

# Early Medieval Arabic Polymathy: A Preliminary Sketch

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By perfect polymath (*perfectam polymathian*) I mean knowledge of various subjects, collected from all kinds of studies, overflowing with fullness, and wandering freely through all the fields of the disciplines as far as the human mind is able to pursue with tireless energy.

—Johann von Wovern (d. 1612),  
*De polymathia tractatio* (Basle, 1603), 16f.\*

I took the word philology in the sense of the ancients (*le sens des anciens*), as a synonym for polymathy.

—Ernest Renan (d. 1892),  
*L'Avenir de la science* (Paris, 1890), 506n69.

## I. Introduction to Medieval Arabic Polymathy

**N**EARLY ALL THE CELEBRATED scholars of the Islamic tradition have been described as polymaths. Yet the intellectual history of medieval Arabic polymathy *per se* has received only a modicum of attention in the field of Islamic studies.<sup>1</sup> This is true as much for the educational paradigm of polymathy as for its appeal as a scientific methodology and sociopolitical ideal of Islamic intellectual history and civilization. Polymathy refers to knowledge of the various sciences and arts mastered by one scholar, the polymath. It was the normative standard and scholarly model for the attainment of knowledge (*ilm*) in the Arabo-Islamic intellectual tradition of the Middle Ages.<sup>2</sup> However, this knowledge may also be described as a form of encyclopaedism that is not necessarily (to take a modern definition of polymathy) focused on the solution of any one single theoretical or practical problem.<sup>3</sup> Three

principal factors were fundamental to the rise of Arabic polymathy and polythematic knowledge, that is, knowledge dealing with more than one field or discipline. First, there was the early introduction of the Platonic methodology of analysis by division (Gk. *diairesis*, Ar. *qisma*), Aristotelian *genus-differentia* definition (*ḥadd*), and the Porphyrian branched tree (*mušāḡḡar*), by which the sciences, or knowledge, were (sub)classified into discrete disciplines (*tartīb*) and the varied genres in which they were to be expounded.<sup>4</sup> Second, there was scholasticism as a method of learning, or pedagogy, which, for the acquisition of true knowledge, emphasized dialectical reasoning, or disputation, argued according to strict logical rules, particularly as adopted by Muslim theologians (*mutakallimūn*) and juriconsults (*fuqahā'*).<sup>5</sup> And third, there was the professionalization of knowledge, that is, scholars or epistemic communities (*ahl al-'ilm*) who established individual intellectual guilds (*ṣunūf aṣ-ṣinā'āt*), alongside those of the artisanal crafts (*ṣinā'āt aṣḥab al-miḥan*), which defined—but also in the processes blurred—the boundaries of the sciences and, correspondingly, the constituents of polythematic knowledge of the polymath.<sup>6</sup>

The professionalization of scientific guild affiliations, it may be argued, culminated in the rise of Sunnī-endowed colleges (*madāris*), which were primarily centered on teaching the jurisprudential sciences (*al-'ulūm aṣ-ṣar'iyya*) and scholastic theology (*kalām*). Importantly, these colleges also taught numerous ancient sciences, such as logic and medicine, as well as observational astronomy, which was essential to timekeeping for regulating the ritual prayer times, the direction of prayer (toward Mecca), and calculating the phases of the lunar calendar for the various religious festivals.<sup>7</sup> These colleges as well as the newly founded libraries were part of the Sunnī revival patronized by the Saḡūqid (r. 429–590/1038–1194) and Ayyūbid (r. 564–658/1169–1260, Egypt and Damascus) dynasties (see Fig. 1).<sup>8</sup> In devising polythematic curricula, these Sunnī colleges standardized teaching and learning, sanctioning the constituents of knowledge itself.<sup>9</sup> Command of these scientific corpora would have been presumed of anyone laying claim to the title of scholar (*'ālim*), or polymath.<sup>10</sup> While much medieval collegiate pedagogy took the commentarial form—whether in the religious or philosophical sciences—pupils were in general assured by their professors that the base textbooks they studied and glossed were the “state of the art” or “bestsellers” in their disciplines (see Fig. 2). The syllabi informed the nature and breadth of medieval Arabic polythematic knowledge, covering topics such as the propaedeutic Arabic grammar, rhetoric (*balāḡa*), dialectical logic (*ādāb al-baḥṭ*) or disputation theory (*'ilm al-ḥilāf*)—that is, the *trivium*—as well as advanced principles of Islamic jurisprudence (*uṣūl al-fiqh*), theology, and metaphysics. Academicians shared not only common pedagogies

and syllabi but also the lingua franca of Arabic, all of which promoted the rapid spread of knowledge and facilitated a great deal of academic migration.<sup>11</sup> In addition, professors (not the university itself, as in Latin Christendom) conferred upon graduates recognized academic degrees, or teaching certificates (*iğāzāt*), that granted their pupils authority to teach certain subjects and textbooks at other institutions of learning in the lands of Islamdom (*dār al-islām*).<sup>12</sup> By the fifth/eleventh century, until the introduction of Western modernity (dating from [Napoleon] Bonaparte's invasion of Egypt in 1213/1798), this scholastic process led to the systematic professionalization of disciplinary bodies of knowledge and produced the notion of the archetypal polymathic dyad that counterpoised the solitary genius against the learned college professor.

How did these epistemic communities come to define and organize the myriad sciences in Arabo-Islamic intellectual history? For one, all knowledge was (rather crudely) demarcated by its place of origin: either native to the Arabian Peninsula, whence Islam emerged, or foreign to it, that is, the sciences of the Arabs and Islam (*'ulūm al-'arab wa-l-islām*), on one hand, and the "foreign" sciences (*'ulūm al-'ağam*) or those of the ancients (*awā'il*), on the other. (This bifurcation of knowledge goes back to the polythematic mathematician Muḥammad ibn-Mūsā al-Ḥwārizmī's [d. ca. 232/847, Latin *Algorismus*] *Miftāḥ al-'ulūm* [*Key to the Sciences*], which he compiled as a manual for the benefit of state secretaries and scribes.<sup>13</sup>) The Arab sciences were also known as the transmitted and scriptural sciences (*al-'ulūm an-naqlīya wa-l-waḍ'īya*), or the (religious) sciences of Islam (*'ulūm ad-dīn*), whose systematical classification occurred after the introduction of the "foreign" sciences, particularly Aristotelian logic, with which many of them came to be mixed.<sup>14</sup> The transmitted sciences included topics as diverse as Arabic grammar (*naḥw*), philology (*fiqh al-luġa/ṣinā'at al-adab*), lexicography (*luġa*), compositional prose (*inšā' an-naṭr*), administrative writing (*ṣinā'at al-kitāba*), Arab(ic) poetry and prosody (*'arūḍ*), and rhetoric. These propaedeutic arts and sciences were required before studying, for example, the sciences of jurisprudence (*fiqh, uṣūl al-fiqh, al-'ulūm aš-šar'īya*), which include regulations on agricultural land taxes (*ḥarāğ*), poll taxes levied on non-Muslim communities (*ğizya*), and inheritance (*'ilm al-farā'id*)—the latter three fields of tax law also required studying applied mathematics, a "foreign" science—theology, the sciences of Muḥammadan tradition (*'ulūm al-ḥadīth*), the Qur'ān and its exegesis (*tafsīr*) and hermeneutics (*ma'ānī*), and history (*ta'rīḥ/aḥbār*), among other secondary fields.

