

Abdelkader Al Ghouz (ed.)

Islamic Philosophy from the 12th to the 14th Century

Bonn University Press



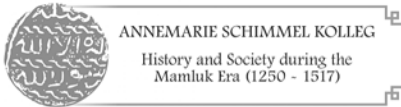


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Abdelkader Al Ghouz, Bonn, August 2018

Introduction

Brief introductory remarks on the narratives of the supposed disappearance of *falsafa* after al-Ghazālī

Through the end of the 20th century, some historians of philosophy, such as Salomon Munk (1805–1867) and Ernest Renan (1823–1892), considered al-Ghazālī and his condemnation of the *falāsifa* in his work *The Incoherence of the Philosophers* (*Tahāfut al-Falāsifa*) a turning point in the history of “Islamic”¹

1 Characterising philosophy in the Islamic world as “Arabic” or “Islamic” is a very difficult question that has been the object of controversial debates among historians of philosophy. Indeed, the Arabic language was the common link between all philosophers and translators who contributed to the genesis and development of philosophy in Islam. These were not only Muslims, but Christians, Jews and Pagan. However, because the 13 articles submitted to the this edited volume focus only on philosophers and theologians of Muslim belief, and because the leading question of this volume concerns “what Islamic philosophy was all about from the 12th to the 14th century”, it seems to be more appropriate to use the adjective “Islamic” rather than “Arabic”. This follows Ayman Shihadeh, who states: “This gap was to be filled by al-Rāzī, who, by his gradual synthesis of *kalām* and *falsafa*, presents, for the first time, an ‘Islamic philosophy’. This timely development was exactly what the milieu required: a mature philosophy, or philosophical theology, that was seen not to conflict with orthodoxy, and that did not approach *falsafa* in an essentially negativist manner” (Ayman Shihadeh, “From al-Ghazālī to al-Rāzī: 6th/12th Century Developments in Muslim Philosophical Theology,” *Arabic Sciences and Philosophy*, vol. 15 (2005), 178). Furthermore, the focus of all 13 articles revolves *a priori* around the process of naturalising the Avicennian philosophy in Islamic theology from the 12th to the 14th century. Engaging with philosophy as discussed by Muslim as well as by Christian, Jewish and pagan scholars should be characterised as “Arabic philosophy” in order to avoid dismissing the role of the non-Muslim scholars. For the controversial debate on the use of “Islamic” or “Arabic”, cf. Michael F. Marmura, “The Islamic Philosophers’ Conception of Islam,” in: Richard G. Hovanissian and Speros Vryonis, Jr. (Eds.), *Islam’s Understanding of Itself*, Malibu: Undena Publications, 1983, 87–88; Oliver Leaman, “Introduction,” in: Seyyed Hossein Nasr (Ed.), *Encyclopaedia of Islamic Philosophy*, Lahore: Suhail Academy, 2002, 1; Dimitri Gutas, “The Study of Arabic Philosophy in the Twentieth Century: An Essay on the Historiography of Arabic Philosophy,” *British Journal of Middle Eastern Studies*, 29, 2002, 16–19; for a detailed discussion of this debate, see also Shahab Ahmed, *What is Islam? The Importance of Being Islamic*, Princeton: Princeton University Press, 2016, 5–109.

philosophy. Munk, for instance, coined the idea that the philosophical tradition in Islam underwent a deep change as a consequence of al-Ghazālī's critics of philosophy in his work the *Tahāfut*. Munk's interpretation of the Ghazālian impact on the reception of the Avicennian philosophy by Muslim scholars found a sympathetic ear by some of his contemporaries (e.g., Ernest Renan), who further elaborated on and expanded Munk's interpretation to a Ghazālian turn in the study of philosophy in Islamic civilizations. In his work *Averroès et l'Averroïsme: Essai historique*, Renan claimed that al-Ghazālī was one of the "intolerant enemies" of the philosophers because he completely rejected rationalism and converted to Sufism.² Furthermore, Renan introduced the Andalusian Muslim philosopher Ibn Rushd (Averroes, d. 595/1198) as the last philosopher whose death marked the end of philosophy in medieval Islam. In addition to Renan and Munk, other historians adopted the narratives of the disappearance of medieval philosophy in Islamic East after the death of al-Ghazālī, and in the Islamic West after the death of Ibn Rushd, e.g., Tjitze J. de Boer (1866–1942) and Ignaz Goldziher (1850–1921).³

Over the last 20 years, the study of the post-Avicennian philosophy has attracted the attention of historians of Islamic intellectual history. Generally speaking, most historians of *falsafa* and *kalām* have now broken epistemologically with the narratives revolving around the assumption that al-Ghazālī's condemnation of the philosophers was a "death blow" to *falsafa*.⁴ For instance, Frank Griffel writes:

The same applies to philosophy. Certain intellectual circles in Islam have frowned upon, shunned, and stigmatized the study of philosophy. Other circles, however, favoured it, encouraged philosophers to write books, and rewarded them for it. There is clear evidence that even after al-Ghazālī there were enough of the latter circles to safeguard that philosophy in Islam did not disappear after 1100. At the beginning of this chapter, I tried to show that after al-Ghazālī there were still quite a number of philosophers, who were Muslims, who followed Avicenna, and who taught, for instance, the pre-eternity of the world. If my field of study, that is Islamic studies, has given a wrong impression

2 Renan, *Averroès et l'Averroïsme: Essai historique*, Paris: Librairie August Durand, 1852, 97.

3 For a detailed survey of how these opinions developed in the 19th and 20th centuries, cf. Griffel, *Apostasie und Toleranz im Islam. Die Entwicklung zu al-Ghazālī's Urteil gegen die Philosophie und die Reaktionen der Philosophen*, Leiden: Brill 2000, 3–16; idem, *Al-Ghazālī's Philosophical Theology*, New York: Oxford University Press, 2009, 3–7.

