims like al-Kindī working together with the Christian translators and scholars who were so indispensable to the translation movement, but we find Christian authors like Ibn ʿAdī engaging politely with Jews in philosophical exchanges.[9]

Third, authors writing in Arabic took over from late antique authors not only philosophical ideas, but a philosophical curriculum. In the case of Porphyry's *Isagoge*, a work by a Neoplatonist was actually added to the standard Aristotelian curriculum.[10] It became such a standard part of philosophical education that al-Kindī uses it as a basis to refute the Trinity because, he says, it is well-known to his Christian opponents.[11] More generally and more fundamentally, the late ancient ordering of Aristotle's works and of the philosophical sciences (which of course go hand-in-hand) penetrated deeply

[9] See S. PINES, "A Tenth Century Philosophical Correspondence", in *PAAJR* 23 (1954), 103-136.

[10] Whether the *Isagoge* itself is a Neoplatonic work is less clear; for an affirmative answer see R. CHIARADONNA, "What is Porphyry's *Isagoge*?", in *DSTFM* 19 (2008), 1-30.

[11] See A. PÉRIER, "Un traité de Yaḥyā ben ʿAdī. Défense du dogme de la Trinité contre les objections d'al-Kindi", in *ROC* 3rd series, 22 (1920-1921), 3-21. Al-Kindī's arguments, without the response of Ibn ʿAdī, are translated in R. RASHED and J. JOLIVET, *Œuvres Philosophiques & Scientifiques d'al-Kindi. Volume 2, Métaphysique et cosmologie* (Leiden 1998), and in P. ADAMSON and P.E. PORMANN (trans.), *Al-Kindī's Philosophical Works* (Karachi 2011, forthcoming).

into Arabic philosophy.[12] This question of how philosophical disciplines relate to one another provides a common link between the two topics I will be discussing in the remainder of this paper.

Logic as an Instrument of Philosophy

In Greek commentaries on the works of the *Organon* — Porphyry's *Isagoge* plus Aristotle's 'logical' works — it became standard to discuss the question whether logic is a part or an instrument of philosophy.[13] The very term *organon* (instrument) shows which way the Aristotelians were inclined to see the issue. For them, logic was not strictly speaking a philosophical science, but rather a discipline or art (τέχνη) which contributes instrumentally to philosophy. They developed this view in opposition to the Stoics. For the Stoics, logic constituted one of the three parts of philosophy, alongside ethics and physics. Alexander of Aphrodisias objected to this, on the grounds that logic has a different subject-matter (ὑποκείμενον) and goal (τέλος) from philosophy.[14] Its subject-matter is "statements and propositions (ἀξιώματα καὶ προτάσεις)", and its goal is "to prove that, when propositions are

[12] See G. ENDRESS (ed.), *Organizing Knowledge. Encyclopaedic Activities in the Pre-eighteenth Century Islamic World* (Leiden 2006); D. GUTAS, "The 'Alexandria to Baghdad' Complex of Narratives. A Contribution to the Study of Philosophical and Medical Historiography among the Arabs", in *DSTFM* 10 (1999), 155-193; P. ADAMSON, "The Kindian Tradition. The Structure of Philosophy in Arabic Neoplatonism", in *Libraries of the Neoplatonists*, ed. by C. D'ANCONA (Leiden 2007), 351-370.

[13] For the issue a good place to start is R. SORABJI (ed.), *The Philosophy of the Commentators 200-600 AD. A Sourcebook*, 3 vols (London 2004), vol. 3, §1(b). See further K. IERODIAKONOU, "Aristotle's Logic: an Instrument, Not a Part of Philosophy", in *Aristotle on Logic, Language and Science*, ed. by N. AVGELIS and F. PEONIDIS (Thessaloniki 1998), 33-53; T.S. LEE, *Die griechische Tradition der aristotelischen Syllogistik in der Spätantike* (Göttingen 1984), ch. 2; A.C. LLOYD, *The Anatomy of Neoplatonism* (Oxford 1990), 17-21.

[14] Alexander, *In An. Pr. I*, ed. M. WALLIES (Berolini 1883), 1.18-2.2.

compounded with one another in certain ways, something may be deduced by necessity from what is posited or conceded (ἡ γὰρ ταύτης πρόθεσις τὸ διὰ τῆς ποιᾶς τῶν προτάσεων συνθέσεως ἐκ τῶν τιθεμένων τε καὶ συγχωρουμένων ἐξ ἀνάγκης τι συναγόμενον δεικνύναι)".[15] Elsewhere in the same commentary, Alexander develops the idea that logic studies argument *forms*, that is, syllogistic forms, to which terms stand as matter. This is why a certain syllogism can be represented schematically (indeed Alexander uses the word σχήμα), with letters instead of terms (e.g. "All A is B, all B is C, therefore all A is C"). As has been pointed out, Alexander here seems to be taking a step towards what we might call "formal" logic.[16] Better, one might instead say that he is acutely observing the significance of Aristotle's own steps towards treating logic schematically and "formally".

However, things are not so simple. One reason Alexander and other commentators disagree with the Stoic view is that for them logic is *defined* by its instrumental role, in that the study of logic (when done properly) ignores "useless" yet valid inferences. It is not germane to point out that "If A, then A; A; therefore A" is a valid inference. Rather the serious logician is interested in argument forms that can be used to advance philosophical science.[17] This differentiates the Aristotelian outlook from the modern understanding of logic as the study of purely formal systems (since trivial inferences belong to the system just as much as "useful" inferences). To put it another way, the commentators seem to be interested more in soundness than validity. This becomes clear when they say, in a phrase that will reappear frequently in the Arabic tradition, that the role of

[15] Translation from Alexander of Aphrodisias, *On Aristotle Prior Analytics 1.1-7*, trans. J. BARNES et al. (London 1991).

[16] T.S. LEE, *op. cit.* (n. 13), 38-39, citing Alexander, *in Pr. An.* 53-54 for the form/matter idea and the importance of substituting letters for terms.

[17] Thus T.S. LEE, *op. cit.* (n. 13), 49-50 speaks of Alexander envisioning a "working logic". Cf. K. IERODIAKONOU, *op. cit.* (n. 13), 36. She also points out (p. 38) that the Peripatetics underestimated the Stoics' own stress on the utility of logic. See also A.C. LLOYD, *op. cit.* (n. 13), 18-19.

logic is to "distinguish the true from the false and the good from the evil".

Actually, if we look at the formulation in a preserved excerpt from Elias on the *Prior Analytics*, we see that he is a bit more nuanced than this. What he says is that "philosophy uses logic (κέχρηται τῇ λογικῇ) to show, in the theoretical domain, what is true and what false, and in the practical domain what is good and what is bad".[18] Note that logic does not establish the true, false, good and bad. Rather it is *used* to establish these things. This is an important qualification, because the commentators need to hold on to the idea that logic is merely instrumental, even if it is an indispensable instrument. The goal is to devise arguments which establish truth. And logic is merely necessary, not sufficient, for the grasp of truth. As Katerina Ierodiakonou has argued, the commentators would have a principled reason for insisting on this point. Logic studies the expression (φωνή), not the thing itself (πρᾶγμα). But each philosophical science has some range of objects — real things out in the world — which it studies. For instance, physics studies things subject to motion and rest. Since logic deals with the words which refer to things rather than the things referred to, logic is not a proper philosophical science.[19]

This is, of course, consistent with its merely necessary and non-sufficient character — logic as such is pre-philosophical, precisely because it does not by itself establish truth. Even commentators with more ambitious views of logic acknowledge this. Here I am thinking particularly of Ammonius, who endorses what he identifies as the Platonic valorization of logic as both part *and* instrument of philosophy. This is because he wants to bring Aristotelian logic into close relation with Platonic dialectic (as described in the middle books of the *Republic*, for instance), which is clearly much more than an

[18] Ed. by L.G. WESTERINK, "Elias on the *Prior Analytics*", in *Mnemosyne* 14 (1961), 126-139: 134.23-24.

[19] K. IERODIAKONOU, *op. cit.* (n. 13), 46.

instrument.[20] But Ammonius is able to distinguish "mere" logic from truth-yielding dialectic by using Alexander's idea of syllogistic form which needs to be filled in by matter. Logic is a mere instrument because the form is "empty", but once the arguments (λόγοι) are "taken together with real things" logic becomes a part of philosophy.[21] Ammonius might as well have said that, once applied to the real things, logic is simply *identical* to philosophy, insofar as philosophy consists of demonstrations with a logical form.

In any case, the "non-scientific" status of logic did not prevent it from being every student's introduction to philosophy in the late ancient teaching curriculum. And for good reason: as we've seen, logic is merely instrumental, but it is an indispensable or necessary instrument. One can no more do philosophy without logic than one can do carpentry without tools. This attitude passed into the Arabic tradition along with the textual tradition of commentary on the *Organon*. As has been noted by numerous scholars — notably Gerhard Endress in his study of the standing of logic in Arabic culture — numerous Arabic texts repeat, even verbatim, the commentators' remarks about logic's instrumentality.[22] As usual Ibn al-Ṭayyib adheres closely to the Alexandrian commentators here, remarking for instance that logic is "the instrument for philosophy (*adā li-l-falsafa*); without the instrument, the agent can do nothing."[23] Various members of the Baghdad school also classify logic as an art in terms of its subject-matter and goal, and they reproduce Greek

[20] See P. HADOT, "La logique, partie ou instrument de la philosophie?", in *Simplicius. Commentaire sur les Catégories*, dir. I. HADOT, fasc. 1: Introduction, (Leiden 1990), 183-188, who connects Ammonius' view to the treatment of dialectic in Plotinus, *Enneads* 1.3.