The themes and topics constituting the *Sitz im Leben* of Arabic polymathy include nomenclature, honorifics (*alqāb*), and patronage; *adab* ("belles-lettres") as a body of polythematic knowledge; and *adīb* as

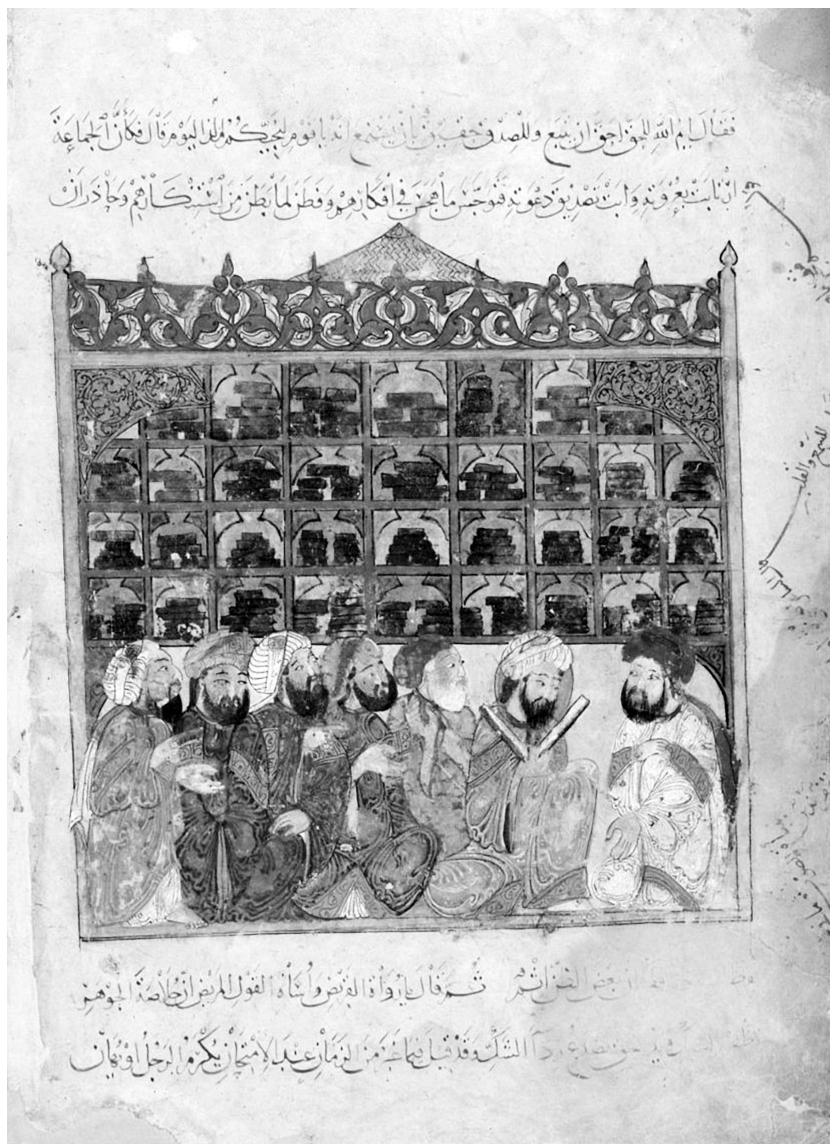


Fig. 1 Library with Pupils, al-Qāsim ibn-ʿAlī al-Ḥarīrī (d. 516/1122), *Maqāmāt* (*Sessions*), Bibliothèque nationale de France, Paris ms arabe 5847, fol. 5<sup>b</sup>, completed in 633/1236f.





Fig. 2 Marginalia on 'Abdallāh ibn-Aḥmad an-Nasafī's (d. 711/1310) *Kitāb Kanz ad-daqā'iq* (On the Treasure of Exactitude), a popular Ḥanafī textbook on the branches (*furu'*) of the science of positive law (*ilm 'amalī*), University of Pennsylvania MS 1896, fol. 6<sup>r</sup>, dated 5 Dū-l-Qaḍa 1015/4 March 1607.

philologist/polymath. (The latter synonymic dyad appears not only in medieval Arabic polymathic typologies, but also in those of the Renaissance classicist Johann von Wovern, who also considered philomathy and polyhistory as synonyms of polymathy, and in the orientalist Ernest Renan's view of himself.<sup>15</sup>) Other common threads in Arabic polymathy weave a tapestry so rich that we can only enumerate them here: discussions of the chancellery secretary or scribe (*kātib*) as polymath; of travel as a knowledge quest (*riḥlat ṭalab al-'ilm*; *Wanderjahre*);<sup>16</sup> of colleges, libraries, and observatories as polymathic foundations (*awqāf*);<sup>17</sup> of booksellers' catalogues, as well as those of public and private libraries;<sup>18</sup> of polymathy as a form of "collecting culture" (*Sammelkultur*); of scholastic pedagogy, curricula, syllabi, and certificates of authorization or audition (*samā'āt*) and their relationship to the transmission of polythematic knowledge; of disputation (*munāzara*) and disquisition (*ḥiṭāb*) in royal courts or salons (*mağālis*), mosques, and college halls as the performance of polymathy and its audience;<sup>19</sup> of literary *topoi* of polymathy in such genres as biography and prosopography (*ṭabaqāt*), doxography, and gnomology;<sup>20</sup> of Arabo-Islamic historiography on the transmission of Hellenic knowledge (as, e.g., in the "from Alexandria to Baghdad" traditions<sup>21</sup>); of turning points in Islamic history and their impact on the nature and stock of polythematic knowledge, such as the creedal inquisition (*miḥna*) unleashed by the 'Abbāsīd caliph al-Ma'mūn (r. 198–218/813–33) and the ensuing *Kulturkampf* over religious, scholarly authority between the backers of the rational (theological) sciences (*ahl al-'ulūm al-'aqlīya*) and those of transmitted Muḥammadan traditions (*ahl al-ḥadīth*);<sup>22</sup> and of the Šu'ūbīya, or "people's movement" made up mostly of Persians in the third/ninth and fourth/tenth centuries, which challenged the supremacy of the 'Abbāsīd empire's (r. 132–656/750–1258) ruling Arab élite along with the social status of Arab(ic) knowledge, literature, and poetry.<sup>23</sup>

The periodization of Arabic polymathy (defined generally to include knowledge of the ancient, "foreign" sciences and those of the Arabs) from the second/eighth century to ninth/fifteenth century, that is, from the early to late Islamic Middle Ages, may be divided into four phases. First, there was the civilizing process of *adab*.<sup>24</sup> This venture of late Umayyad and early 'Abbāsīd chancellery secretaries created a body of polythematic knowledge on the basis of Middle Persian (Pahlavi), Graeco-Hellenistic, and Sanskrit cultural, literary, and scientific paradigms. As knowledge that was key to culturally educating the ideal citizen of a polity (*Bildung*),<sup>25</sup> *adab* achieved an abiding dominance in the Islamic tradition; recognition of its cultural and intellectual significance extended from the Mediterranean Sea to the Indus River, cementing the idea that the empire of Islam was heir to the realm of Alexander the Great.