4 See, for instance, Dimitri Gutas, *Greek Thought, Arabic Culture*, London and New York: Routledge, 1998; Robert Wisnovsky, "Towards a Genealogy of Avicennism," *Oriens* 42 (2014), 323–363; Tzvi Y. Langermann (Ed.), *Avicenna and his Legacy: A Golden Age of Science and Philosophy*, Turnhout: Brepols, 2009; Heidrun Eichner, *The Post-Avicennian Philosophical Tradition and Islamic Orthodoxy: Philosophical and Theological Summae in Context* (Habilitation Thesis, Halle, 2009); Griffel, *Al-Ghazālī's Philosophical Theology*, Oxford: Oxford University Press, 2009.

about this in the past one-hundred and sixty years since the appearance of Ernest Renan's 'Averroès et l'Averroïsme' it is now high time to rectify this mistake.⁵

Why choose the period from the 12th to the 14th century?

Why from the 12th century?

It is widely recognised in the academia nowadays that *kalām* underwent a historical turning point as a reaction to the intense engagement with the philosophical legacy of Ibn Sīnā (Avicenna, d. 428/1037). This interaction of *falsafa* and *kalām* was one result of naturalising philosophy/science in Islam during Ibn Sīnā's lifetime. It is also the reason why Wisnovsky speaks of an "Avicennian turn" initiated by the Aš'arite theologian and the *Imām al-Ḥaramayn* al-Juwaynī (d. 487/1085):

Some in fact are coming to the conclusion that al-Ġazālī's importance in the history of Islamic philosophy and theology derives as much from his assiduous incorporation of basic metaphysical ideas into central doctrines of Sunnī *kalām*, as from his far more celebrated bashing of the *falāsifa*. What is less well known is that al-Ġazālī's role in the "philosophizing" of Sunnī theology was not a lonely struggle by a single genius, but part of a broader trend that seems to have begun during Avicenna's lifetime and that picked up speed in the first and second generations after Avicenna's death in 1037, with the work of al-Ġazālī's teacher, the Aš'arite al-Ġuwaynī (d. 1085), as well as of the Māturīdite al-Bazdawī (d. 1099), work that was carried forward by dozens of subsequent members of those two major Sunnī theological schools. It is clear, in fact, that the dividing line between the Sunnī theologians commonly referred to in the later Islamic tradition as *mutaqaddimūn* ("early" or "ancient"), and those referred to as *muta'ahḥirūn* ("late" or "modern"), lies not with al-Ġazālī but with Avicenna himself, and that the turn in Sunnī *kalām* was therefore Avicennian, not Ġazālīan.⁶

Historians of medieval Islamic intellectual history mostly highlight two different timeframes as two different tuning points in the history for the interaction between philosophy/science and *kalām*.⁷ The first turning point took place during

5 Frank Griffel, "... and the killing of someone who upholds these convictions is obligatory!" Religious Law and the Assumed Disappearance of Philosophy in Islam," in: Andreas Speer und Guy Guldentops (Eds.) *Miscellanea Mediaevalia* 39: Das Gesetz, Berlin and Boston: de Gruyter, 2014, 226.

6 Wisnovsky, "One Aspect of the Avicennian Turn in Sunnī Theology," in: *Arabic Sciences and Philosophy* 14 (2004), 65.

7 For the interaction of *falsafa* and *kalām* after Ibn Sīnā, see, for instance, Abdelhamid Sabra, "The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam: A Preliminary Statement," *History of Science* 25 (1987), 223–243; idem, "Science and Philosophy in Medieval Islamic Theology: The Evidence of the Fourteenth Century," *Zeitschrift für Geschichte der arabisch-islamischen Wissenschaften* 9 (1994), 1–42; idem, "Kalām Atomism as an

the phase from Ibn Sinā to al-Ghazālī, and the second one between al-Ghazālī and Fakhr al-Dīn al-Rāzī (d. 606/1210). The Aristotelian/Avicennian philosophical thought was introduced into Sunnī *kalam* during the first phase. After this introductory period, Muslim theologians were characterised in the second phase (from the 12th century onwards) by their very familiarity with philosophy/science.⁸ The process of naturalising philosophy/science in *kalām* reached its zenith in the 12th century⁹ in the context of what Yahya Michot calls the “Avicennian pandemic” affecting the development of Islamic theology from the 12th century onwards.¹⁰ Concerning the time from al-Ghazālī to al-Rāzī, Shihadeh states:

Al-Rāzī transformed Islamic theology to the extent that previous *kalām* seemed irrelevant and obsolete. Perhaps this partly explains the scarcity of information on the 6th/12th century intellectual activity examined here. Even Abū al-Barakāt al-Baghdādī takes a step to the background, as his direct influence on later Islamic thought diminishes. Al-Rāzī’s place in later Muslim theology is somewhat comparable to that of Ibn Sinā in *falsafa*. For it appears that almost all later theology, that of proponents and opponents alike, was done *vis-à-vis* his philosophical theology. This, however, is another story.¹¹

For his part, Wisnovsky points out:

(...) In this sense, Rāzī stood in relation to Avicenna as Avicenna stood to Aristotle: as a sometimes critical but nevertheless deeply indebted appropriator of the original author’s theories. Ṭūsī, by contrast, stood in relation to Avicenna as Averroes (Ibn Rushd, d. 595/1198) stood to Aristotle: as an energetic defender stamping out the corruptions of previous (mis)interpreters.

Partly as a result of his broader understanding of exegetical practice, Rāzī came to be presented in subsequent narratives of post-classical Islamic philosophy as one of Avicenna’s greatest opponents, while Ṭūsī was portrayed as Avicenna’s greatest defender. One slogan of such narratives was that Rāzī was ‘Leader of those who raise objections’ (*imām al-mushakkikīn*), whereas Ṭūsī was ‘Leader of those who establish the

Alternative Philosophy to Hellenizing *Falsafa*,” in: James E. Montgomery (Ed.), *Arabic Theology, Arabic Philosophy. From the Many to the One: Essays in Celebration of Richard M. Frank*, Leuven: Peeters, 2006, 199–272; Dominik Perler and Ulrich Rudolph (Eds.), *Logik und Theologie: Das Organon im arabischen und im lateinischen Mittelalter*, Leiden and Boston: Brill, 2005; Sabine Schmidtke (Ed.), *The Oxford Handbook of Islamic Theology*, Oxford: Oxford University Press, 2016.