[21] AMMON., *In An. Pr.* I, ed. M. WALLIES (Berolini 1889), 10.38-11.3. For him the Platonic view is the reasonable middle ground between the extreme positions of the Stoics and Peripatetics. Cf. also T.S. LEE, *op. cit.* (n. 13), 40.

[22] See G. ENDRESS, "Grammatik und Logik. Arabische Philologie und griechische Philosophie im Widerstreit", in *Sprachphilosophie in Antike und Mittelalter*, hrsg. von B. MOJSISCH (Amsterdam 1986), 163-299. For a useful overview of the relevant sources see also C. HEIN, *Definition und Einteilung der Philosophie* (Frankfurt a.M. 1985), 153-162.

[23] *in. Cat.*, ed. by C. FERRARI, *op. cit.* (n. 4), 10.25.

ideas about this, saying for instance that its subject-matter is expressions (*alfāẓ*).[24]

The Arabic commentators, however, are in a rather different dialectical situation than the one faced by their Greek predecessors. The latter were opposing a Stoic (and Platonic) tradition which gave too much weight to logic, by making it a full-blown part of philosophy. The former, by contrast, are defending the merits of logic against detractors who argue that it is worthless. In particular, they are confronted by the rival claim of grammar to be the fully adequate study of expressions.[25] So famous as hardly to need mention is the debate before the vizier Ibn al-Furāt, between the grammarian al-Sīrāfī and the father figure of the Baghdad school, the Christian Abū Bišr Mattā. This event, and related criticisms, provoked several responses from members of the Baghdad school. Al-Fārābī thematizes the relationship between logic and grammar in his *Enumeration of the Sciences* (*Iḥṣā' al-ʿulūm*), and Ibn ʿAdī wrote a treatise *On the Difference between Logic and Grammar* which expounds the subject-matter and goal criteria for demarcating each art.[26]

[24] As G. ENDRESS, *art. cit.* (n. 22), 207, points out, *lafẓ* renders φωνή in Isḥāq b. Ḥunayn's Arabic translation of *On Interpretation*. Al-Kindī shows less awareness of the Greek treatment of this issue. In his *On the Quantity of Aristotle's Books*, he unblinkingly makes logic one of four broad areas of the Aristotelian corpus, without mentioning its merely instrumental status. He does, however, implicitly set logic apart in much the way suggested by K. IERODIAKONOU, in that he names types of entities studied by physics, intermediate science (which he here identifies as psychology, elsewhere as mathematics), and metaphysics. Logic has no type of entity assigned to it. See M. GUIDI e R. WALZER, *Uno scritto introduttivo allo studio di Aristotele* (Roma 1940), §II.2.

[25] On the grammar vs. logic debate see G. ENDRESS, *art. cit.* (n. 22); ID., "La controverse entre la logique philosophique et la grammaire arabe au temps des khalifs", in *JHAS* 1 (1977), 339-351; A. ELAMRANI-JAMAL, *Logique aristotélicienne et grammaire arabe: étude et documents* (Paris 1983). The account of the debate from al-Tawḥīdī is edited and translated into English in D. S. MARGOULIATH, "The Discussion Between Abu Bishr Matta and Abu Sa'id al-Sirafi on the Merits of Logic and Grammar", in *JRAS* (1905), 79-129.

[26] Ed. by S. KHALIFAT, *op. cit.* (n. 5), 414-24. Trans. in A. ELAMRANI-JAMAL: "Grammaire et logique d'après le philosophe arabe chrétien Yaḥyā b. ʿAdī (280-364 H/893-974)", in *Arabica* 29 (1982), 1-15. G. ENDRESS, *art. cit.* (n. 22) provides annotated translation of the debate as recounted by al-Tawḥīdī and Ibn ʿAdī's treatise, at p. 238-296.

Because the aim of these philosophers is to extol the importance of logic, they understandably give a rather different impression of logic's status than the Greek commentators, who focus on its mere instrumentality. Admittedly, the members of the school do faithfully repeat that logic is an instrument. Abū Bišr, for instance, is quoted in the report of the debate as saying that logic is "one of the instruments (*ālāt*) by which one knows correct from faulty speech, and unsound from sound concept (*maʿnā*) — like a balance (*mīzān*), with which I may know the more from the less".[27] But formulations like this might easily leave one with the impression that logic sorts out the true from the false on its own. This can be seen from Ibn al-Furāt's purported characterization of Abū Bišr's view when introducing the debate. According to the vizier, Abū Bišr claims that "there is no way to knowledge of the true and false (*lā sabīl ilā maʿrifat al-ḥaqq wa-l-bāṭil*), the right and wrong, or the good and bad, apart from logic". This is the sentiment we found in Elias' commentary on the *Prior Analytics*, but stripped of its nuance: now logic is *the way* to know truth, goodness and so on, rather than something that is *used by philosophy* to know these same things.

Of course we can hardly rely on Ibn al-Furāt (or those who are reporting the debate to us) to capture Abū Bišr's view accurately. But an almost identical statement is given by Ibn ʿAdī's student Ibn Zurʿa in his own defense of logic: "it is clear and obvious, to anyone who knows about logic or follows what its adherents have said, that logic is an art whose goal (*ġaraḍ*) comprises the sorting out (*taḫlīṣ*) of true from false in speech, and the discrimination (*tamyīz*) of good from evil in action".[28] This is in at least superficial disagreement with Ibn al-Ṭayyib, who

[27] D.S. MARGOULIATH, *art. cit.* (n. 25), 93.

[28] N. RESCHER, "A Tenth-Century Arab-Christian Apologia for Logic", in *Islamic Studies* 2 (1963), 167a9-11. Ibn Zurʿa is arguing against unnamed opponents who accuse logic of undermining religion rather than of being superfluous. He takes the rather surprising line that logic instead lends an important support to religion, because it distinguishes the possible from the impossible. This allows us to define a miracle as that which is (naturally) impossible; hence without logic there can be no concept of miracles!

following a different strand of the Greek tradition (found in Ammonius, Elias and others), says that the end (*ġāya*) of logic is demonstration (*burhān*).[29] Ibn ʿAdī's *On the Difference between Logic and Grammar* also makes demonstration the definitive end of logic. Logic's subject-matter is "expressions insofar as they refer to universal things (*al-umūr al-kulliyya*)",[30] and the reason the things in question must be universal is that the goal is demonstration. For demonstration concerns itself only with universals, not particulars.[31] A demonstration is, more precisely, a composition of universal referring expressions into a syllogism which is (necessarily) in accord with the way things really are. Ibn ʿAdī thus goes on to give the following overall definition of logic: "the art which is concerned with expressions which refer to universal things for the sake of composing [those expressions] in a way that agrees with the things to which they refer".[32]

Again, one could be forgiven for thinking that someone who has perfectly mastered logic can dispense with the rest of philosophy. If I am already in possession of syllogisms that confer universal knowledge of how things are, what else remains to be done? Alternatively, to put it in terms of the formulation used by Ibn al-Furāt and Ibn Zurʿa, if logic tells me the difference between true and false, good and evil, isn't it a *sufficient* condition for philosophical wisdom, rather than a mere necessary instrument? As I say, it is natural that the philosophers might give this impression, given their need to stress the value of logic. But in fact, the defense of logic requires them only to show that it is a *necessary* and not sufficient means of reaching truth. Whereas the Greek commentators needed to emphasize, against the Stoics, that logic is only an instrument, the Baghdad school

[29] K. GYEKYE, *op. cit.* (n. 4), §52.

[30] S. KHALIFAT, *op. cit.* (n. 5), 422. Of course Ibn ʿAdī is thinking here of Porphyry's understanding of the *Categories* as studying words insofar as they signify things.

[31] On this see P. ADAMSON, "Knowledge of Universals and Particulars in the Baghdad School", in *DSTFM* 18 (2007), 141-164.

[32] S. KHALIFAT, *op. cit.* (n. 5), 423.

needs to emphasize, against al-Sīrāfī and his ilk, that it is an instrument one cannot do without.

Thus our philosophers owe us an account of why logic is a necessary tool for reaching the goals they mention — discerning truth from falsehood and good from evil, producing demonstrations — without being by itself capable of reaching those goals. To my knowledge the first adequate answer to the question in the Arabic tradition is suggested by al-Fārābī, and further taken up by Ibn ʿAdī. For al-Fārābī the key text is found in his *Enumeration of the Sciences*:

> "Among the objects of the intellect, there are some things about which the intellect cannot err at all. These are the things man perceives by himself as if he were naturally endowed with knowledge of them and certainty regarding them — for example that the whole is greater than the part, and that every three is an odd number. About other things it is possible to err, and to deviate from truth to untruth. These are the things which are such as to be grasped with ratiocination (*fikr*) and consideration (*ta'ammul*), by argument and proof. So regarding these, but not regarding the things [known immediately], the man who seeks to arrive at certain truth about what he is inquiring into needs the canons (*qawānīn*) of logic."[33]

Al-Fārābī unfortunately omits to explain further, proceeding instead to a comparison between logic and grammar which is rather unflattering to grammar (logic deals with objects of the intellect, grammar with linguistic expressions).

But for greater illumination, we can turn to Ibn ʿAdī — not his study of logic in relation to grammar, but the more rarely studied *On the Four Scientific Questions Regarding the Art of Logic*.[34] This

[33] Al-Fārābī, *Catálogo de las ciencias*, ed. y trad. por A. GONZALEZ PALENCIA (Madrid 1953), 22.5-14 in the Arabic text.