The second phase consists of the ‘Abbāsīd Graeco-Syro-Arabic translation movement in Baghdad from the second/eighth century to fourth/tenth century, which translated effectively all (known) Hellenic philosophical and scientific knowledge into Arabic.<sup>26</sup> Command of these texts furnished a perfect polymath, the philosopher/sage (*ḥakīm/faylasūf*). Central to this phase, as it related in particular to the classification of the Aristotelian sciences, is the polythematic philosopher Abū-Yūsuf Ya‘qūb ibn-Ishāq al-Kindī (d. ca. 256/870, Latin Alkindus) and his circle of translators, who were responsible for the initial naturalization of the “foreign” sciences in an emerging “native” Arabo-Islamic milieu.<sup>27</sup>

Phases three and four may be distinguished as the periods, respectively, before and after Avicenna (d. 428/1037, Abū-‘Alī Ibn-Sīnā), whose polymathic presence looms over the whole of the Middle Ages. The third phase is marked especially by the figure of the Neoplatonic philosopher Abū-Naṣr al-Fārābī (d. 339/950, Latin Alfarabius), who because of his systematic classification of the philosophical sciences (*marātib al-‘ulūm*) was known after Aristotle (who is likened to Islam’s prophet, Muḥammad, as the seal of the ancient philosophers [*ḥātīm al-ḥukamā’ al-qudamā’*]<sup>28</sup>) as the second “master teacher” (*mu‘allim*), or polymath.<sup>29</sup> Al-Fārābī’s monumental *Iḥṣā’ al-‘ulūm* (*Enumeration of the Sciences*, Latin trans. *De scientiis*) addresses both the Aristotelian philosophical sciences and the arrangement of the religious (Islamic) and linguistic (Arabic) sciences among them.<sup>30</sup> Al-Fārābī’s treatise established the edifice of polythematic knowledge in the Islamic world and influenced nearly all subsequent classificatory works in the Arabic and Latin traditions.<sup>31</sup>

Al-Fārābī’s prodigious *œuvre*—along with that of the Baghdad school of Aristotelians with whom he was associated—commanded great authority as a continuation of the late antique Alexandrian commentarial tradition.<sup>32</sup> It constitutes, after al-Kindī and his circle (about whom al-Fārābī is conspicuously silent), the second stage of the naturalization of Greek philosophy into Arabic in a literary style (albeit at times pedantic) well suited to the taste of his (al-Fārābī’s) Muslim audience. In part because of the fierce competition for patronage and royal approbation, this phase of Arabic polymathy exhibited a sharp scholastic divide between the proponents of the “foreign” sciences on the one hand and those of the “native” sciences on the other. Exemplary to this divide is the well-known court debate of the year 320/932 between the grammarian Abū-Sa‘īd as-Sirāfī (d. 368/979) and the logician Abū-Biṣr Mattā ibn-Yūnus (d. 328/940) on the scientific merits of (Arabic) grammar versus those of (Greek) logic.<sup>33</sup>

All of this was to change after Avicenna, who was regarded by later medieval philosophers and theologians as the best codifier of all philo-

sophical knowledge to be found in the most mature versions of the Aristotelian sciences. Avicenna's topics and ineluctable synthesis of Graeco-Hellenistic philosophy with subjects that hitherto had been the domain of scholastic theology and Šūfic mysticism included (the philosophical naturalization of) the revelation (*waḥy*) of the Qur'ān, the nature and noetics of prophetic knowledge, and the eschatology of the human soul (*nafs*) and intellect (*'aql*). Constituting phase four, Avicenna's philosophical project represents the terminus of the naturalizing process of the Aristotelian sciences into Arabic (and New Persian).<sup>34</sup> Avicenna's appropriation and systematic treatment of religious themes for philosophical ends had wide currency among most scholars of the religious sciences, but particularly among Aš'arī-Šāfi'ī theologians, forever blurring the scholastic boundaries of the sciences of philosophy and Islam as well as the nature of polythematic knowledge itself.<sup>35</sup>

The remainder of this essay will frame an examination of phases one and two of Arabic polymathy around the question of what the constituent sciences and arts of early medieval polythematic knowledge are. Regarding phase one, I will first address the literary origins of Arabic polymathy under the aegis of the late Umayyad caliphate and the *de facto* division of knowledge between the "foreign" and the "Arab" sciences. The essay will then turn to phase two, focusing on the rise of polymathy under the early 'Abbāsīd empire and the Graeco-Arabic translation movement as exhibited in al-Kindī's classification of the Aristotelian corpus and his own polythematic *œuvre*—concluding with the antiquarian catalogue of a Baghdad bookseller that reflects the constellations of knowledge in Islamic civilization at the turn of the fourth/tenth century.

## II. The Origins of Polymathy in the Arabic Literary Heritage

The origins of Arabic polymathy lie in the Damascene office of the chancellery under the late Umayyad dynasty (r. 41–132/661–750). This period of Umayyad history witnessed the professionalization of the chancellery, particularly after the Arabicization (*ta'rib*) reforms of the caliph 'Abd-al-Malik (r. 105–25/724–43), which replaced the administrative languages of Greek and Middle Persian—of, respectively, the Byzantine and former Sassanian empires—with Arabic.<sup>36</sup> Because of the exigencies of empire building, the secretaries of the Umayyad chancellery invented (classical) Arabic prose out of, and to be distinguished from, the "rhymed prose" (*sağ'*) of the Qur'ān, the scriptural *koine* of Islam.<sup>37</sup> This process included, in particular, codifying Arabic orthography and transcription

of diacritics, such as letter-pointing (*iġām, taġīm*, lit. to impose “foreign” elements on Arabic) and vocalization (*taškīl*), a formative linguistic and paleographic endeavor in itself.<sup>38</sup> This administrative language, the handiwork of predominantly non-Arab secretaries of Persianate cultural heritage, became the generative prose of the translational target language for Perso-Hellenistic knowledge and later, with the ‘Abbāsīd translation movement, for nearly all Graeco-Hellenistic philosophical and scientific literature.

This process of Arabicization produced two literary works with far-reaching implications for the history of polymathy in Islamic civilization. The first, associated with the editorship of the Persianate chancery secretary Sālim ibn-‘Abdallāh Abū-l-‘Alā’ (fl. 65–125/685–744), is the pseudepigraphical *Sirr al-asrār* (*Secret of Secrets*, hereafter *Secrets*, whose translation as *Secretum secretorum* into Latin and later European vernaculars constitutes one of the most complex reception histories of any world literature text).<sup>39</sup> The *Secrets* is styled as an epistolary exchange, purportedly between Aristotle and Alexander the Great (see Fig. 3). It is based on translations and redactions of texts from the Graeco-Persian “mirrors for princes” genre (Latin *Specula principum*), the purpose of which was to instruct and enlighten its audience of future Umayyad caliphs and their administrative staff as well as the Arab aristocracy, more generally, who formed the ruling élite of a burgeoning empire in the Near East.<sup>40</sup> Encyclopaedic in its scope, *Secrets* concerns such topics as the general principles of governing, statecraft (*siyāsa*), and military strategy (*siyāsat al-ḥurūb*), while also providing the earliest enumeration of the disciplines (*funūn*) of the ancient (*qadīma*) Greek sciences, mastery of which was deemed necessary for a princely polymathic knowledge-base. Fields of study included astrology (*‘ilm an-nuġūm*), political astrology (*‘ilm al-aḥkām*), astronomy (*‘ilm al-hay’a/ al-‘ilm bi-l-falak wa-l-kawākib*), meteorology (*ahwā’*), anatomy (*aġzā’ al-ġism*), humoral medicine (*ṭibb*), *materia medica* (pharmacology, *adwiya*), hygiene, marital relationships (*wifāq wa-ḥilāf az-zawġayn*), table manners (*ādāb al-akīl*), magic (*siḥr*), talismans, physiognomy (*‘ilm al-firāsa*), onomancy, herbal and lapidary lore, and gnomologia. Collectively, these sciences comprised a curriculum of polythematic knowledge of all known, or officially sanctioned, “foreign” sciences in the late Umayyad period. The *Secrets* also signaled the Arabic rebirth of classical ancient knowledge while exhibiting, in literary form, the power of the conquering Arabs—not only over the realms of the Byzantine and Persian empires but also over knowledge itself.