- 8 Shihadeh, “From al-Ghazālī to al-Rāzī: 6th/12th Century Developments in Muslim Philosophical Theology,” *Arabic Sciences and Philosophy*, vol. 15 (2005), 141–179, cf. Eichner, *The Post-Avicennian Philosophical Tradition and Islamic Orthodoxy*, 8, n. 5.
- 9 Cf. Griffel, *Al-Ghazālī’s Philosophical Theology*, 7; Adamson, “Philosophical Theology,” in: Sabine Schmidtke (Ed.), *The Oxford Handbook of Islamic Theology*, Oxford: Oxford University Press, 2016, 309.
- 10 Michot, “La pandémie avicennienne au VIe/XIIe siècle,” *Arabica* 40 (1993), 287–344.
- 11 Shihadeh, “From al-Ghazālī to al-Rāzī: 6th/12th Century Developments in Muslim Philosophical Theology,” 179.

truth' (*imām al-muḥaqqiqīn*). In other words, Rāzī's way of construing *taḥqīq* – as including a critical engagement with the theories being interpreted – was rejected and relabeled as *tashkīk*, whereas Ṭūsī's more restrictive view of *taḥqīq* was embraced and came to predominate, at least in the context of Avicennian exegetical practice.¹²

Why to the 14th century?

The present volume limits itself to the 14th century in agreement with the programmatic article by Dimitri Gutas entitled “The Heritage of Avicenna: The Golden Age of Arabic Philosophy, 1000–ca. 1350”, which he conceptualizes as a catalogue of criteria to be examined to show – in terms of case studies – the extent to which the timeframe under consideration in this volume was philosophically significant.¹³

The present volume

In order to make a comprehensive contribution to the ongoing research challenges concerning the question of how *falsafa* and *kalām* interacted with each other in the context of naturalising philosophy/science in Islam, this volume centres on the following questions: What was philosophy all about and which reactions did it create especially in *kalām* works from the 12th to the 14th century? The present volume comprises 13 articles that tackle these questions from various different angles. It is structured around six main sections reflecting the topics and the approaches of the contributions.

Section 1, “Historical and Social Approaches to Philosophy”, consists of two contributions that present a social approach to studying intellectual history. *Dimitri Gutas* traces the role of prominent scholars who contributed tremendously to the genesis of new genres of writing after Ibn Sīnā. He asks whether the period under consideration was indeed a “golden age” of philosophy/science or

12 Wisnovsky, “Towards a Genealogy of Avicennism,” 326. Dimitri Gutas, for his part, refutes Wisnovsky's interpretation quoted above and argues: “Avicenna had no pre-determined (or revealed) doctrine to which he tried to make Aristotle fit, whereas ar-Rāzī did, his criticism by and large tending to make Avicenna conform to Ash'arite views.” Gutas, “Avicenna and After: The Development of Paraphilosophy,” in: Abdelkader Al Ghouz (Ed.), *Islamic Philosophy from the 12th to the 14th Century*, Göttingen: Bonn University Press and V&R unipress, 2018, 51, n. 73.

13 Gutas, “The Heritage of Avicenna: The Golden Age of Arabic Philosophy, 1000–ca. 1350,” in: Jules Janssens and Daniel De Smet (Eds.), *Avicenna and His Heritage*. Acts of the International Colloquium, Leuven – Louvain-la-Neuve, September 8–11, 1999, Leuven: Leuven University Press, 2002, 81–97.

rather of “paraphilosophy”. *Maribel Fierro* examines the nature of the relationship of Averroes, a harsh critic of the Ash‘arite theology, with both the Mu‘minid caliphs of his times and the Almohad movement founded by Ibn Tūmart (d. 524/1130), who was a strong adherent of Ash‘arism. This approach is crucial for contextualising Averroes’ “disgrace”, both socially and scholarly.

The two articles presented in Section 2, “Knowing the Unknown”, are centred on occultism and its interpretations by prominent philosophers and theologians. *Yahya Michot* examines how Ibn Taymiyya (d. 728/1328) read Ibn Sinā’s interpretation of the prophetic faculties as described in the *namaṭ* of the *Ishārāt* in a Mamluk context. In order to let Ibn Taymiyya speak for himself, Michot includes in his article an English translation of the passages quoted by Ibn Taymiyya in his work the *Ṣafadiyya*. *Luis Xavier López-Farjeat* tackles the question of how Ibn Bājja (Avempace, d. 533/1138), Ibn Rushd (Averroes, d. 595/1198) and Ibn Khaldūn (d. 808/1406) interpreted Ibn Sinā’s doctrine of veridical dreams and prophecy described in his epistle *al-Risāla al-Manāmiyya*. Using a comparative approach, López-Farjeat examines how each of the above-mentioned scholars explained the acquisition of particular forms and how they conceived the dimensions of veridical dreams and prophecy.

Section 3, “God, Man and the Physical World”, presents some views of prominent scholars concerning the world’s creation and creation itself. Basing his contribution on the scholarly milieu of the 6th/12th-century Bagdad, *Andreas Lammer* analyses al-Shahrastānī’s (d. 548/1153) and Abū l-Barakāt al-Baghdādī’s (d. 560/1164–5) doctrines concerning God’s priority over the world and the question of *when* God brought the world into being. *Davlat Dadikhuda* sheds lights on the issue of how Fakhr al-Dīn al-Rāzī (d. 606/1210) and Nāsīr al-Dīn al-Ṭūsī (d. 672/1274) engaged with and reacted to Ibn Sinā’s philosophy of the human soul and the latter’s relationship to the body, basing the analysis on *Kitāb al-Ishārāt* VII.6. *Peter Adamson* tackles one of the crucial points where philosophy/science and *kalām* meet up in the context of the above-mentioned process of naturalization. Adamson presents al-Rāzī’s conception of the void, aiming to explain the extent to which al-Rāzī accepted the Avicennian arguments in the *Shifā’* and, consequently, Aristotle’s arguments in the fourth section of the *Physics*.