[34] M. TÜRKER, "Yaḥyā ibn ʿAdī ve Nesredilmemis, bir Risalesi", in *Ankara Üniversitesi Dil ve Tarih-Cografya Fakültesi dergisi* 14 (1956), 87-102, Arabic edition at 98-102. Trans. in N. RESCHER and F. SHEHADI, "Yaḥyā Ibn ʿAdī's Treatise 'On the Four Scientific Questions Regarding the Art of Logic'", in *JHI* 25 (1964), 572-578. I quote from the Rescher and Shehadi translation, with some modifications, giving the page and line number from the Türker edition.

little treatise implicitly raises the issue of logic's necessity (that is, instrumentality) as opposed to its suffiency, and gives a persuasive account of why it is merely necessary. Ibn ʿAdī defines logic in now-familiar terms as "an instrumental art by which one discriminates between truth and falsehood in theoretical science, and between good and evil in practical science" (98.19-20). He then explains each term in the definition, one by one, in a manner reminiscent of his somewhat pedantic approach to commenting on lemmata in Aristotelian texts. His explanation of the term "instrument (*āla*)" is that it is something intermediary (*mutawassiṭa*) between the artisan and his subject (99.1-2). This is reprised in the next paragraph, in which Ibn ʿAdī stresses the absolute need for logic (99.11-13):

> "The good obtained through [logic] and apprehended by the intermediary [of logic] (*bi-tawassuṭihā*) is beyond any parallel, since it [sc. this good] is complete happiness. There is no happiness more complete for theory than belief in the truth, and it is through it [sc. logic] that this is apprehended; and in action no [happiness] more complete than acquiring the good, without which it cannot be possessed."

As with other passages we've examined, this could give the impression that logic is all one needs in life, whether in theory or in practice. But a more careful reading shows that Ibn ʿAdī is careful to describe it as an instrument and intermediary to the end of happiness. Again, the question is how exactly it serves to bring us to truth and the good, without doing all the work itself.

His answer is given shortly thereafter (99.14-100.7), and has a clear relationship to what we have seen in al-Fārābī. The relevant passage is too long to quote in its entirety, so I summarize: whatever is known (*maʿrūf*) is known either with no need for proof, because it is self-evident, or known by means of proof. Things known without proof are either sensible forms (which may be essential or accidental), or immaterial and grasped directly by the intellect. Of the latter, there are simple things known by stipulation (*waḍʿ*) and definition, and there

are composed things we know as "immediate premises (*muqaddimāt ġayr ḏawāt awṣāt*)" (99.25). As for that which is known by proof, knowledge "is obtained by resorting to [logic] from a knowledge of things other than it, with a need for prior, antecedent knowledge in making it known. This type of knowledge-acquisition is called proof, argument, and demonstration" (99.27-9). He illustrates the point by referring to the way mathematicians derive previously unknown essential truths from the properties of things like lines and numbers.

Ibn ʿAdī's explanation of logic's instrumental role must be understood in the context of the foundationalist epistemology of Aristotle's *Posterior Analytics*. As explained there, there are two kinds of knowledge involved in science. First, there are the things we know by proving them — Aristotle calls these things objects of "demonstrative knowledge (ἐπιστήμη)" (II.19, 99b15-17). But we cannot demonstrate everything, because this would lead to an infinite regress (see *Post. An.* I.3, 72b18-25). Thus there must be some things known immediately — in *Post. An.* II.19 the state of knowing such things is not called ἐπιστήμη but rather νοῦς.[35] Ibn ʿAdī, making more explicit what is surely already implicit in the passage from al-Fārābī's *Enumeration*, says that logic enables us to extend our immediate knowledge so as to produce demonstrations. I take it that he means something like this: I have immediate knowledge that man is animal. I also know immediately that every animal is mortal.[36] I then use a logical

[35] On this chapter see P. ADAMSON, "*Posterior Analytics* II.19: a Dialogue with Plato?", in *Aristotle and the Stoics Reading Plato*, ed. by V. HARTE, M.M. MCCABE, R.W. SHARPLES and A. SHEPPARD (London 2010), 1-19.

[36] Of course there is a puzzle about how such things could be known "immediately", unlike al-Fārābī's examples ("the whole is greater than the part"). But Ibn ʿAdī has made a place for principles like this by mentioning items of knowledge grasped directly through sensation, and in this he is true to the account in *Post. An.* II.19. Note that "immediately" should not be taken to mean something like "instantly" or "from the beginning", as al-Fārābī suggests in the case of fundamental rules of reasons. Rather, it means without any antecedent premises. This is consistent with the idea that a first principle might be grasped only after a lengthy process of induction based on sensation.

scheme (All A is B; All B is C; Therefore All A is C) to infer that man is mortal. Without the logical scheme I would be unable to extend my knowledge any further than what I know immediately. Recall that Ibn ʿAdī has defined "instrument" as an intermediary, and now it is clear why: logic is instrumental because it is the intermediary used to arrive at mediated knowledge.

Notice that on this account, we can in fact have certain knowledge of many things without using logic. (So Ibn al-Ṭayyib is exaggerating when he says, as we saw him saying above, that the philosopher can do *nothing* without logic — unless he holds, rather implausibly, that immediate knowledge is not part of "philosophy".[37]) The indispensability of logic does not consist in its supplying us with the principles of knowledge, but with *completing* our knowledge and thus conferring total happiness, that is, the fulfillment of our rational capacity. Obviously this raises further questions. For instance, we might be willing to admit that logic, when added to immediate knowledge of principles, could in theory lead us to theoretical perfection. But to say the same about practical perfection would imply a highly rationalist account of ethics, in which we reach the practical good simply by reasoning correctly from first practical principles.[38]

Leaving this aside, it is worth asking whether Ibn ʿAdī and like-minded philosophers genuinely adhere to a purely instrumental vision of logic, in which it does nothing but to extend

[37] Incidentally it is worth noting an echo of Ibn ʿAdī's account in Ibn al-Ṭayyib. In the *Categories* commentary (ed. by C. FERRARI, *op. cit.* (n. 4), 18.21ff), he contrasts things grasped without error and immediately by sensation, as well as things grasped as principles by the intellect, with those that are grasped only by prior knowledge. His examples of the former are more like al-Fārābī's: that equal things are equal to the same thing and that the whole is greater than the part. But since other things do stand in need of proof, "this logical art is intended precisely to give us a way (*ṭarīq*) and method by which we may adequately reach hidden things by means of evident things: namely demonstration" (19.15-17).

[38] Indeed this sort of view is put forth by al-Fārābī in other contexts, as I have pointed out at P. ADAMSON, *art. cit.* (n. 31), 149.

knowledge from what is grasped immediately. I think this depends on what we understand as falling under "logic". The logic Ibn ʿAdī has in mind is basically syllogistic, so that his account applies primarily to logic as we find it in the *Prior Analytics*. It could certainly be adapted to explain the need for texts like the *Topics* and *Sophistical Refutations* as well, since these help us avoid invalid, and valid but non-demonstrative, inferences. But the *Organon* touches on many themes other than validity and the criteria required for demonstration. The *Categories* commits Aristotle to a division, at least, of words into 10 types — and for the post-Porphyrian tradition, this division has ontological significance insofar as the *Categories* studies "words as they refer to things". Even restricting ourselves to the criteria for demonstration, consider a claim Ibn ʿAdī highlights in *On the Difference between Logic and Grammar*: that demonstrative knowledge is always of universals. This notion is put to use in such robustly non-logical contexts as Avicenna's proof of the immateriality of soul and his discussion of God's knowledge of particulars.[39] In short, Aristotle's *organon* may include some metaphysics and certainly includes what we would call epistemology. So even if Aristotle's Greek and Arabic interpreters manage to show that logic is an instrument, not a part, of philosophy, they have little hope of showing that the *Organon* is instrumental for, rather than part of, Aristotelian philosophy.

Physics or Theology? Arguments for and against the World's Eternity

Consider the following two ancient Greek arguments for the eternity of the world:

[39] I have discussed these issues in P. ADAMSON, "Correcting Plotinus: Soul's Relationship to Body in Avicenna's Commentary on the *Theology of Aristotle*", in *Philosophy, Science and Exegesis in Greek, Arabic and Latin Commentaries*, ed. by P. ADAMSON, H. BALTUSSEN and M.W.F. STONE, 2 vols (London 2004), vol. 2, 59-75; ID., "On Knowledge of Particulars", in *PAS* 105 (2005), 273-294.

> Assume there is a first motion. Then what is potentially moved either (a) comes into existence at some moment, or (b) is potentially moved for an eternity before actually moving. In either case, a prior motion is required: in the case of (a), to make the movable exist, or in (b) to actualize the movable's potentiality for motion. Thus the supposedly first motion is not after all first, which shows that the assumption of a first motion is incoherent. Similarly, motion cannot end, because whatever destroyed the last mover would itself need to be destroyed.
>
> The maker of the cosmos is eternally generous, and creates through his generosity; therefore the cosmos that he creates is eternal. Furthermore, if he went from not creating to creating or vice-versa, he would change, but the maker of the cosmos is immutable.

The first summarizes Aristotle's argument in *Physics* VIII.1 (251a9-b10; 251b28-252a6), the second Proclus' opening argument in his *On the Eternity of the World.*[40] Both arguments attempt to prove the same conclusion, namely that the physical cosmos is eternal *ex parte ante* and *ex parte post.* Despite this they are importantly different in strategy.