The second work of note during this period is *Risāla ilā l-Kuttāb* (*Epistle to the Secretaries*, hereafter *Secretaries*).<sup>41</sup> This was the earliest “handbook” of professional ethics (*ādāb*) in Arabic, by ‘Abd-al-Ḥamīd ibn-Yaḥyā al-‘Āmirī al-Kātib (k. ca. 132/750), who was the last Umayyad chancellor and the



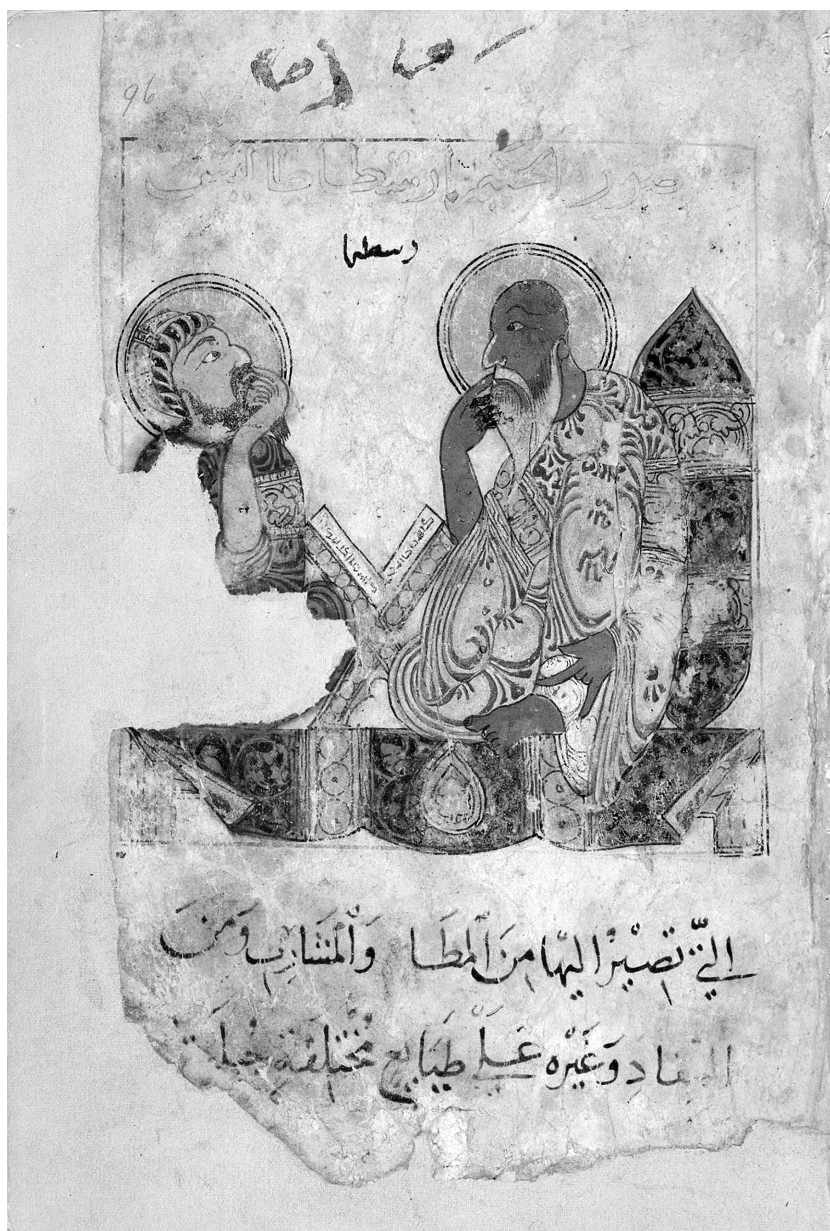


Fig. 3 Aristotle and a Pupil (who in this depiction is popularly considered to be Alexander), *Kitāb Naʿt al-hayawān* (*On Zoology*), British Library ms Or. 2784, fol. 96<sup>a</sup>, dated seventh/thirteenth century.

acclaimed progenitor of Arabic literary prose and epistolography.<sup>42</sup> In this work, al-Kātib formulates a professional curriculum of mainly Arab sciences to be acquired by all secretaries of the Umayyad chancellery—many of whom after the revolution in 132/750 would serve in the ‘Abbāsid chancellery, including, notably, the polymath (*adīb*) Ibn-al-Muqaffā‘ (k. 139/756), translator of the celebrated Perso-Indian animal fable *Kalīla wa-Dimna* (*Kalīla and Dimna*).<sup>43</sup> Besides adapting much of Graeco-Persian traditions of statecraft, the *Secretaries* concerns the literary, ethical, and disciplinary formation of the members of the secretariat guild—the first professionally organized guild of Islamic civilization.<sup>44</sup> Specifically, the *Secretaries* details the knowledge—much of it being part of what would become the Arab sciences—considered to be indispensable for the administration of an empire. ‘Abd-al-Ḥamīd’s curriculum includes such subjects as Arabic grammar, philology, lexicography, poetry, prosody, penmanship, epistolography, rhetoric (*ḥiṭāba*), qur’ānic literary style and exegesis, obligatory religious duties (*farā’id*), histories of the prophets and kings, and—for financial secretaries—the two “foreign” sciences of accountancy (*muḥāsaba*) and economic management.

In time, the polythematic curriculum of the *Secretaries*, with the exception of the last two “foreign” sciences, would form the rudiments of the religious sciences (*al-‘ulūm ad-dīniyya*) of the Arabs and later those of the literary arts (*al-‘ulūm al-adabīya*) of Islamic civilization. The latter is defined as a body of linguistic and literary knowledge encompassing many of the propaedeutic Arab sciences.<sup>45</sup> Such knowledge was intended to educate the model secretary and to cultivate in the ideal citizen of a polity (*avant la lettre*) humanistic habits of urbane etiquette and civility—the master of which was an acknowledged polymath (*adīb*, cf. *adab* to the civilizing process of the ancient Greek *paideia*).<sup>46</sup> In this respect, the professional exemplar of expert polythematic knowledge would shape the history of Arabic polymathy, which itself was inexorably linked to empire building. The chancellery secretaries of the Umayyad empire, then, are to be considered the first (or *primus inter pares*) polymaths of Islamdom.

It should be noted, finally, that the literary purpose of the *Secrets* and the *Secretaries* is primarily pragmatic, that is, to educate the ruling aristocracy in matters of statecraft and to professionalize the knowledge and identity of the secretariat, respectively.<sup>47</sup> Additionally, the Aristotelian tripartite division of the philosophical sciences into theoretical, practical (ethical), and productive (artisanal), with special emphasis on the latter two, appears to be implicit in both treatises’ enumeration of knowledge. Taken as a whole, this knowledge determined the formative ambit of polymathy in medieval Islamic civilization.

### III. Early Arabic Polymathy and “Humanistic Knowledge” (*al-Ulūm al-Insānīya*)

Much of the success of the ‘Abbāsīd Graeco-Arabīc translation movement of the second/eighth century to fourth/tenth century was undoubtedly owed to the literary development and linguistic standardization of Arabic prose under the chancellery of the Umayyad empire. The process of standardizing Arabic continued unabated well into the ‘Abbāsīd period. As the target language of translation, the Arabic language was rapidly evolving even as it conveyed over time nearly the entire corpus of Greek philosophical and scientific thought to a culturally and linguistically new audience—the Islamic polity (*umma*). The center of the translation movement was Baghdad, the metropole of the ‘Abbāsīd empire, whose founding in the year 145/762 (using political, electional astrology and geomancy to determine the most auspicious date and site) constitutes a major turning point in world intellectual history.<sup>48</sup> There, the patronage of Arabic and intermediary Syriac translations of (Greek) “foreign” texts, with subjects ranging from alchemy to medicine to metaphysics, became a collective obsession of the Baghdad aristocratic élite, including powerful state functionaries, the ruling Arabs, and the caliphs.<sup>49</sup> Many of the translators, recognized polymaths themselves, were of Eastern Christian backgrounds, with the Arab Nestorian physician Hunayn ibn-Ishāq al-‘Ibādī (d. ca. 260/874) and his circle of translators standing out.<sup>50</sup> By the fourth/tenth century, after nearly two hundred years of Arabic translations, imperial Baghdad became a global index (*fihrīst*) of polythematic knowledge intersecting with the intellectual and cultural traditions of Greek, Iranian, Indian, Sogdian, and Babylonian civilizations.