In Section 4, “Universals”, *Fedor Benevich* describes Muḥammad b. ‘Abd al-Karīm al-Shahrastānī’s (d. 1153) metaphysics. He argues that al-Shahrastānī found a way to combine the *aḥwāl* theory of traditional Ash‘arism with the Avicennian metaphysics of universals. *Yuki Nakanishi* sheds light on the controversy surrounding the reality of existence (*wuġūd*) as discussed by the early Timurid philosopher-theologian Sa‘d al-Dīn al-Taftāzānī (d. 792/1390) and the early Ottoman Akbarian mystic Shams al-Dīn al-Fanārī (d. 834/1431).

In the first article of Section 5, “Logic and Intellect”, *Hanif Amin Beidokhti* first outlines the epistemic basis used in debating the categories up to the 13th century and then addresses the question of what al-Suhrawardī (d. 586/1191) criticised in the peripatetic classification of categories. Furthermore, Beidokhti briefly discusses the philosophical benefits of the categories for al-Suhrawardī’s *Ḥikmat al-Ishrāq*. *Nariman Aavani* looks at the philosophical reflections of the (understudied) philosopher-theologian Afḍal al-Dīn Muḥammad Ibn Ḥasan Kāshānī (known as Bābā Afḍal, d. 610/1214) and exposes Bābā Afḍal’s epistemic arguments for the unification of the intellect, the intellector and the intelligible, contextualising them within the broader scholarly context of the Aristotelian and Avicennian philosophy.

Section 6, the final section of the present volume, “Anthropomorphism and Incorporealism”, consists of two articles that shed light on debating God’s attributes in Ḥanbalite theology. *Livnat Holtzman* focuses on Ibn Taymiyya’s tolerant attitude towards answering theological questions that fall in the category of *bi-lā kayfa*, such as questions related to anthropomorphism. *Jon Hoover* addresses the question of how Ibn Taymiyya uses Averroes’ philosophy in order to criticise Fakhr al-Dīn al-Rāzī’s incorporealist concept of God.

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Historical and Social Approaches to Philosophy

Avicenna and After: The Development of Paraphilosophy. A History of Science Approach*

Mais que foutait Dieu avant la création?

Samuel Beckett¹

Introduction: The Terms of the Discussion

With Avicenna now demonstrably situated at the center of the philosophical tradition in the Islamic world, it has become apparent that philosophy after him was mostly in reaction to his philosophy. What at first started as a working hypothesis, that the different reactions to Avicenna's philosophy in the three centuries after him (1050–1350) as either supporting, or rejecting, or reforming his theories constituted a “golden age of Arabic philosophy,” has opened up a very fruitful period of research on the post-Avicenna developments which partly substantiates the hypothesis: this period did witness an unprecedented and committed engagement with Avicenna's philosophy at various levels of sophistication and participation.² But what this engagement consisted in, and what its essence, motivation, and function were – or “what philosophy was all about” after

* This is a revised and expanded version of the keynote speech delivered at the conference on February 24th, 2016. The relatively informal tone of the lecture has been retained, as was the sketchy format, given the broad spectrum covered, which also necessitated that the added annotation, with a certain well-meaning didactic edge to it, be kept to the essential minimum. I wish to thank Peter Adamson, Asad Ahmed, Dag Hasse, Matthew Melvin-Koushki, and Ayman Shihadeh for their very helpful comments and suggestions on earlier drafts, while I assume responsibility for all interpretation of the historical record and for errors that may remain.

1 *Molloy*, Paris: Editions de Minuit, 1951, 227. Beckett's own English translation, in collaboration with Patrick Bowles, has a different twist, and inexplicably (to me) leaves out the crucial objection in *mais*: “What was God doing with himself before the creation?” (*Three Novels by Samuel Beckett. Molloy. Malone Dies. The Unnamable*, New York: Grove Press, 1965, 167). The irreverence – if irreverence it is – is twentieth century, but the question itself with its sea of implications, and the exasperation in the tone, are dead serious, and old (Augustine put it as follows: *Quid faciebat deus, antequam faceret caelum et terram? Confessiones* XI,10); they are also the subject of paraphilosophy in Islam after Avicenna.

2 Gutas, “The Heritage of Avicenna,” which the present essay re-focuses by providing the historical and ideological context.

Avicenna until the Timurids, as the question is put in the program of our conference, and whether this golden age was a golden age of *philosophy* – is a different matter, and is the problem at hand, which I propose to discuss historically.

First, it is necessary to be precise about what is meant by “philosophy” historically in the Islamic world – not what we mean by it today but what the medieval scholars understood by it, and indeed at different times. Because this is a serious part of the problem. For us moderns (or post-moderns, if you will, and leaving aside the professors of philosophy – *not* the historians of philosophy – in academic departments today), philosophy is a fuzzy concept, basically meaning deep thoughts about life and the world in general, and at best including ethics of a non-religious character.³ Even logic, modern logic, and the philosophy of language, may be considered border-line philosophy. For the ancient and medieval philosophers, though, and especially for thinkers from late antiquity onward, with whom we are concerned here, philosophy was something quite concrete: it meant all the rational sciences, so basically what we broadly term science nowadays.⁴ This must be obvious to anyone who has had a look at the classification of the sciences in medieval Islam, or, at the very least, at the contents of Avicenna’s *ash-Shifā’*: it includes logic, the theoretical sciences – namely physics, whose eight parts range from the principles of physics and cosmology to psychology, zoology, and botany (we do not call these subjects “philosophy” today) – then mathematics – the ancient quadrivium of arithmetic, geometry, astronomy, and music – and then metaphysics, or the investigation into the principles of being and the ultimate, or necessary, being itself. Avicenna also treats what were classified as the practical sciences – ethics, oeconomics, and politics – briefly at the end of the metaphysics: these were no less scientific studies insofar as they investigate human behavior in individuals, in families, and in the city or state. So, the philosophers were doing science, and so was Avicenna, and once we stop using the (for us) fuzzy word “philosophy” we can acquire a better tool with