Aristotle's argument is presented alongside other proofs of the world's eternity given in *Physics* VIII. For instance, he argues that there cannot be a first moment of time, because this is incoherent (251b10-251b28), and that since heavenly motion is circular, it can be beginningless and endless, having no contrary (264b9-265a12; cf. *De caelo* I.3). These arguments all turn on Aristotle's conception of motion: either motion in general, or time which measures motion, or the motion of the

[40] H.S. LANG and A.D. MACRO (ed. and trans.), *Proclus, On the Eternity of the World* (Berkeley 2001). The first argument is preserved only in Arabic, and is translated in the volume by J. MCGINNIS. For the Arabic text see also A. BADAWĪ (ed.), *Neoplatonici apud arabes* (Cahirae 1955), 34.4-35.8. For a French translation see G.C. ANAWATI, "Un fragment perdu du *De Aeternitate Mundi* de Proclus", in *Mélanges de Philosophie Grecque offerts à Mgr. Diès* (Paris 1956), 23-25. For a German translation by P. HEINE see M. BALTES, *Die Weltentstehung des platonischen Timaios nach den antiken Interpreten*, volume II (Leiden 1978), 134-136. The extant Greek portions of Proclus' text may be found in John Philoponus, *De aeternitate mundi contra Proclum*, ed. H. RABE (Lipsiae 1899).

heavens. This is no accident, for physics is the study of motion. These are, then, properly *physical* arguments for the eternity of the world. While Aristotle believes that the eternal motion of the cosmos does require an explanatory principle that is itself unmoving, a "first mover", this principle is not first in the order of discovery. What we grasp first is the nature of motion; then we grasp that motion must be eternal; and only then do we argue from the eternity of motion to an eternal cause of that motion.

Proclus uses a very different strategy, proving the eternity of the cosmos by appealing to the eternity and generosity of its maker, which he simply assumes (he is of course thinking of the Demiurge in Plato's *Timaeus*). A number of Proclus' arguments in *On the Eternity of the World* have this structure, which as we will see is representative of Proclus' way of understanding the world's eternity. For him the world is not eternal in its own right, so to speak, but rather because it is the effect of an eternally active cause. Thus the most appropriate way to understand or demonstrate the world's eternity would be by reasoning from the nature of its cause. We could call this a *theological* approach.

The purpose of this second section of my paper is to trace these two contrasting approaches to the question of the world's eternity through some authors of late Greek and early Arabic philosophy. The issue is whether the world's eternity is properly answered by physics or by metaphysics. Here "metaphysics" is understood to mean the study of the ultimate causes of things. This terminology is perhaps anachronistic for some of the Greek authors discussed below (and certainly for Aristotle, who of course does not use the word or title "metaphysics"). But it captures the way that early Arabic philosophical works tend to treat physics and metaphysics. For instance Abū Sulayman al-Siǧistānī, a student of Ibn ʿAdī, says:

> "Inquiry concerning the conjunction of effects with causes has two aspects: the first, insofar as it ascends through their connections to their cause; the second, insofar as the power of the cause

pervades its effects. Inquiry in the first mode belongs to the physicist; in the second, to the science of metaphysics."[41]

Applying this contrast to the problem of the world's eternity, the "physical" approach means arguing for or against eternity from what we actually observe about the world, especially about motion and things that are in motion, since for Aristotle this is the subject-matter of physics. We may then, following Aristotle, use the eternity of the world and its motion to argue that the world must have an eternal moving cause. The "metaphysical" or "theological" approach, by contrast, answers the same question by appealing to necessary truths governing the causation excercised by world's principle(s).

To understand the Peripatetic treatment of these problems one can do no better than to turn once again to Alexander. As it happens one of the most important texts for establishing his thought on the eternity of the world is not preserved in Greek, but only in Syriac and Arabic translations: this is the text known as *On the Principles of the Cosmos*.[42] After an introductory section, the *Principles* begins by explaining (§4) that "natural" bodies are bodies that have principles of motion. Indeed an internal (*fī ḏātihi*) principle of motion is what we mean by "nature" (*ṭabīʿa*). The heavens have such a principle, and are thus natural bodies. Furthermore, as Alexander remarks, discussions elsewhere have shown that the heavenly bodies are "divine, ungenerated and imperishable" (§4).

Thus at the very outset of the work, Alexander has indicated his adherence to what I have called the physical approach to

[41] The passage appears in *On the First Mover*, translation from J.L. KRAEMER, *Philosophy in the Renaissance of Islam. Abū Sulaymān al-Sijistānī and his Circle* (Leiden 1986), 291.

[42] C. GENEQUAND (ED.), *Alexander of Aphrodisias on the Cosmos* (Leiden 2001). Citations are to Genequand's section numbers. See further G. ENDRESS, "Alexander Arabus on the First Cause: Aristotle's First Mover in an Arabic Treatise attributed to Alexander of Aphrodisias", in *Aristotele e Alessandro di Afrodisia nella tradizione araba*, a cura di C. D'ANCONA e G. SERRA (Padova 2002), 19-74.

the question of the world's eternity. The heavens are natural, despite their divinity, and their nature ensures their eternity (see further §46, §57). Other arguments for eternity in the *Principles* are taken from the *Physics*. Alexander uses Aristotle's argument against the possibility of a first motion (§66-69), and also rehearses the argument that there cannot be a first instant of time (§70-71), since any instant has time both before and after it — an allusion to the Aristotelian doctrine that the "now" or instant is not a part of time, but is without extension, a division between past and future.[43] Recognizing the eternity of motion allows us to establish the eternity of an unmoved mover. Alexander says both on his own behalf and on that of Aristotle that we know the first cause is eternal because we know its effects are eternal, rather than vice-versa (§49, §89; compare Aristotle, *Physics* 259a6-7).

Another passage in the *Principles* likewise reveals Alexander's commitment to the physical approach. He has just pointed out that sublunar bodies constantly change into one another, and are thus generable and perishable. He then continues:

> "This kind of perishability existing in the universe is not something happening to it by the will and resolution of some other being, I mean by that the divine things, but it is something inherent in its proper nature. For it does not fit the divine nature to will that which is not possible, just as it is not possible either, according to the opinion of those who profess the doctrine of creation, that perishability should attach to what has not been generated at all."[44]

Even though the divine causes (the first cause and the heavens) do bring about change in the sublunar world, the proper nature of sublunar bodies is in a sense independent of those causes. What is possible for the sublunar bodies is determined by their nature, and the same is true for the heavens: since they

[43] See also R.W. SHARPLES, "Alexander of Aphrodisias, *On Time*", in *Phronesis* 27 (1982), 58-81. This notion of the instant is affirmed in the passage translated as §11-13, at p. 62-63.

[44] §139-140, translation from C. GENEQUAND, *op. cit.* (n. 42).

are *not* generable, they must also be incorruptible.[45] Alexander believes we can come to know the corruptibility of sublunar bodies and the eternity of the heavens (and thus of the cosmos as a whole) by studying their natures, that is, by understanding the intrinsic principles of their motions. This is the case even though, as he says elsewhere, the eternal motion of the heavens has the prime mover as an extrinsic final cause (§52).

This should be compared to one of Alexander's *Quaestiones* (1.18), where Alexander argues "that it is not possible for the world to be incorruptible through the will of God, if it is corruptible by its own nature".[46] This *quaestio* has attracted attention for its discussion of modal notions: Alexander holds that it is impossible for S to be P when S is prevented from being P, or when S has no natural disposition towards being P.[47] In light of this, Alexander is able to refute the Platonist position that "according to its own nature", the world is disposed towards corruption and not eternity, but that the world nevertheless possesses an eternal existence given to it extrinsically by God (as we will see below, this is roughly the position that will be taken up by Proclus). Employing his notion of impossibility, Alexander argues (31.25-32.3) that if the world has no innate disposition towards eternity, it cannot possibly be eternal. Even God cannot make such a thing eternal, since, as he says, "what is impossible in this way, since it is impossible for all, is impossible even for the gods" (32.3-4). The Platonists' position is, he might say, like holding that water has no innate disposition to be dry, but could be made dry by the gods. Alexander's own view is of course that the Platonists are exactly wrong: the nature of the world is such that it has only a dispo-

[45] For this commonly held principle in Greek thought, see L. JUDSON, "God or Nature? Philoponus on Generability and Perishability", in *Philoponus and the Rejection of Aristotelian Science*, ed. by R. SORABJI (Ithaca 1987), 179-196.

[46] Alexander of Aphrodisias, *Quaestiones*, ed. I. BRUNS (Berolini 1887), 30.23-24.

[47] See the citations provided in Alexander of Aphrodisias, *Quaestiones* 1.1-2.15, trans. R.W. SHARPLES (London 1992), at p. 66-70.

sition to be *eternal*, not to be corrupted. Thus it is impossible — purely because of the world's nature — that the world be generated or corrupted.[48]

Things look a bit different in the works of Themistius. His views on the world's eternity are again largely faithful to those of Aristotle, as may be gleaned not only from his paraphrases of the *Physics* and *De caelo*,[49] but also from his paraphrase of *Metaphysics* Book *Lambda*, which is preserved in Arabic, Hebrew and Latin.[50] In Book *Lambda*, chapter five, Aristotle had appealed to the eternity of the world as a premise for proving the existence and nature of the first cause. He did not, however, attempt to prove here that the physical world is eternal — as we would expect, if it is right to say that he sees this as a matter for physics. In his paraphrase of this chapter Themistius mostly confines himself to expanding on allusions to the world's eternity by inserting versions of the *Physics* VIII arguments, e.g. on time (at 12.13 ff.) and the impossibility of a first motion (13.5 "there is no origination of motion except through [another] motion").

[48] Admittedly Alexander does also use arguments that are not straightforwardly "physical". For example, he alludes repeatedly in the *Principles* (e.g. at §23) to the fact that the heavens "imitate" the eternity of the first cause.