Although his influence often went unacknowledged by later Arabic philosophers, much is owed to al-Kindī for his early classification of the “foreign” sciences, especially the framing of Graeco-Hellenistic polythematic knowledge in an emerging Islamic civilizational milieu. Celebrated as “the philosopher of the Arabs” (*ḥaylasūf al-‘arab*), al-Kindī is credited with inaugurating the Arabic philosophical heritage.<sup>51</sup> He lived in Baghdad in the heyday of the Graeco-Arabīc translation movement, where, with a team of translators, who were for the most part Syriac-Christian, al-Kindī (and later his “school” of philosophy) contributed greatly to the creation of a uniquely Arabo-Islamic form of polythematic Neoplatonic Aristotelianism.<sup>52</sup> Specifically, they forged two pseudo-Aristotelian treatises, appropriating later Neoplatonism. Al-Kindī had a direct hand in the first of these two treatises, titled *Uṭūlūḡīyā arīṣṭūṭālīs* (*Theology of Aristotle*, Latin trans. *Theologia aristotelis*, dating from the Renaissance), a paraphrase of parts of Plotinus’s *Six Enneads*.<sup>53</sup> The second was

*al-Idāh li-ariṣṭūṭālīs fī l-ḥayr al-mahd* (Aristotle's *Explication of the Pure Good*, Latin trans. *Liber de causis*), comprising extracts from Proclus's *Elements of Theology*.<sup>54</sup> The popularity of these two pseudepigraphal texts, especially the former, was central to the development of Neoplatonic noetics, cosmogony, and cosmology in medieval Arabic and Latin philosophy. In addition, al-Kindī further naturalized Greek philosophy by writing a lexicon of Arabic philosophical terms, as translated from the Greek, titled *Fī Ḥudūd al-aṣyā' wa-rusūmihā* (*On Definitions of Things and Their Descriptions*).<sup>55</sup> This glossary advanced the "nativizing" of Greek philosophical vocabulary in Arabic. It was an early witness to the genre of definitional works (*ta'rifāt*, *ḥudūd*) of Arabic technical terminology, which were essential to gaining proficiency in any discipline and to advancing polythematic learning.

Apart from his role in editing and adapting some of the Arabic translations of his circle, including (perhaps most importantly) Aristotle's *Metaphysics*, al-Kindī devoted himself to composing treatises and epistles (the latter Umayyad secretarial genre of epistolography he appropriated for philosophical writing).<sup>56</sup> These books by or ascribed to him number more than three hundred and are on nearly all fields of the ancient sciences, many of which defined for the first time these medieval branches of knowledge in Arabic.<sup>57</sup> Al-Kindī did not see any conflict, theologically, between revealed knowledge and human reason, that is, between Islam (as it was then developing) and philosophy (as it was then being translated and assimilated). Moreover, he championed the use of Euclidean geometrical proof in his philosophical argumentation and considered metaphysics to be *the* science for elucidating the truth claims of revealed religion.<sup>58</sup> For instance, al-Kindī argued that the world had a beginning, being created *ex nihilo*, as against the Aristotelian doctrine of its coeternality with the unmoved mover, or God. He also maintained that the apodeictic truths reached by philosophy—or axiomatic proof by geometry, as he preferred—may be revealed to an unlettered prophet and that the eschatology of bodily resurrection (*à la* Qur'ān 36:78–82) is within God's power to will. Besides such theological (*kalāmī*) arguments, al-Kindī deployed qur'ānic religious themes and phraseology in his own philosophical writings, wherein one finds verses from the Qur'ān quoted as proof texts (*ṣawāhid*).<sup>59</sup> His method of naturalizing Greek philosophy, which would have an enduring influence on al-Fārābī and especially Avicenna, may be described as one of philosophizing Islam as well as Islamicizing philosophy. This approach to both the body of knowledge associated with philosophy and that with religion fused the "foreign" sciences with those of Islam—reinventing the nature and compass of Arabic polymathy for the Middle Ages.

Al-Kindī classified the then-known translations, or knowledge, of the Aristotelian sciences in an epistle titled *Risāla fī Kamīyat kutub arisṭūṭālīs wa-mā yuḥtāḡu ilayhi fī taḥṣīl al-falsafa* (*On the Number of Aristotle's Books and What Is Necessary to Acquire Philosophy*).<sup>60</sup> In laying out the earliest curriculum of late antique Aristotelianism, al-Kindī's epistle established the foundation for philosophical polymathic learning in the Arabic tradition.<sup>61</sup> Considering that a great part of Aristotle's authentic corpus had been translated by the time of al-Kindī, this epistle furnished his audience with a "progress report" on the state of the Arabic translations of the "foreign" sciences.<sup>62</sup> *Aristotle's Books* epitomizes the indigenous Arabic historiographical narrative of the transmission of Greek knowledge "from Alexandria to Baghdad": the Arab(ic) rediscovery and recovery of the ancient sciences as having led to (*avant la lettre*) the renaissance of Islamic civilization with all the implications this concept conveys for the cultivation of humanistic polymathy.<sup>63</sup> This framing had provided the 'Abbāsīd caliphate ideologically with an imperial chronography that bypassed (Byzantine) Constantinople and linked Baghdad directly to Alexandria.<sup>64</sup> Historically, after the death of Alexander the Great, the 'Abbāsīd translation movement marks the culmination of the Hellenization of the Mediterranean world and the Near East.

In *Aristotle's Books*, al-Kindī emphasizes at length that a pupil seeking to attain philosophical knowledge (*ilm falsafī*) must first learn the science of mathematics (*ilm ar-riyāḍiyyāt*), or the (early Latin Boethian) *quadrivium*, namely, arithmetic (*ilm al-'adad*/*ilm al-ḥisāb*), geometry (*handasa*), harmonics (*ta'līf*, or music [*mūsīqā*]), and astronomy (*tanḡīm*)—the latter two representing the applied branches of the former two sciences. The stress al-Kindī places in the epistle on mastering the *quadrivium*, geometry in particular, signals his own predilection to employ an axiomatic system for philosophical, apodeictic proof. Following an adapted form of the Alexandrian curriculum of Aristotelianism, wherein each treatise corresponds to a particular science, he enumerates Aristotle's books under the theoretical and practical branches of philosophy (see Fig. 4). Theoretical philosophy is divided, by this account, into physics, metaphysics, and (ostensibly) logic, *contra* traditional Aristotelianism which considers logic merely as an instrument (Gk. *organon*, Ar. *āla*) of philosophy; the mathematical sciences here are omitted as a division of theoretical philosophy. Practical philosophy is divided into ethics, œconomics (housecraft), and politics. The Aristotelian sciences for al-Kindī comprise all demonstrable humanistic knowledge (*al-'ulūm al-insānīya*): (i) Logic (*manṭiq*) is equated analogously to the *quadrivium*. It is an instrument of human reasoning which proceeds by determining the truth or falsity of propositions and arguments. According to al-Kindī,