3 The fuzziness of the concept, even as used by historians of philosophy, at times verges on meaninglessness when it is claimed that “philosophy is where you find it,” or “philosophy is, ultimately, whatever philosophers think it is” (which is tautological, for it raises the circular question who a philosopher is – one who does philosophy!). See note 57 below and the references cited there.

4 I hardly need to cite authorities to support this historical fact, but it helps to provide the broader context of the discussion: “When we study ancient philosophy, we are guided by our contemporary conception of the philosophical enterprise. This makes it easy for us to overlook the fact that the ancient philosophers had a very different conception of their philosophical activity;” Michael Frede, “The Philosopher,” in Brunschwig and Lloyd, 2. And more to the point, the statement of the two editors of this volume in their “Introduction,” p. xii: “[T]his division [in “contemporary parlance”] between science and philosophy does not correspond at all to the conceptual frameworks of antiquity.”

which to gauge what Avicenna as well as his predecessors and successors were doing.

Our investigation is thus the history of *science*, as understood by the medieval thinkers themselves (and the ancients, of course, as I will soon mention), and not by us and our categories and definitions;⁵ henceforth I will be using the word science (and at times also science/philosophy) to refer to what we usually call philosophy or science and philosophy. But before we can talk about what Avicenna did in his science, it is necessary to discuss briefly what had previously been done in science in Greek, since science in the Islamic world is partly the extension and partly the revival of Hellenic science,⁶ and we can best understand what Avicenna was doing by reference to this background. But having said that, two more terminological clarifications are needed before we proceed, first about the Hellenes and second about science.

I will be talking about the Hellenes to refer to what we normally call ancient Greeks, that is, the Greek speaking peoples of the first millennium BC and following in the southern Balkans and the Aegean, with their culture and ethnic Olympian religion. The reason why I make this distinction is that they tend to be confused with the Greek speaking peoples in the eastern Roman empire, whom we normally, and again, ill-advisedly, call Byzantines, because of the identity of their language. But the Hellenes *as historical agents* through their societies, institutions, beliefs, and ideas were quite different from the Roman Orthodox (whom I will so name instead of “Byzantines”)⁷ in almost every aspect except the language, and calling everybody indiscriminately Greek confuses the issues – sometimes deliberately.⁸ I also hope this distinction will stave off a misunderstanding that I am arguing on racial grounds, race not being a category that is, or can be, of use in historical hermeneutics.

5 There is a lot of discussion nowadays on these subjects, on what science is, among historians and philosophers of science; there are even those who maintain that science begins with Newton and that everything that went before him is not science: it is “nature-knowledge” or “mathematical knowledge,” etc. But such a priori definitions and theoretical ruminations are hardly relevant, or of benefit, to historical investigations such as the present one.

6 In general, see Gutas, “The Rebirth of Philosophy.”

7 Byzantium was a Megarian colony at the mouth of the Bosphorus inhabited by Hellenes. The Roman emperor Constantine chose it as the site of his residence, and the name, Christian this time, was changed to Constantinople. Thus Byzantines refers to the pre-Constantine Hellenic inhabitants of the city and their culture. Under Christianity the term “Byzantines” referred only, if at all, to the inhabitants of the capital city, not to all the subjects of the eastern Roman empire, as the term does today. The empire itself, like its culture, was called, knew itself as, and was, always Roman; see the extensive discussion by Kaldellis, *Hellenism*.

8 In a way I am following the medieval Arab usage, which was historically correct in the discrimination it makes: they called the Hellenes *Yūnān*, and the Roman Orthodox, very properly, *Rūm*, or Romans.

When it comes to the Hellenic science I will be discussing next, it must be emphasized, again to avoid misunderstanding, that I (or any of my sources, particularly Lloyd) am not *defining* what Hellenic science or any science was, is, or should be, but simply describing what it historically was according to the best scholarship available, and the reason is that it was precisely this science that was transmitted into early Islam, which is my subject. The late David Pingree wrote an excellent article warning against the symptoms of the disease he called “Hellenophilia,” which are, thinking that the Hellenes invented science, that they discovered the scientific method, that their sciences are the only real sciences, and that true science is only what scientists, following the Hellenes, are doing now. I am doing none of this but describing what Hellenic science was, and saying that it was followed and applied in early Islam not because Muslims (and Christians, and Jews, and Zoroastrians, and polytheists in the early ‘Abbāsīd and Būyīd periods) *had* to follow it if they wanted to do science, but because they in fact *did*. The historical specificity of my argument throughout is essential to investigating and understanding what philosophy was before, for, and after Avicenna.