[49] In his paraphrase of *Physics* 8.1, for example, Themistius follows Aristotle closely in arguing for the impossibility of a beginning of motion (210.3ff) or time (211.34ff, concluding with the point that "if time is eternal, then so is motion", 212.8), and for the impossibility of an end to motion (212.10ff). Like Aristotle and Alexander he says that the eternity of the first mover follows from the eternity of motion (233.14-17). For the *Physics* paraphrase see the edition of H. SCHENKL (Berolini 1900); for the extant Latin version of the *De caelo* paraphrase see the edition of S. LANDAUER (Berolini 1902).

[50] Arabic edition in A. BADAWĪ, *Arisṭū ʿinda l-ʿarab* (al-Qāhira 1947). Latin and Hebrew editions by S. LANDAUER (Berolini 1903). Badawī's Arabic text must be read alongside the textual variants supplied in R.M. FRANK, "Some Textual Notes on the Oriental Versions of Themistius' Paraphrase of Book I [sic] of the *Metaphysics*", in *Cahiers de Byrsa* 8 (1958-1959), 215-230. French translation by R. BRAGUE in Themistius, *Paraphrase de la Métaphysique d'Aristote (livre Lambda)* (Paris 1999). On this text see also S. PINES, "Some Distinctive Metaphysical Conceptions in Themistius' Commentary on Book *Lambda* and Their Place in the History of Philosophy", in his *Collected Works, volume III* (Jerusalem 1996), 267-294.

So far, so Peripatetic: he merely makes explicit the physical arguments that Aristotle has given elsewhere. But consider the following:

> "We say that motion cannot cease or come to be. If it were originated, then its mover would be prior to it. But how can we imagine that it has a mover, which is eternal (*azalī*), but that it does not come to be from it for all of eternity (*dahr*)? There is nothing to prevent its coming to be from it. And there is nothing that begins to be in a state, such that by being in this state it would originate [the motion], since all that originates only originates from [the first mover], but there is nothing other than [the first mover] that could hinder it or awaken its desire. Nor is it possible for us to say that it was first incapable of bringing its effect about, and then capable, [or that it first did not will and then willed, or did not know and then knew,][51] because this would require change, which would in turn require that there be something else that changes it [sc. the first mover]. But if we say that there is something that prevents it [from causing the motion], then it would follow that there is some other cause more powerful than it."[52]

At the beginning of the passage Themistius is alluding to the argument of *Physics* VIII.1 with which we began this section. But he soon veers off into an argument that is more reminiscent of Proclus': the first cause is immutable, unique, and cannot be made to act by anything else. Thus it is the nature of the *cause* that determines the eternity of its effect. So in this passage, at least, we can see Themistius going further than Alexander in a Platonizing direction, using metaphysical argumentation in the midst of a generally physical treatment of the world's eternity.

Let us turn now to Proclus, whose discussion of the eternity of the world in his *Commentary on the Timaeus* is among the most clear and detailed expositions of the problem from a Neoplatonic point of view.[53] The fact that this exposition is

[51] This phrase in brackets appears in the version reported by Sharastānī: see R.M. FRANK, *art. cit.* (n. 50), 220 n. 73.

[52] A. BADAWĪ, *op.cit.* (n. 50), 12.18-13.5; cf. 14.21-32 in the Latin version.

[53] *Procli Diadochi in Platonis Timaeum commentaria*, ed. E. DIEHL (Lipsiae 1903), 276.8-296.12. See further J. F. PHILLIPS, "Neoplatonic Exegeses of Plato's Cosmogony (*Timaeus* 27C-28C)", in *JHPh* 35 (1977), 173-197; R. SORABJI,

found in the context of interpreting the *Timaeus* is no accident. Just as the decisive texts on the world's eternity were, for the Peripatetics, two unambiguously physical works from Aristotle's corpus (the *Physics* and *De Caelo*), so for the Platonists the question of the world's eternity arises in the context of discussing the *Timaeus*.[54] Since Platonists saw the *Timaeus* as the dialogue in which Plato sets out his views on the physical world,[55] we might initially expect Proclus to pursue exclusively physical arguments in his *Commentary*. And in fact, in this very section on the world's eternity, Proclus reproaches his predecessor Severus for "bringing mythic obscurities into natural philosophy" (I 289.14-15), going on to add, "these exegetical points, being unrelated to physics, must not be admitted" (290.2-3). However, matters are complicated by the fact that for Proclus, the *Timaeus* is also a work of theology, insofar as the dialogue sets out how the physical cosmos is fashioned by a demiurge.[56] Thus it is as a practicioner of "natural philosophy" in a rather different sense than Aristotle's that Proclus addresses himself to the infamous interpretive difficulty raised by Plato's claim, at *Timaeus* 28b, that the physical world "has

Time, Creation and the Continuum (London 1983), chapters 13-15; G. VERBEKE, "Some Late Neoplatonic Views on Divine Creation and the Eternity of the World", in *Neoplatonism and Christian Thought*, ed. by D.J. O'MEARA (Albany 1982), 45-53.

[54] As H.S. LANG and A.D. MACRO, *op. cit.* (n. 40), remark, "for the Platonists the problem of the eternity of the world is indistinguishable textually from Plato's *Timaeus* and its account of how the world, or cosmos, is made" (21).

[55] Proclus himself announces at the beginning of his commentary (1.17-18) that the topic of the dialogue is the philosophy of nature. On this see now M. MARTIJN, *Proclus on Nature* (Leiden 2010).

[56] This becomes clear especially from Proclus' use of the *Timaeus* in his *Platonic Theology*. See Proclus, *Théologie Platonicienne*, vol. I, texte établi et trad. par H.D. SAFFREY et L.G. WESTERINK (Paris 1968), e.g. at 19.6-8 (the *Timaeus* is one of the dialogues that studies "divine things" from a mathematical, ethical, or physical point of view); 24.17 (it is one of the most important dialogues for Plato's theology); 25.8-11 (it deals specifically with the intellectual gods, the demiurgic monad, and the encosmic gods, see further 27.17-18); 29.24-30.3 (the *Timaeus* is about physics, but "for the sake of natural philosophy" must also deal with the noetic gods, since one knows images through their paradigms). See also the use of the *Timaeus* at *Platonic Theology* V.15-20.

been generated, beginning from some starting-point (γέγονεν, ἀπ' ἀρχῆς τινος ἀρξάμενος)".

An earlier Platonist reading of this passage, associated with Atticus and Plutarch, understands Plato to be saying that the world has a beginning (ἀρχή) in time, and takes γέγονεν to be a reference to that temporal beginning. Proclus rejects this, arguing that γέγονεν instead echoes the immediately preceding contrast (*Timaeus* 27d-28a) between the realm of becoming (τὸ γιγνόμενον) and the intelligible world of being (τὸ ὄν). The cosmos, holds Proclus, is perpetually in a state of coming-to-be, and thus it may said always to be undergoing generation. As for the word ἀρχή at 28b, it refers not to a temporal beginning but to an "external cause", namely the Demiurge himself (see *In Tim.* I 279.23-25). Proclus praises his Neoplatonic predecessors Plotinus, Porphyry, and Iamblichus for likewise seeing the passage as a reference to the fact that the world has an external cause, rather than a beginning in time (I 277.11-14).

Proclus gives a series of arguments against the idea that the world has a temporal beginning. Most of them are textual; that is, Proclus tries to establish Plato's meaning by citing other passages in the *Timaeus* and beyond. For our purposes his final two arguments (I 288.14ff) are more interesting. These proceed, like the first argument of his *On the Eternity of the World*, from the nature of the Demiurge. Unlike the cosmos the Demiurge belongs to the realm of being, and thus he must always be doing whatever he does. But, "if he always makes (δημιουργεῖ), what is made always exists too" (I 288.16-17). On the other hand, the eternity (ἀιδιότης) possessed by the world is not the same as the timeless eternity (αἰῶν) of the realm of being; rather the world is eternal in the sense of lasting for infinite time. And it is preserved eternally only by the constant renewal of its existence by its cause (I 278.19-21). So the generation of the world is not the generation of something that comes to be and later passes away, or that begins moving and later completes its motion. It is not, that is, the sort of

generation studied in physics.[57] To Proclus' mind, it is part of Plato's superiority over Aristotle that Plato grasps the need to ground the world's continued existence in theological, rather than physical, principles (I 295.22-27).

In arguing that the question of the world's eternity is decided above all by its relationship to an external cause, Proclus opens the door for anti-eternity arguments that belong to the same theological or metaphysical arena. The opening was exploited by John Philoponus in his works on the eternity of the world. We are in possession of fragments of a work rebutting Aristotle's arguments for the eternity of the world in *De caelo* and the *Physics* (*Against Aristotle*),[58] and a monumental treatise which repeats, and then refutes, Proclus' arguments in *On the Eternity of the World* (*Against Proclus*).[59] Philoponus seems also to have written an independent treatise arguing that the world cannot be eternal because it does not possess infinite power; this work was known in the Arabic tradition.[60] Philoponus uses different strategies in responding to Aristotle's physical arguments and Proclus' theological arguments. Against Aristotle, he argues that since the heavens are finite (by virtue of the fact that they are bodies), they cannot move for an infinite period of time by their very nature.[61] Instead — and here Philoponus could find some common ground with Proclus — if the heavens move

[57] See the remark of J.F. PHILLIPS, *art. cit.* (n. 53), 178, that "*to aei gignomenon* means for Proclus that which comes to be by a cause external to it (*in Tim.* I 279, 24f.)... this relationship to its higher cause makes the cosmos a special sort of *genêton* to which the concepts of the natural sciences do not apply".