the branches of logic consist of the eight books of the *Organon* (not the conventional nine of the later Alexandrian logical curriculum which includes Porphyry's *Eisagoge* [*Introduction (to Aristotle's Categories)*] as the first and Aristotle's *Rhetoric* and *Poetics* [which al-Kindī includes] as the eighth and ninth book, respectively<sup>65</sup>). The eight books are *Categories* (*Catg.*), *De Interpretatione* (*De Int.*), *Prior Analytics* (*APr.*), *Posterior Analytics* (*APo.*), *Topics* (*Top.*), *Sophistici Elenchi* (*Soph.*), *Rhetoric* (*Rhet.*), and *Poetic* (*Poet.*); (ii) *Physics* (*aṭ-ṭabī'īya*) is science that investigates the properties common to all things occurring in nature. Its branches are each outlined in ten books, namely, *De generatione et corruptione* (*GC*), *De caelo* (*De Cael.*), *Meteorology* (*Meteor.*), *Mineralogy* (*Mineral.* [not by Aristotle]),<sup>66</sup> *De Plantis* (*De Plant.* [Pseudo-Aristotle]),<sup>67</sup> *De partibus animalium* (*Part. An.*), *De anima* (*De An.*), *De sensu et sensibilibus* (*Sens.*), *De somno et vigilia* (*Somn.*), and *De longitudine et brevitate vitae* (*Long.*). The last four brief works are part of the seven that make up the Aristotelian compendium *Parva naturalia* (*PN*), which concerns natural phenomenon involved with the faculties, dispositions, and affections of the rational soul.<sup>68</sup> Al-Kindī defines the topic of these four books as belonging properly to immaterial things whose existence are not dependent on material bodies (*aḡsām*) notwithstanding existing in them until death. The philosophical import here is that the subject matter of the *De An.* (psychology) falls more within the realm of the *Metaphysics* than *Physics* on account of the soul's immateriality (a classificatory hypothesis to which Avicenna assented in his discussions of the soul<sup>69</sup>); (iii) *Metaphysics* (*mā ba'd aṭ-ṭabī'īyāt*) examines that which exists independently of matter and furnishes apodeictic proofs for their nature and existence (even in matters of traditional Muslim theology). Its subject matter, al-Kindī adds, includes the nature of God's existence, his attributes, unicity (*tawhīd*), and agency as the creator the world. For all of al-Kindī's profound interest in the subject of the *Metaphysics*, including his enthusiasm for its translation and his own treatise on the topic, *Fī l-Falsafa al-ūlā* (*On First Philosophy*), he says next to nothing on its arrangement and contents as compared to the other works he enumerates in *Aristotle's Books*; and (iv) practical philosophy, lastly, addresses ethics (*aḥlāq*) and the moral habits that lead to excellence of character, not only of the person but also the household and, ultimately, the polity.<sup>70</sup> The latter three societal groups are the subject of the three branches of this Aristotelian science: ethics, œconomics, and politics, respectively. Al-Kindī divides practical philosophy into four books: *Nicomachean Ethics* (*Eth. Nic.*), *Magna Moralia* (*MM*), *Eudemian Ethics* (*Eth. Eud.*), and *Politics* (*Pol.*); note that for *MM* and *Eth. Eud.*, al-Kindī fails to provide the titles, referring only to their dedicatees.<sup>71</sup> All four books, al-Kindī writes, are the apotheosis of the

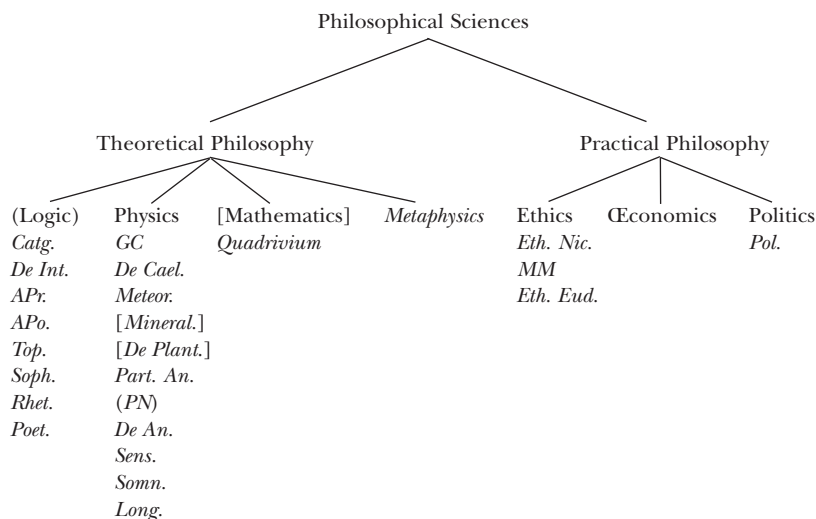


Fig. 4 al-Kindī, *Aristotle's Books*

(Alexandrian) polythematic curriculum of the Aristotelian sciences, the mastery of which cultivates praiseworthy habits in the soul (*alā anafs wa-siyāsātihā*) of the polymath, adorning it with humanistic virtue (*al-faḍīla al-insānīya*) in this world—and certainty with salvation (*ṣalāḥ al-ḥāl*) in the next.

As outlined by al-Kindī, the Aristotelian sciences established a curricular paradigm for the entire constellation of humanistic knowledge, albeit of “foreign” extraction, to be mastered by the novice (polymath). In *Aristotle's Books*, al-Kindī's stance toward the “foreign” sciences is, unlike the opening section of his *On First Philosophy*, unapologetic about the authority of Aristotle and of philosophy as a rational science *par excellence* for the cultivation of true knowledge in the civilization of Islam. Al-Kindī places particular emphasis on geometrical proof as the ideal method for philosophical argumentation, *contra* traditional Aristotelian logic, which exemplifies his philosophical polymathy: his pragmatic approach to solving the problems of one science, as metaphysics (or scholastic theology), with the methods of another, namely, Euclidean geometry. In other words, he emphasizes a synthetic philosophical style that brings together knowledge from the mathematical sciences to bear on the problems of the philosophical sciences with the aim of offering a more coherent account of truth as corresponding to metaphysical or theological reality. In due course, the novelty of al-Kindī's polymathy was supplanted by more normative forms of Aristotelian logical demonstration, as preserved most notably in the works of al-Fārābī and Avicenna.<sup>72</sup>

The scope and expansiveness of al-Kindī's polymathy is reflected not only in his appropriation of late antique Alexandrian Aristotelianism but also in his dialectical outlook on the historical progress of philosophy as it advances synthetically from one nation to the next, one civilization to another.

The philosophical sciences and arts that make up al-Kindī's polymathic *œuvre* constitute the panoply of humanistic knowledge, including that of *adab*, known to this formative period of Arabic polymathy.<sup>73</sup> Excepting some Arabo-Islamic sciences (conspicuously jurisprudence), it included nearly all branches of the medieval Arabic sciences, here presented with their ancillary Arabic disciplinary names: (i) the all-important propaedeutic *quadrivium*; (ii) logic and dialectics (*ğadab*); (iii) physics (natural sciences), Neoplatonic cosmology of the celestial spheres (astronomy), political astrology (*ahkām an-nuğūm*), meteorology and astrometeorology (*al-ilm bi-l-ātār al-kā'ina fī l-jaww/al-ātār al-uhwīya*), geology (*al-ilm bi-l-ātār al-kā'ina fī l-arḍ*), gemology (*ilm al-ğawāhir wa-l-ahğār*), geodesy (*masāha, taḥṭūl al-arādī*), optics (*manāzir*), botany (*nabāt*), zoology (*ḥayawān*), veterinary science (*baytara*), psychology (science of the soul, its faculties and intellect), medicine (*tibb*), humoral physiology (*mazāğ*) and pathology, disability studies (on muteness), sexual hygiene, *materia medica*, and food science and dietetics (*ağdiya*);<sup>74</sup> (iv) metaphysics, theology (*ilāhiyāt*) or first philosophy, and “interfaith” dialectical apologetic theology (*kalām*); (v) ethics, politics and statecraft (*siyāsīyāt*);<sup>75</sup> (vi) the occult sciences (*ulūm al-ḥafīya/al-ğarība*)—used to control nature, but not all of which al-Kindī endorsed as legitimate sciences—including electional astrology (*iḥtiyārāt*), alchemy (*al-kimiyā'*), oneiromancy (*ta'bīr al-ru'ya/tafsīr al-aḥlām*), physiognomy, geomancy (*ilm ar-raml*), magic, letter divination (*ğafr*), and talismans (*ṭilismāt*);<sup>76</sup> (vii) the productive, artisanal crafts (*aş-şanā'i' al'amalīya*) such as swordsmithing and bladesmithing (as evidenced in an epistle commissioned by the caliph al-Mu'taṣim-bi-llāh [r. 218–27/833–42], whose son prince Aḥmad al-Kindī tutored<sup>77</sup>), glass paneling (*taḥwīh*), silvering or making mirrors (*mir'āt*) and burning mirrors (*al-marāyā l-muḥriqa*), making ink (*midād/ḥibr*) and dye (*şibāğa*), aromachology (*rawā'iḥ*), perfumes (*itr*), and perfume making and distillations (*kimiyā' al-itr wa-t-taş'idāt*).