1. Hellenic Science in History

The Hellenes, then, did science, but in addition they talked about its methods and what it means to do science. Hellenic science can be defined by the following three characteristics it exhibited: it was (a) an open-ended and rational inquiry into reality (all reality and not only the physical world, but also the cosmos as well as social products: ethics, politics, literature); (b) an investigation and explanation of first principles and causes; and (c) a continuous discussion and re-evaluation of the methods used in the inquiry both by oneself and by others. These characteristics of Hellenic scientific inquiries as well as their origin, progression, causes, and social context have been examined in great detail by a number of scholars and in particular in the publications by G.E.R. Lloyd, which provide a precise historical understanding of science as practiced by the Hellenes.⁹

The progression of this science can be seen from the sixth century BC to the sixth century after Christ. It was, however, very uneven, and its rate depended on a number of historical factors, which need to be stated, examined, and studied in

⁹ Primarily Lloyd, *Magic, Reason and Experience; Science, Folklore and Ideology*; and *The Revolutions of Wisdom*, with many others being of relevance. They are highly recommended, for their methodology and approach, to students of all history of science and not only Hellenic, and certainly also “Islamic.”

each case. For our purposes, I will mention three major aspects or characteristics of the *practice* of this science, which will also help us as we move forward to science in the Islamic world.¹⁰

The first is the development of *research science*: it is the basic function of the scientific approach to reality, whose rational investigation aims to find out, explain, and prove how things – all things – work or are set up. Among the Hellenes, these developments start with the first pre-Socratics and continue apace throughout antiquity. The different fields of inquiry are established: physics, astronomy, mathematics, medicine, metaphysics (inquiry into first principles and being as being), ethics, politics, etc., and, with Aristotle's *Poetics*, even literature.¹¹ This initial period is analyzed in great detail by Lloyd who shows, step by step, how the shift was made from a mythological view of reality at one end of the ideological spectrum, closer to a scientific one at the other end – from mythos toward logos, as it has often been described, but with the understanding that mythos and logos are the two extremes of the ideological continuum that is socially constructed, not two absolute and incommensurable modes of being in binary opposition. The shift was piecemeal, very gradual, and of course never complete (it still isn't), but it itself was real and revolutionary; as Lloyd puts it,

The distinction between science and myth, between the new wisdom and the old, was often a fine one, and the failures of ancient science to practise what it preached are frequent; yet what it preached was different from myth, and not *just* more of the same, more myth. The rhetoric of rationality was powerful and cunning rhetoric, yet it was exceptional rhetoric, not so much in that it claimed not to be rhetoric at all, ... as in supplying the wherewithal for its own unmasking.¹²

The major nodal point in this process which Lloyd's analysis reveals, and which demands continuous attention, is the confrontation between the results of scientific research and the traditional beliefs of society, religious and otherwise –

10 P.R. Blum drew a useful distinction in his 1998 book between two types of doing philosophy, what he called "philosopher's philosophy" (*Philosophenphilosophie*) and "school or curricular philosophy" (*Schulphilosophie*). The first refers to a philosopher's independent and open-ended thinking outside of institutionally and socially imposed modes of thought, and the latter to scholasticized philosophy as an academic subject that is to be taught. His analyses refer to the early modern period, but the distinctions are actual and historically accurate and can be applied to philosophizing of all periods. Niketas Siniosoglou (to whom I am indebted for bringing Blum's study to my attention) and I used it with reference to philosophy in the later Roman Empire ("Philosophy and 'Byzantine Philosophy'"). In what follows I expand upon the concept for application to philosophy in antiquity and Islam.

11 In his introduction (1447b9), with a word preserved only in the Syriac and then its Arabic translation, Aristotle expressly says that this field had not been recognized until his day and remains "anonymous" (*bi-lā tasmiyatīn*).

12 Lloyd, *The Revolutions of Wisdom*, 336.

some of which the titles of Lloyd's books specify as magic, folklore, and ideology. At each such point of discovery and the research that led up to it, the question is which side the scientist himself will take, and why, as well as what the factors are that will allow or hinder the acceptance and reception of this discovery within society in general. This confrontation and the research that leads up to it constitute the major conflict in the social history of science and the basic criterion by which we can judge scientific developments. This makes scientific research a highly political act, and political analysis can never be dissociated from the history of science (as unfortunately is still very much the case).¹³ I will come back to the issue of traditional beliefs later (in section 2).

The second is the development, already by the end of the fourth century BC, of *curricular* or *school science*, that is, the formation of a collection of scientific doctrines as a body of teachings already achieved, usually following the views of an authority scientist, for the purpose of their study and dissemination. This leads to what may be called the *scholasticization* of science, in both meanings of the term scholastic, referring to teaching and also to pedantic adherence to a set of teachings. This is a prerequisite for research science, insofar as each scientist has to advance to the level of his predecessors before he can move forward, but the scholasticization of a body of knowledge also led to its use for social and political purposes. This process started with, or at least was fully put deliberately in place by, Aristotle, both in his personal method of research and in the practice of his school. Aristotle as a rule gave a survey of his predecessors' opinions on any given subject before he proceeded to its investigation, and to that end he and his school were the first to start collecting source material for all their studies – today we would say that they compiled data bases: opinions of mathematicians, of physicists, constitutions of the Greek city states, etc.¹⁴

Through an amazing confluence of historical events, this procedure of scholasticized science, of forming a body of scientific knowledge for the purposes of studying it, teaching it, and progressing beyond it, acquired a manifest social and political function, even if previously implicit, right after the death of Aristotle, because of Alexander's conquests. Some of Aristotle's and Theophrastus's

13 The political and socially anchored dimension of scientific research, which is often crucial to its survival, should be easier to comprehend and appreciate in 2017 when climate change and a host of other scientific results find little purchase among Western governments, let alone the rest of the world.

14 The concise formulation of the Peripatetic project under Aristotle, which was to record what has been called the history of science until his day and collect the opinions of his predecessor scientists, remains that by Jaeger, *Aristotle*, 334–336, followed by numerous studies that provide the details and explore the ramifications. For Eudemus, one of Aristotle's students most active in this area, see the illuminating collection of articles edited by Bodnár and Fortenbaugh. A recent comprehensive study of the ancient historiography of science is by Zhmud.

students, notably Demetrius of Phaleron, moved to Alexandria under the first Ptolemies and were instrumental in the foundation of the Museum and the Library there at the very beginning of the Hellenistic period (323–31 BC). The Museum and the Library, as repositories of all knowledge – that is, by this time, of both research and school science – became symbols of the majesty of the Ptolemies and henceforth an indispensable tool of royal glory, used by all rulers in centuries to come. Augustus in particular, the first Roman emperor, had a cultural policy, for political purposes, of extolling classical Hellenic civilization.¹⁵ The significance of this development for our purposes is that it adds yet another political angle in our analysis of scientific work. In this context, the engagement of each scientist has to be assessed for whether it was directed to research science or school science, or both, and why: what was the social inducement, or reward, or impediment for each scientist and at each historical context to engage in one or the other, or in both?