[58] Preserved in Simplicius' commentaries on *De caelo* and the *Physics*; see Philoponus, *Against Aristotle on the Eternity of the World*, trans. C. WILDBERG (London 1987).

[59] Ed. by H. RABE (Leipzig 1899; reprinted Hildesheim 1984).

[60] See S. PINES, "An Arabic Summary of a Lost Work of John Philoponus", in *IOS* 2 (1972), 320-352; reprinted in his *Studies in Arabic Versions of Greek Texts and in Medieval Science*, vol. 2 (Jerusalem 1986). This may or may not be the same as the work discussed by Simplicius at *in Phys.* 1326-36. See Philoponus and Simplicius, *Place, Void, and Eternity*, trans. D. FURLEY and C. WILDBERG (Ithaca 1991), 107-128.

[61] SIMPL., *in Cael.*, ed. J.L. HEIBERG (Berolini 1894), 79.2-8; Fragment II.49 in Philoponus, *Against Aristotle*, trans. C. WILDBERG, *op. cit.* (n. 60).

eternally they can do so only by receiving the infinite power required to do so from an external cause. There is no possibility, then, of a physical proof of the heavens' eternity. Similarly, in refuting the arguments given by Aristotle in *Physics* 8, Philoponus argues that Aristotle has illegitimately assumed that the production of the world must be like the production of anything in nature. But this is false, because the world is created by God, and God's creative act need not obey the laws of nature.[62]

When arguing against Proclus, Philoponus must of course take a different tack. Here it will not be sufficient simply to say that the physical world's nature is compatible with a beginning in time. He must dispute Proclus' claims about the way in which God, or the Demiurge, in fact creates the world. Only this will tell us whether the world is eternal or not. As I have pointed out elsewhere, Philoponus seems to be aware that his task is to show that even the Demiurge cannot create an eternal cosmos.[63] For instance, an eternal world would require there to be an actual infinity, which is impossible, as Aristotle and Proclus both admit. Likewise, an eternal world would be equal to its Creator in eternity, but this is impossible, for what is brought into being must be lesser than its cause. These are not physical impossibilities that have to do with the nature of the created cosmos: rather they are absolute impossibilities, which limit the possible outcome of God's creative power and generosity. Philoponus recognizes that he and Proclus in a sense agree, insofar as both accept that the world's temporal duration is determined by God, not by its nature: "if Proclus agrees with Plato about these doctrines [sc. that the world acquires its being from an external cause, is in itself generable and corruptible, and is finite], then he makes it clear that the world is corruptible by its nature, while incorruptibility belongs to it

[62] SIMPL., *in Phys.*, ed. H. DIELS (Berolini 1882, 1895), 1141.12-16; Fragment VI.115 in Philoponus, *Against Aristotle*, trans. C. WILDBERG, *op. cit.* (n. 60).

[63] See P. ADAMSON, *Al-Kindī* (New York 2007), 84-85.

from above nature, supplied by some superior power" (§29, 240.19-23).

Recent scholarship has suggested that the Arabic tradition continues this trend towards establishing the world's eternity through theological or metaphysical arguments, rather than physical ones. As we might expect given Philoponus' influence on him, al-Kindī is a good example.[64] In fact al-Kindī seems even happier than Philoponus to assume that physical considerations are not decisive in settling the matter. He enthusiastically endorses Aristotle's cosmology, according to which the heavens consist of an ungenerable and indestructible fifth element — but adds that, of course, the heavens can only exist for as long as God wills.[65] He thus casually discards as irrelevant the entire debate between Philoponus and Aristotle. And reasonably so, if physical considerations are in any case overriden by theological ones. Similarly, a recent study by Marwan Rashed showed that al-Fārābī saw Aristotelian arguments for the world's eternity drawn from physics as falling short of demonstrative status.[66] Some such arguments are merely dialectical. Others can be used to prove the *fact* that the world is eternal, without attaining a demonstration, because a proper demonstration argues from cause to effect (in this case, from God to the world). Thus only a theological argument can be demonstrative.[67]

I have elsewhere suggested that al-Kindī was motivated to disprove the world's eternity because he adhered to the contemporary theological contrast (as seen most prominently in the controversy over the nature of the Qur'ān) between the

[64] Or so I have argued in *ibid.*, 88.

[65] See his *On the Nature of the Celestial Sphere*, at M. ABŪ RĪDA (ed.), *Rasā'il al-Kindī al-falsafiyya*, 2 vols (al-Qāhira 1950/53), vol. 2, 40-46: 46.

[66] M. RASHED, "Al-Fārābī's Lost Treatise *On Changing Beings* and the Possibility of a Demonstration of the Eternity of the World", in *ASPh* 18 (2008), 19-58: 21 for Maimonides' distinction between natural and theological proofs.

[67] *Ibid.*, 44. Such proofs would proceed, for instance, from the eternity and unchanging activity of God to the eternity of His effect, namely the world.

eternal and the created.[68] He does not consider the possibility that something could be both created *and* eternal. This uncritical acceptance of the created-eternal dichotomy could not last for long, and indeed it was already rejected by al-Kindī's contemporary Thābit Ibn Qurra. His short treatise explaining Aristotle's *Metaphysics* has recently been edited and translated by David C. Reisman and Amos Bertolacci.[69] It deals with, among other things, the manner in which God bestows existence on things in the physical cosmos. Thābit sees divine causation of motion as tantamount to divine causation of existence:

> "The First Mover is the cause of the form that gives subsistence to the substance of all the things that are properly in motion. Thus the subsistence of the substance of each one of them does not belong to it in itself, but rather is from something that is the first ground (*sabab*) for its motion... The First Mover, then, is the principle and cause for the existence (*wuǧūd*) and perdurance of the forms of all corporeal substances. For, when we imagine the removal of the existence of natural motion [from corporeal substances]... their substance undoubtedly corrupts."[70]

For Thābit's Aristotle, the first mover does not merely cause the motion of a cosmos whose existence is taken for granted, but rather causes the cosmos to exist precisely by making it move. The argument proceeds by supposing that for any natural object to exist is for it to have a form, and for it to have a form is for it to have a proper motion.

Thābit's Aristotle does not however say that God is an *efficient* cause of that existence, only that He is a final cause: God causes motion as an object of desire (*šawq*). Thābit nonetheless ascribes to Aristotle the view that God's relationship to the

[68] See P. ADAMSON, *op. cit.* (n. 63), 98-105.

[69] D.C. REISMAN and A. BERTOLACCI, "Thābit ibn Qurra's *Concise Exposition of Aristotle's Metaphysics*: Text, Translation and Commentary", in *Thābit ibn Qurra: Science and Philosophy in Ninth-Century Baghdad*, ed. by R. RASHED (Berlin 2009), 715-776. I am grateful to the authors for allowing me to see this important study in pre-print form. Their translations, with some minor modifications.

[70] D.C. REISMAN and A. BERTOLACCI, *art. cit.* (n. 69), §2.

world is one of "willful making (*ṣanʿ irādī*)" (§ 6). In light of this it is still unclear what sort of proof should be given regarding the world's eternity. Thābit's Aristotle may still want to say that the eternity of motion is implied by the intrinsic nature of the heavens or of bodies in general. In that case the final causality exercised by God will be only a necessary condition for the persistence and motion of these bodies. As it turns out, though, Thābit's Aristotle makes no appeal to the nature of the physical cosmos when proving the world's eternity:

> *Treatise*, §4: "What Aristotle says is that the most excellent [state] for the First Principle is that in which it is the cause from eternity of the existence of everything that exists... without having become like that only at some time, after not being like that... So this is more excellent than that the First Cause is the cause of the existence of the universe at some time."[71]

This has nothing to do with the impossibility of a first motion or moment of time. Rather, the argument is that for God to be most excellent (*afḍal*), He must have an eternal, rather than changing, relationship with the cosmos. And of course this could only be the case if the cosmos is itself eternal. Thābit's Aristotle continues by observing that, if God went from not being a cause of existence to being a cause of existence, there would have to be some second, further cause to explain this change. But this is impossible, since there is nothing else that could either assist or hinder God in bringing existence to the world.

We have seen this sort of argument before. It is very like Themistius' argument from the paraphrase of *Lambda*, altered so as to make God a cause of existence, as well as motion.[72] But unlike Themistius, Thābit gives *only* this theological argument for the eternity of the world, proceeding then to deal with possible objections. The first objection is that if the

[71] *Ibid.*, §4.

[72] D.C. Reisman and A. Bertolacci, *op. cit.* (n. 69), demonstrate Thābit's reliance on the paraphrase of Themistius in their commentary on the text, though they do not cite Themistius as a source for this particular passage.

world is eternal, then it has no cause — in other words, al-Kindī's assumption that the eternal and created are exhaustive and mutually exclusive. Thābit rejects this in his own voice (§ 5), and goes on to ascribe to Aristotle a rebuttal, which again relies on the idea that the first cause cannot change so as to start bringing the world into existence. The second objection is that if the world is eternal then God can have no will (or at the very least that He *need* not have a will, since He can serve as a final cause without actually doing anything at all). This is refuted by reverting to the claim that God must be as perfect as possible — thus God does have will, but does not have desire, since causing without will or out of desire would both imply imperfection. Thābit's discussion of the eternity of the world is thus strikingly theological in character. This is despite the fact that Thābit's *Treatise* is to be located much more in the Peripatetic than the Neoplatonic tradition.