The intellectual legacy of al-Kindī's school of Islamically oriented philosophy came to an end by the late fourth/tenth century—this despite at least four generations of followers, including Aḥmad ibn-aṭ-Ṭayyib as-Saraḥasī (k. 286/899), Abū-Zayd Aḥmad ibn-Sahl al-Balḥī (d. 322/934), and Muḥammad ibn-Yūsuf al-Āmirī (d. 381/992), all of whom were polymaths in the Kindian tradition.<sup>78</sup> This tradition and form of Arabic polymathy was overtaken by the Alexandrian commen-

tariat method of Aristotelianism of al-Fārābī and the school of Baghdad Peripatetics, notably the Syriac Jacobite Abū-Zakarīyā' Yaḥyā ibn-'Adī (d. 636/974) and the Nestorian monk Abū-l-Faraḡ Ibn-aṭ-Ṭayyib al-'Irāqī (d. 435/1043).<sup>79</sup> Both of these schools represent distinct and important stages in the naturalization of Greek philosophy in Arabic and, as such, in the history of Arabic polymathy. Even then, however, they were eclipsed by Avicenna and his redoubtable synthesis of all the Aristotelian sciences, effectively replacing the Stagirite's collective works with his own *summae*. The enormous success of Avicenna's philosophy among philosophers and scholars of the Islamic sciences—above all scholastic theologians and Sūfīs<sup>80</sup>—rested on his polymathic ingenuity and bravura in appropriating (perhaps not unlike al-Kindī, though not for Muslim theological ends) Islamically salient motifs as well as qur'ānic and popular mystical language for the grandeur of his own distinctive philosophical style and project. In his own lifetime, Avicenna's triumph over these other schools of philosophy earned him, with full approbation of his disciples, the sobriquet “the undisputed master” (*aš-šayḥ ar-ra'īs*, or perhaps “the supreme polymath”) of all Peripatetics (*maššā'ūn*).<sup>81</sup> The Avicennan (Ḥurāsānī or Eastern) school of Aristotelianism came to dominate nearly all facets of medieval Arabo-Islamic intellectual history until beyond the eve of Western modernity in the Middle East.<sup>82</sup> The naturalization of the Avicennan tradition in the Islamic religious sciences, which irrevocably mixed the “foreign” and “native” sciences and so redefined the nature and scope of Arabic polymathy, resulted chiefly with the work of Abū-Ḥāmid Muḥammad al-Ġazālī (d. 505/1111), particularly in the area of theoretical Sūfīc mysticism but especially and more systematically with the polymathic Aš'arī theologian Faḥraddīn ar-Rāzī (d. 606/1210), in the more traditional areas of theoretical jurisprudence, scholastic theology, and qur'ānic exegesis.<sup>83</sup>

The global nature of the transmission of polythematic knowledge into the Arabic intellectual tradition, at the latter phase of the translation movement and after al-Kindī, may be conclusively illustrated in the “handlist” of the Baghdad bookseller Muḥammad Ibn-an-Nadīm al-Warrāq (d. 380/990), titled *Kitāb al-Fihrist* (*Index*), which he completed in 377/987f.<sup>84</sup> In the exordium, the author describes his classified *Index* as a compilation of the books of all nations (*ḡamī' al-umam*) written in (or translated into) Arabic either by Arabs or “foreigners” (*aḡam*); it serves effectively as a “union catalogue” of the (then) civilization of Islam.<sup>85</sup> Ibn-an-Nadīm next showcases his own polymathic knowledge of such disciplines as calligraphy, bibliography, codicology, and paleography, in addition to describing the national languages (*luḡāt al-umam*) and script (*ḥaṭṭ*) of, among other nations, the Chinese, Sogdians, Indo-Aryans (*sind*),

Sub-Saharan Africans (*sūdān*), Turkic people, Russians (*rūsīya*), Franks (*fīranġīya*, that is to say, Latin Europe), and Armenians. As an antiquarian polymath of books and their culture, Ibn-an-Nadīm enumerates in the *Index* the titles of more than seven thousand books, that is, original compositions, translations, and compilations of which he says he had individual knowledge.

The *Index* organizes titles of books by subject according to ten lemmata (*maqālāt*), which are subdivided into various discrete topics and disciplines (*funūn*):<sup>86</sup> (i) the Arabic script and that of the aforesaid languages, the sciences of the Qurʾān, including the orthoepic rules of its recitation (*taġwīd, tilāwa*), its redactions and variant readings (*qirāʾāt*), and the life stories of its reciters (*aḥbār al-qurrāʾ*), and the holy writ of the Jews and Christians (*kutub aš-šarāʾi*); (ii) Arabic grammar, philology, lexicography, and their disciplinary histories; (iii) *adab*, biography (*sīra*), including that of Muḥammad and other romantic figures of early Islam and antiquity, genealogy (*ansāb*) of Arabs, history, and the chronicles of kings (*aḥbār al-mulūk*) and their courtiers (*ġulasāʾ*), boon companions (*nudamāʾ*), littérateurs (*udabāʾ*), singers (*muġannūn*), and jesters (*muḍḥikūn*);<sup>87</sup> (iv) poetry of the ancient (*ġāhili*) Arabs and that of the moderns (*muḥdatūn*), and the generational lives (*ṭabaqāt*) of the poets; (v) Islamic theology and its schools, Muslim heresiography (*fīraq*), Šūfic mysticism (*mutaṣawwifa*), and “satanism” (*al-mutakallimūn ʿalā l-wasāwis*); (vi) Sunnī and Šīʿī schools of law,<sup>88</sup> and the sciences of Muḥammadan tradition; (vii) philosophy and the ancient sciences, whose topics Ibn-an-Nadīm assigns to the natural philosophers (*ṭabīʿiyūn*) and logicians, omitting metaphysicians but not their books, mathematicians (*aṣḥāb at-taʿālīm*), including arithmeticians, geometers, musicians, and astronomers (*al-ḥussāb al-munaġġimūn*), technical artisans or toolmakers (*ṣunnāʾ al-ālāt*), “technologists” or device and astrolabe makers (*aṣḥāb al-ḥiyal wa-l-ḥarakāt*)—the latter two professions belong to the Aristotelian productive sciences—and ancient and modern physicians, the history of medicine, and the translations of the ancient sciences and their commentarial tradition; (viii) the occult sciences, including incantations (*azāʾim*), magic, conjuring (*šāʾbada*), the life stories of their practitioners, didactic erotic “bedtime” stories (*asmār*), fairy tales (*ḥurāfāt*)—both genres were adapted from Middle Persian literature—and other bawdy tales, including the second earliest notice of *Alif layla wa-layla* (*The Thousand and One Nights*);<sup>89</sup> (ix) the religious creeds (*iʿtiqādāt*) of non-Muslims including, among others, the pagans of Harrān (ancient Carrhae), Chaldeans, Sabaeans, Manicheans, Mazdakites, and the religions found in India and China, which are characterized by Ibn-an-Nadīm (in an orientalist tone) as curious (*tarīfa*) and strange (*ġarība*); and (x) alchemy of the ancient and modern philosophers.