The third is what can be called the *dogmatization of school science*: by late antiquity, the corpus of Hellenic school teachings became rationalized and consolidated to assume a doctrinaire quality; this consolidation, whatever its negative effects on research science since by definition it would not allow improvements, nevertheless makes this now well-defined body of Hellenic school science exportable, and as a result we see its international acknowledgment as universally valid science and its attendant translation into other languages in the West (of India), notably Syriac and Middle Persian at first and eventually Arabic and other languages. This had far-reaching implications, depending on the circumstances, on research science in each historical context.

Briefly, the historical course of this development can be traced as follows. Until the fourth Christian century, research science and school science were heavily engaged in in the Greek speaking world in the eastern Mediterranean and the Near East, with the scientific view of reality spreading among the educated elites and without noteworthy resistance from traditional forms of belief and proponents of the Greco-Roman mythological world-view. This is true even for the non-Greek speaking populations, whose elite, educated in Greek, participated in the scientific activities *in Greek*. Latin speakers who were educated enough as to be interested in these subjects read or studied them in Greek – or bought educated Greek slaves; while Aramaeans themselves contributed mightily in Greek: the two most notable thinkers being Iamblichus from Apamea in Syria (d. ca. 325) and Porphyry from Tyre in today's Lebanon (d. ca. 305). Plotinus (d. 270) provides the most striking example: a Greco-Egyptian, or most likely a native Latin speaker from upper Egypt (Plotinus is a Latin name – Plotina was the

15 Of the many studies on the Ptolemies and the early Empire, particularly revealing of cultural policies is the study by Spawforth.

emperor Trajan's wife – and he was the protégé of the Roman emperor and Roman aristocracy), he taught philosophy in Rome *in a defective Greek* whose written expression had to be corrected by Porphyry,¹⁶ whose native tongue was Aramaic!

But the emergence of Christianity as a social force in the fourth century proclaimed and championed the mythological approach to reality in a form more vehement than anything that Hellenic traditional forms of belief could produce. The defining characteristic of late antiquity, certainly from the viewpoint of the history of science, but also more generally, was the conflict between Hellenism and Christianity, the ensuing defeat of the former, and the complete change in outlook and approach to reality that this brought about. This was of huge consequence to science: truth was no longer what was discovered at the end of open-ended inquiry into reality by rational – including logical and mathematical – means, but what is encoded and revealed once and for all in a book: in the case of Christianity, the mythological narrative of the Bible.¹⁷ Others scholars have more charitably called this change in outlook a change from the anthropocentric to the theocentric.¹⁸ This, though perhaps true from a certain viewpoint, softens the contrast; but it is necessary to be explicit about its stark and vehement nature.

After Constantine established Christianity as the state religion of the Roman Empire early in the fourth century, the pressure on the Hellenes was thus to conform – the pressure being exerted by social, administrative, and violent means: the lynching of the woman scientist Hypatia in Alexandria by a Christian mob, instigated by the bishop Cyril, later sanctified for his efforts; Justinian's edict prohibiting Hellenes to teach, thus effectively shutting down the Academy in Athens in 529; and a host of other measures and activities, all well documented, aiming at suppressing, delegitimizing, and ultimately killing or converting the adherents of the Olympian religion (and other religions as well).¹⁹ The effect on

16 Porphyry, *Life of Plotinus*, §§ 19–20.

17 In a chapter in which he discusses the interplay and dialectic between tradition and innovation (or mythos and logos, traditional beliefs and science) in Hellenic societies until late antiquity, G.E.R. Lloyd makes the following assessment of the change that came about at the end of that process: “What in some areas of thought was to alter the balance [between tradition and innovation] irrevocably – indeed by the sixth century A.D. had already done so in those areas – was the appeal to a particular text, the Bible, as revealed truth. The shift from reference to the ‘divine Hippocrates,’ the ‘divine Plato,’ and so on, to reference to the word of God may seem not so great in verbal terms, but it reflects fundamental differences not least in the underlying institutional realities: the creation of a church, the constitution of Christianity as the official religion of empire, and the availability of a new battery of sanctions that could be deployed against the deviant;” *Revolutions of Wisdom* 107.

18 Athanassiadi in *Mutations*, p. ix, and throughout the Introduction.

19 A recent publication edited by Marie-Françoise Baslez, on the persecutions conducted by Christians in the fourth century alone, offers nuanced and sensitive studies of their history, even if at times apologetic for the stark presentation of Christian cruelty. In one of the articles,

the progression of science of such relentless persecution from the fourth century onwards was accordingly for Hellenic science to consolidate and rationalize its teachings and establish a corpus of Hellenic doctrine and eventually dogma, as the line of defense against Christian dogma. This trend can be documented in most fields of Hellenic endeavor. Up until the third century the various schools of ancient science/philosophy were active; after that they gradually fade out and only Platonists and Aristotelians remain to contest the center of general scientific activity. The same applies to particular fields like medicine: in the second century Galen was energetically arguing against the other approaches to medicine which were antagonistic to his own; in the following centuries we hear less and less of them. And the most explicit acknowledgment of this effort to consolidate, rationalize, and dogmatize the results of Hellenic learning comes from the field of medicine: the emperor Julian, himself in mortal combat against Christianity in the fourth century, asked the physician Oribasius to collect “all that is most important from all the best doctors” in a comprehensive *Medical Collection*, which Oribasius did, in seventy volumes.²⁰ Similar developments can be seen in astronomy with and after Ptolemy (second century), whose work was eventually frozen as the undisputed authority in that field, and in other sciences: a body of doctrine became standardized, consolidated, and dogmatized, usually on the authority of a key figure or figures, for the purposes not only of teaching at home but, more importantly, of projecting persuasive respectability abroad in the contest with rival dogmas.