The theological approach can also be discerned in early Arabic writings that are overtly hostile to the Aristotelian tradition. One example is a work of uncertain authorship entitled *On Metaphysics*. It was discovered by Paul Kraus in an Istanbul manuscript, where it is ascribed to the famous philosopher and physician Abū Bakr al-Rāzī. Despite his suspicions about its authenticity, Kraus included it in his edition of the works of al-Rāzī.[73] The work has since found its supporters and detractors as an authentic Razian document.[74] I myself am increasingly convinced that it is authentic. One reason is that the treatment of the world's eternity chimes well with remarks on the same topic in al-Rāzī's certainly authentic *Doubts About Galen*, which I will mention below. *On Metaphysics* is only partially

[73] Al-Rāzī, *Rasā'il falsafiyya*, ed. P. KRAUS (Al-Qāhira 1939), at 116-134.

[74] See A. BADAWĪ'S chapter on al-Rāzī in *A History of Muslim Philosophy*, ed. by M.M. SHARIF, vol. 1 (Wiesbaden 1963), at 440-441. He cites previous views, mostly noncommittal (to this group may be added the remarks in A. BAUSANI, *Un filosofo "laico" del medioevo musulmano: Abū Bakr Muḥammad ben Zakiryya Rāzī* [Roma 1981], at 14). The most significant study of the work accepts its authenticity: G.A. LUCCHETTA, *La natura e la sfera: la scienza antica e le sue metafore nella critica di Rāzī* (Lecce 1987).

extant and has a rather disjointed structure, with no smooth transitions between the three main sections of the extant work.[75] These three sections are: a general attack on philosophers' claims that "nature" explains motion and operates teleologically (116.2-124.6), a section disputing philosophical theories of how the human fetus is generated (124.7-128.2), and a cosmological section, dealing *inter alia* with the eternity of the world, the possibility of multiple worlds, and the question of whether the world is infinitely large (128.3-134.11).

The author's discussion of the eternity of the world follows on from the attack on teleology. So it is no surprise that he finds unconvincing the physical arguments that have been adduced in favor of the world's eternity. He repeats (128.3-8) Aristotle's argument in *Physics* VIII.1 against the possibility of a first motion, and then says rather dismissively (128.8-9):

> "What we say is that the body and the motion are originated together, and we have undermined [the above argument] already, by saying that the Creator, the great and exalted, possesses an act that operates without His having changed."

Interestingly, the response seems designed to anticipate and rebut even the revised version of Aristotle's argument, as it appears in Themistius and Thābit, in which the argument is supposed to turn on the immutability of God as an agent, rather than on the conceptual impossibility of a first motion.[76]

[75] It ends abruptly in the midst of a discussion of whether the cosmos must be of finite size. There are also internal references, which may be to other sections of the same work; if so the original text could have been quite extensive. (See especially the reference at 120.11 to a "section on the soul (*bāb al-nafs*)"; and also 124.5-6, 128.16-17, 129.11-12.)

[76] This is despite the fact that the argument is not set out that way by the author: "Aristotle gives several proofs that the world's motions are eternal. In one of these he assumes that the world has always existed (*anna al-ʿālam qadīm*). What he says is that if motion began in time, then the body [of the cosmos] stayed unmoving for an infinite time, and then moves. If [the body of the cosmos] has a mover that has always existed, which moves it, then either it changes or the body that it moves changes. Whichever of the two moves, there was a motion before that motion" (128.3-6).

For the author insists that God could create body and motion *de novo* without Himself changing. In responding to Aristotle's argument from the nature of time,[77] by contrast, the author is willing to meet the philosophers on their own ground. He interprets the Aristotelian view (correctly) as follows: there cannot be a first instant of time, because there must be a time before and after every instant. But, he argues (128.17-129.5), if this is taken to imply that no period of time can actually begin or end, then neither could there be a first moment of Sunday or last moment of Saturday! Furthermore, time is analogous to space,[78] so if there is a time before and after every time, then there must be a spatial extension beyond every spatial extension, and therefore the world is infinitely large, contrary to what the philosophers believe (129.6-9).

Because of the author's dialectical strategy he is happy to confront specific arguments of the upholders of eternity (*ahl al-dahr*)[79] on the empirical level of physics, when it suits him. But the dominant feature of his treatise is an impatience with appeals to "nature", whether this be to explain apparent intelligent design in the world or the formation of human embryos, or to undergird the opponents' chosen cosmology. An appeal to nature cannot settle any of these issues, because nature is subordinated to divine action. The author's philosophically

[77] Paraphrased at 128.11-16, and said to appear not in the *Physics*, but in *Metaphysics* book *Lambda*. This fact and the aforementioned response to the argument from motion suggest that the author may, like Thābit, have consulted the Arabic version of Themistius' paraphrase of *Lambda*. Tantalizingly, the author says he has elsewhere responded to a similar argument in a refutation of Proclus.

[78] For this assumption see also 132.5-7, and compare al-Ghazālī, *The Incoherence of the Philosophers*, ed. and trans. by M.E. MARMURA (Provo 1997), 33.

[79] The expression first appears at 125.1 in the context of the argument over the formation of the embryo; at this stage *ahl al-dahr* is perhaps used as a general term for those who pay insufficient reverence to the divine as cause of the world (e.g. materialists). But it may also suggest the continuity of the author's polemic: just as his opponents think that nature is a sufficient cause of human formation, so they believe it is self-sufficient and in no need of a creator, and therefore eternal.

astute skepticism about natural philosophy comes out most strongly in passages where he attacks the Aristotelians' use of induction from sense-experience. When one group of opponents attempts such an argument (the world is infinitely large, because we never see a body without another body beyond it), he responds by pointing out the weakness of such inductive inferences (127.17-128.2). Is an African who has only met black people entitled to think all people are black? Or is someone from a landlocked area entitled to think that all land is surrounded by further land? Our polemicist is on to something here. He realizes that counter-examples[80] carry a weight that positive generalizations made from experience cannot, since such generalizations could always be falsified with the discovery of a counter-example in the future. Here the author moves beyond rejecting physical arguments for the opponents' various cosmological claims, and suggests the ultimate inefficacy of Aristotelian physics as a whole.[81]

Let us now turn briefly to al-Rāzī's *Doubts About Galen*, which also contains a discussion of the world's eternity.[82] This is provoked by Galen's treatment of the issue in the lost *On Demonstration*, where it was argued that such things as the heavens and oceans have never been known to change from

[80] Such as he presents elsewhere in the text, e.g. when he says that semen cannot be a sufficient cause of pregnancy, because if it were women would conceive a child whenever it were present (125.3-6).

[81] He is similarly scathing about Aristotle's appeals to common opinions, or *endoxa*, which represent another important starting-point for the Peripatetics. In response to Aristotle's claim "that there is no need to give a proof (*dalīl*) of nature, owing to its obviousness, and the fact that everyone recognizes it and grants its existence" (116.3-4), he says, "something is not true just because everyone grants it, just as something is not wrong just because everyone denies it... Proof is unnecessary only for immediately evident things (*al-ašyā' al-mušāhada*), and for the intellectual first principles of demonstrations; but nature is not grasped by the senses, nor is the knowledge of it a principle in the intellect" (116.9-10; 14-16).

[82] For an edition of the work see Al-Rāzī, *Kitāb al-Šukūk ʿalā Ǧālīnūs*, ed. by M. MOHAGHEGH (Tehran 1993). The relevant section is translated in J. MCGINNIS and D.C. REISMAN (ed. and trans.), *Classical Arabic Philosophy. An Anthology of Sources* (Indianapolis 2007), 51-53.

their state (*ʿan ḥālihi*). Since these large-scale features of the cosmos are unchanging over time, we can infer that the cosmos as a whole is eternal (3.18-21). Al-Rāzī contrasts this passage unfavorably to the more agnostic treatment of the same topic in other Galenic works, and exposes certain weaknesses in the argument. Particularly interesting for us is his point that things can be destroyed without displaying change or decay over time. For instance, a glass vessel might persist as it is for some time, and then suddenly be struck by a rock (4.23). Could the same sort of thing happen to the cosmos? Yes, at least according to some: "it is in this way that the world is destroyed, according to those religious believers (*mutadayyinīn*) who speak of the world's destruction" (5.2-3). Al-Rāzī need not be endorsing this suggestion. Rather, he's pointing out that it is a possibility which is not eliminated by Galen's inductive argument. This is reminiscent of *On Metaphysics*, especially a passage (which I take to be dialectical in just the same way) where the author proposes that the phenomena explained as "natural" by philosophers could just be the result of direct divine action.[83] In both contexts, natural experience is shown to be non-demonstrative once the possibility of divine action is considered.

Conclusion

I have here examined two topics which display the continuity of late antique and early Arabic philosophy. This continuity is hardly surprising, given how closely the first philosophers of the Arabic tradition engaged with the last philosophers of antiquity. On the other hand, we should always be mindful of the context of that engagement. With respect to the instrumental status of logic, we saw that members of the Baghdad

[83] Al-Rāzī, *op. cit.* (n. 73), 116.17-18: "on what basis do you deny that God, great and exalted, is all by Himself (*bi-ḏātihi*) the one who necessitates the powers of all other acts, and the natures of things?"

School retained the commitments of their Greek authorities while also formulating a response to the attack of contemporary critics. On the topic of the world's eternity, slightly earlier authors like al-Kindī, Thābit and al-Rāzī carry on the late ancient process by which physical arguments are shown to be inadequate to determine whether the world is eternal or not. Their discussions must also be read in contemporary context, in this case provided by *kalām* authors who strictly opposed an eternal God to created things, and proposed occasionalist views on which God acts directly in the world, obviating the need for stable natures.[84] Such developments threw into doubt the apodeictic pretentions of Greek science. Then again, subtle reflection on the epistemic status of logic, physics, and other philosophical disciplines had always been a part of Greek science itself. Aristotle taught al-Fārābī the difference between the demonstrative and the merely dialectical; Galen taught al-Rāzī the difference between the certain and the merely probable. Such distinctions invited authors writing in Arabic to stand in judgment over their favorite authorities, and to decide not only what should be retained from the antique tradition — but also where there was room for improvement.[85]

[84] For more discussion of the relation between *kalām* and the first generations of philosophy in Arabic, see P. ADAMSON, "Arabic Philosophy. *Falsafa* and the *Kalām* Tradition before Avicenna", in *The Oxford Handbook of Medieval Philosophy*, ed. by J. MARENBON (forthcoming). I should perhaps clarify that in speaking of a "theological" approach to the eternity debate I do not mean a *kalām* approach, but rather an approach proceeding from premises about God and His relation to the world. In this sense "theology" is simply the part of philosophy dealing with God.