The doctrine of science itself was what we call Neoplatonism, a system with an Aristotelian body capped by a rather incongruous Platonic head, while the curriculum of scientific teaching was Aristotelian throughout, with the Platonic dialogues forming the culmination of philosophical training.²¹ Aristotle himself had already, and famously, established the classification of the different parts of philosophy/science, in *Metaphysics* E.1 and K.7, into the various fields I enumerated above. This classification was used by Andronicus of Rhodes for editorial purposes when he put the extant school treatises of Aristotle in a certain se-

“Les maisons de la cachette” (pp. 395–402), Yann Le Bohec begins his study (p. 395) by stating that the task of the historian is not to judge what is good and what evil in history but to establish the facts, and that the practices revealed by these facts should not be explained, much less judged, as if they were taking place today. This is well and good, and applies to the present study as well, which is why I cite it, but at the same time it must also be emphasized that such practices of curtailing and denying, by whatever means, freedom of speech, religion, and thought, even if we do not condemn them by modern standards, had historical consequences which should be equally explicitly stated and not swept under the rug.

20 *Corpus Medicorum Graecorum* 6.1.1.4.7f., cited in Lloyd, *The Revolutions of Wisdom*, 332n152.

21 A brief survey of late antique developments in the conduct and instruction of science/philosophy in Greek is conveniently offered by Rudolph, “The Late Ancient Background.”

quence in his edition in the first century BC, and was later further elaborated upon by the Neoplatonists for the purposes of instruction in their numerous introductions to the study of Aristotle. But the Neoplatonists went even beyond that and erected an elaborate schema of classification of Aristotle's works in which individual treatises corresponded to a discrete field of study. The result of this process was that the classification of *Aristotle's* works became, in effect, a classification of all the sciences, and hence of *all human knowledge*. Thus a curricular classification of the sciences whose function was initially descriptive and later preponderantly pedagogical, eventually was dogmatized to acquire normative value on the assumption that it reflected ontological reality as well: as the last Neoplatonist teachers in Alexandria insisted, science/philosophy – that is, all rational human knowledge – is so divided because inherently and by its very nature can be only so divided.²²

The system thus codified for pedagogic and ontological – or factual – reasons represented the sum total of Hellenic science and offered the scientific view of the world in contradistinction to the mythological narratives of religions – not only Christianity, but potentially all religions. It was thus eminently teachable, but also, not being culture- and religion-specific, exportable. And it was this essentially Aristotelian system that was adopted and translated, in the pre-Renaissance era, into the languages of the various peoples in the West (of India).

I do not know (or I do not know yet, if I live long enough) the historical reasons behind this momentous change in cultural attitudes – from engaging in science *in Greek* to *translating* it into one's own language – but the evidence we have all points to the fact that at the beginning of the sixth century, in a period of amazing historical synchronicity, there are programmatic efforts to translate the Greek Aristotelian curriculum into national languages. Boethius in Italy conceives the plan to translate Aristotle into Latin, his contemporary Sergius of Rēsh 'aynā in northern Mesopotamia starts on a similar project in Syriac, while *their* contemporary, the Sasanian emperor Chosroes I (Anūshirwān) is clearly sponsoring the translation of some of the logical and physical works of Aristotle into Middle Persian. Although the progress and outcome of these beginnings varied as time went by, the fact is that the Hellenic scientific body of learning in the form of the Aristotelian curriculum as developed and dogmatized by the last Hellenes, the Neoplatonists, was internationally acknowledged throughout the West even before Islam appeared.

22 See Gutas, "Paul the Persian," 255–259.

2. The Historical Agency of Traditional Beliefs and Religion

Before we proceed with Islam, let me discuss a bit more explicitly the main conflict between science and traditional beliefs and religion. A very significant subject, it is usually misunderstood and misapplied in discussions of the history of science.

Briefly, traditional beliefs and religion can be understood as the account of reality provided in a mythological narrative endorsed by a society at large. This mythological narrative is generally considered sacrosanct and, in monotheistic religions, immutable and unnegotiable. But scientific research discovers ways in which reality works that are inconsistent with this narrative. At this point the real issue is not whether religion in general, or any specific religion, as it is mostly taken, is essentially for or against science, but the political, social, and cultural factors that are powerful enough to determine whether, and the extent to which, the scientific discovery is to be accommodated to the mythological narrative or upheld independently. Accordingly, there is a *scale of adherence to the mythological narrative* of a religion, from none to total, which is the discriminating factor in this case. If no adherence at all on one end of the scale would be atheism, the minimal might be that of the Epicureans, for example, who made gods responsible for the universe but then abstain completely from running it. Descartes (1596–1650) also did the same: as Blaise Pascal (1623–1662) said in his *Pensées*, complaining about him,

To write against those who plunge too deeply into science. Descartes.

I cannot forgive Descartes. He would gladly have left God out of his whole philosophy. But he could not help making Him give one flip to set the world in motion. After that he had no more use for God.

Descartes, useless, and questionable.²³

Around the middle of the scale would be most likely the majority of medieval scientists: while adhering to and even believing in the mythological narrative of their respective religions, they nevertheless found different ways to accommodate it to the superior scientific truth, usually by allegorizing it and making it express symbolically what the scientists say, as the early Muslim philosophers did (about whom more later in section 3). There are thus numerous positions that were historically adopted by different peoples at different times and which register at different points on the scale.

So when one discusses religion as inhibitor of scientific progress one should be careful to discriminate as I have just described. For frequently religion is the motivating factor for scientific research. An excellent example is provided by the

23 J.M. Cohen, translator, 82.