[85] I gratefully acknowledge the Leverhulme Trust's support for my research into natural philosophy in the Islamic world.

DISCUSSION

U. Rudolph: Wie aus Ihren Ausführungen hervorgeht, trug das instrumentelle Verständnis von Logik dazu bei, dass bestimmte Teile des *Organon* bei den arabischen Autoren in den Vordergrund traten. So scheint sich Ibn ʿAdī vor allem auf die Syllogistik konzentriert zu haben, weil "Logik" für ihn eine Methode war, um aus bekannten (wahren) Aussagen auf neue Erkenntnisse zu schliessen. Kann es sein, dass diese Auffassung die Rezeption des *Organon* bei den islamischen Theologen begünstigt hat? Denn die Theologen mussten eigentlich nur noch ihre eigenen Grundannahmen zu wahren Prämissen erklären und konnten dann die Logik/Syllogistik bei ihren weiteren Überlegungen einsetzen.

P. Adamson: I think that in general, there is a close relationship between *kalām* and *falsafa* in the early period I was discussing. This is perhaps most obvious when philosophers discuss theological problems, but it also applies to the case of logic or, more broadly, reflection on argument forms. That's been shown by some interesting recent work by Cornelia Schöck, for instance. I suppose that logic was the philosophical discipline known best to theologians, certainly in the later post-Ghazālī period but also in the time before Avicenna which I was focusing on. And it is an open question, which needs further research, how much theological use of logic might have influenced authors in the *falsafa* tradition. In the specific case of Ibn ʿAdī's treatment of first principles, however, I don't think we need to suppose that there was influence from *kalām* logical discussions. For one thing, he makes it clear that first principles are often gleaned from sensation, a point taken directly from *Posterior Analytics* 2.19. For another thing, Ibn

ʿAdī (unlike al-Fārābī, and unlike some other non-Muslim thinkers of the period such as Saadia Gaon) doesn't seem to have engaged closely with Muslim *kalām*. There is an exception that proves the rule: his epistle criticizing the Ashʿarite theory of acquisition (*kasb*). His introduction to that epistle suggests that he doesn't consider it his business to be getting involved in *kalām* issues, because he says he is discussing it only to satisfy the request of the epistle's addressee.

C. Riedweg: Welche Rolle spielt eigentlich der Koran in der arabischen philosophischen Diskussion der Ewigkeit der Welt? Die brennende Aktualität dieser Frage in der jüdisch-christlichen Tradition erklärt sich ja nicht zuletzt mit dem seit Philon (wenn nicht schon davor) nachweisbaren Bemühen, die biblische Erzählung von Genesis 1,1ff. mit dem massgeblichen paganen Text über die Weltentstehung, Platons *Timaios*, möglichst weitgehend in Einklang zu bringen. Gibt es im Koran Äusserungen über den Anfang und das Ende der Welt?

P. Adamson: I wouldn't pretend to be an expert in the Koran or the tradition of Koranic commentary, but several things do leap to mind. First, there are the repeated statements in the Koran that when God wishes something to exist, He need only say to it "be", and it is. (See 2:117, 3:47, 59; 6:73; 16:40; 19:35; 36:82; 40:68.) This might suggest a temporal process: first God decides that something should exist; then He commands it to exist; and then it exists. Theologians even discussed the status of things that do not yet exist because God has yet to give His command. If we apply this reading of those passages to the case of the cosmos as a whole, then it looks like the Koran is telling us that the cosmos is not eternal. And exactly this inference was drawn by al-Kindī in a discussion of one such verse, which appears as a kind of digression in his treatise *On the Quantity of Aristotle's Books*. Similarly, Koran 41.11 has God commanding the heavens and the earth to come into existence. Also relevant is the idea that creation

itself was a temporal process, because it took six days, as in the Old Testament (see 7:54, 10:3; 11:7; 25:59). So, I think it would be fair to say that the Koran gives at least a strong impression that the world is not eternal in the past (*ex parte ante*). In terms of future eternity (*ex parte post*), there are also statements in the Koran to the effect that the world is fleeting and transitory (for instance 27:88). And of course there are many references to a future Day of Judgment, though this might be taken to imply only a radical change to the world rather than its end. Having said all that, the temporal boundedness of the world is not exactly a dominant theme of the revelation; much more emphatic is the idea that the created world is a sign of God's power and wisdom. And there is at least one passage which might be taken to imply that the world was not created *ex nihilo*. This is 21:30, which says that the heavens and the earth were at first "something closed up (*ratq*)" and God then opened or unfolded them. I don't know of a philosophical text that cites this verse, though.

D. De Smet: Dans le passage de l'*Iḥṣāʾ al-ʿulūm* que vous citez, al-Fārābī laisse entendre qu'il existe dans l'homme une connaissance innée, naturelle, qui n'est pas sujette à erreur et qui a pour objet les "premiers intelligibles". Cette même idée est exprimée par la notion de *al-ʿaql al-ġarīzī*, que l'on trouve dans plusieurs auteurs antérieurs à al-Fārābī, dont al-Ḫāsibī, al-ʿĀmirī et Abū Yaʿqūb al-Siǧistānī. On peut également la rapprocher du concept de *ʿilm ḍarūrī* dans le *kalām*. Comment situez-vous cette thématique du *noûs symphytos* par rapport à la noétique aristotélicienne et quelles sources peuvent être à la base du passage d'al-Fārābī que vous citez?

P. Adamson: There's a strong temptation to say that what we have in texts like the ones you mention is a notion of *a priori* knowledge: this is also encouraged by the examples that al-Fārābī gives, for instance that "every three is an odd number". If we think ahead to Avicenna, we might be even more

encouraged to think that, because in some texts he talks about first intelligibles as a kind of knowledge that comes directly from the Active Intellect without any need for sense experience. But notice again that Ibn ʿAdī, who I took to be expounding the same idea that al-Fārābī was setting out, includes some things taken from sensation as "first principles". I think that is faithful to the Aristotelian tradition. In Aristotle himself, at least, it would clearly be wrong to suppose that there are *a priori*, innate intelligibles which are epistemically prior to anything we learn inductively from sense-experience. It would be worth looking into the impact (if any) of the *kalām* notion you mention, "necessary knowledge (*ʿilm ḍarūrī*)", on philosophical treatments of first principles, to see whether it helped push the *falsafa* tradition further in the direction of our modern notion of *a priori* knowledge.

C. D'Ancona: Nel passo citato a p. 34, il punto di Abū Bakr al-Rāzī (se è lui l'autore dello scritto *Sulla metafisica*) non mi sembra tanto quello di gettare dubbi dialettici sull'argomento "fisico" in favore dell'eternità del mondo, quanto quello di contrapporre a un'erronea visione della creazione il modo giusto e corretto di concepire l'"atto" in cui Dio dà origine al mondo. Nel passo citato, l'autore non sembra svolgere un argomento dialettico; egli piuttosto asserisce in prima persona una tesi che proviene in modo molto evidente dalla pseudo-*Teologia di Aristotele* e dai testi ad essa collegati: l'atto con il quale Dio crea il mondo non comporta alcun mutamento. Questo tipico adattamento creazionista del modello neoplatonico di causalità "per l'essere stesso della causa" si incontra anche nelle *Opinioni degli abitanti della città perfetta* di al-Fārābī.

P. Adamson: Your question is bound up with the problem of the authenticity of *On Metaphysics*. After all, we know that al-Rāzī did not believe in creation *ex nihilo*, since he holds that matter is eternal. Of course that's compatible with the claim of *On Metaphysics* that body and motion are initiated by a divine

act of creation which involves no change on God's part — it would just not be an act which creates body and motion from nothing. More problematic would be the author's denial of infinite time, since again we know that al-Rāzī made absolute time an eternal principle. And in fact, in his own theory al-Rāzī was very reluctant to allow God to perform an "unprovoked" action. This is one reason why he postulates soul as an eternal principle, since soul's lack of complete wisdom makes it possible for it to choose an arbitrary moment for the constitution of the world out of pre-existing matter. So, if you are right that *On Metaphysics* is not arguing dialectically, I think we must deny the ascription to al-Rāzī, or admit that he is being rather inconsistent. I would prefer to hold on to the dialectical reading, and would appeal to passages like the one I mention from *Doubts about Galen* where I think he is arguing in just the same way: pointing out that his opponent (in this case Galen) has failed to rule out certain possibilities, without necessarily endorsing those possibilities as actual. He does something similar in other texts, for instance at the end of *The Spiritual Medicine* (*al-Ṭibb al-rūḥānī*). There he argues dialectically that there would be no reason to fear death even if, counterfactually, the soul were to die along with the body. He's trying to do what Galen and the Aristotelians fail to do: rule out all possible objections to his position, even objections based on false (but plausible) premises. Still, I agree that it's very plausible that Neoplatonic sources lie behind the "unchanging God" idea invoked in *On Metaphysics*, whether or not the author is describing a view he holds himself.