#### IV. In Lieu of a Conclusion

Although there may not be an exact term for polymathy in Arabic, the phenomenon was unquestionably present in medieval Islamic civilization. As an analytical concept and field of specialization, polymathy elucidates the nature of polythematic knowledge and the intellectual, normative ideals of the Arabic (and Persian) literary tradition of Islam in the Middle Ages. The appeal of polymathy as a scientific method and a socioreligious ideal of Islamic intellectual history and civilization is true both for the educational paradigm it provided and for its wide appeal to scholars and their patrons. The investigation of the details of the application of polythematic knowledge to the solution of philosophical, scientific, jurisprudential, or even literary problems, among others, is perhaps the most problematic aspect of this yet unexplored history of Arabic polymathy. Withal polymathy may also be construed as a genre of the highest order as regards the exegesis of the Qur'ān, that is, the ostensible hermeneutics of the verses of the Qur'ān became an occasion for expounding on philosophical and theological doctrines as well as scientific theories—many of which were beyond the pale of certain orthodoxies—having little if any explanatory value of God's words.<sup>90</sup> In other words, the medieval genre of qur'ānic commentary is unlike other disciplinary genres in the Arabic literary and scientific tradition, since the latter genres are (often) *sui generis* as to their explicit methodological, topical, and terminological specializations. This genre, or compositional category, of qur'ānic exegesis may then be termed polymathic in this regard due to its capacity for the development and intertwining of religious and philosophical polythematic knowledge—the symbiotic relationship of which is emblematic of the medieval heritage of Arabic polymathy.

UNIVERSITY OF VIRGINIA

#### NOTES

\* The earliest recorded Western European definition of “polymath[y].” Translation adapted from Kathryn Murphy, “Robert Burton and the Problems of Polymathy,” *Renaissance Studies* 28, no. 2 (2014): 279. (Arabic transliteration herein follows the rules of the *Deutsche Morgenländische Gesellschaft* [DMG], except for the diphthongs *aw* and *ay* for *au* and *ai*, respectively, and all dates [r. = ruled, d. = died, k. = killed] appear according to and in order of the Hīġra [*anno Hegirae*] and Gregorian [*anno Domini*] calendars, apart from just Western European dates.)

1 See, e.g., M. J. L. Young, “Polymathy in Islam,” *Milla wa-milla: The Australian Bulletin of Comparative Religion* 1 (1961): 35-44; Antonella Ghersetti, ed., *Al-Suyūṭī, a Polymath of the Mamlūk Period: Proceedings of the Themed Day of the First Conference of the School of Mamlūk Studies (Ca' Foscari University, Venice, June 23, 2014)* (Leiden: Brill,

2016); Vivian Strotmann, *Majd al-Dīn al-Fīrūzābādī (1329-1415): A Polymath on the Eve of the Early Modern Period* (Leiden: Brill, 2016); Elias Muhanna, *The World in a Book: al-Nuwayrī and the Islamic Encyclopedic Tradition* (Princeton, NJ: Princeton Univ. Press, 2017); and James Pickett, *Polymaths of Islam: Power and Networks of Knowledge in Central Asia* (Ithaca, NY: Cornell Univ. Press, 2020). Note: *Index Islamicus*, the European language bibliography on Islam, includes, for what it is worth, “individual polymaths” as a subject-search heading.  
2 See Franz Rosenthal, *Knowledge Triumphant: The Concept of Knowledge in Medieval Islam* (Leiden: Brill, 1970; repr. 2006).

3 See Wilhelm Schmidt-Biggemann, “Polyhistorie/Polymathie,” in *Historisches Wörterbuch der Philosophie*, vol. 7, ed. Joachim Ritter and Karlfried Gründer (Basel: Schwabe, 1971-2007), 1083-85. On encyclopaedism in the Islamic tradition, see Josef van Ess, “Encyclopaedic Activities in the Islamic World: A Few Questions, and No Answers,” in *Organizing Knowledge: Encyclopaedic Activities in the Pre-Eighteenth Century Islamic World*, ed. Gerhard Endress (Leiden: Brill, 2006), 3-19; Gerhard Endress, “The Cycle of Knowledge: Intellectual Traditions and Encyclopaedias of the Rational Sciences in Arabic Islamic Hellenism,” in *Organizing Knowledge*, 103-33; and Hans Hinrich Biesterfeldt, “Medieval Arabic Encyclopedias of Science and Philosophy,” in *The Medieval Hebrew Encyclopedias of Science and Philosophy: Proceedings of the Bar-Ilan University Conference*, ed. Steven Harvey (Dordrecht: Kluwer, 2000), 77-98; repr., *Islamic Medical and Scientific Tradition*, vol. 1, ed. Peter Pormann (London: Routledge, 2010), 48-67.

4 See Peter E. Pormann, “Medical Education in Late Antiquity: From Alexandria to Montpellier,” in *Hippocrates and Medical Education: Selected Papers Presented at the XIIIth International Hippocrates Colloquium, Universiteit Leiden, 24-26 August 2005*, ed. Manfred Horstmannshoff (Leiden: Brill, 2010), 419-41; and Jean Jolivet, “Classification of the Sciences,” in *Encyclopedia of the History of Arabic Science*, vol. 3, *Technology, Alchemy and Life Sciences*, ed. Roshdi Rashed and Régis Morelon (London: Routledge, 1996), 1008-25. Cf. Dimitri Gutas, “Aspects of Literary Form and Genre in Arabic Logical Works,” in *Glosses and Commentaries on Aristotelian Logical Texts: The Syriac, Arabic, and Medieval Latin Traditions*, ed. Charles Burnett (London: Warburg Institute, 1993), 28-76.

5 See van Ess, “The Logical Structure of Islamic Theology,” in *Logic in Classical Islamic Culture*, ed. Gustave E. von Grunebaum (Wiesbaden: Harrassowitz, 1970), 21-50; van Ess, “Disputationspraxis in der islamischen Theologie: Eine vorläufige Skizze,” *Revue des études islamiques* 44 (1976), 23-60; repr., van Ess, *Kleine Schriften*, vol. 2, ed. Biesterfeldt (Leiden: Brill, 2018), 911-47; and George Makdisi, *The Rise of Humanism in Classical Islam and the Christian West: with Special Reference to Scholasticism* (Edinburgh: Univ. of Edinburgh Press, 1990), 2-47, 88-96.

6 See Maya Shatzmiller, *Labour in the Medieval Islamic World* (Leiden: Brill, 1993), 11-33; and, on the scientific classification of artisanal crafts, see José Miguel Puertá Vilchez, *Aesthetics in Arabic Thought: From pre-Islamic Arabia through al-Andalus*, trans. Consuelo López-Morillas (Leiden: Brill, 2017), 97-479.

7 See Makdisi, *The Rise of Colleges: Institutions of Learning in Islam and the West* (Edinburgh: Univ. of Edinburgh Press, 1981), 1-34, 75-152; Ahmed H. al-Rahim, *The Creation of Philosophical Tradition: Biography and the Reception of Avicenna's Philosophy from the Eleventh to the Fourteenth Century A.D.* (Wiesbaden: Harrassowitz, 2018), 23-36; Sonja Brentjes, *Teaching and Learning the Sciences in Islamicate Societies (800-1700)* (Turnhout: Brepols, 2018), 77-111; and David A. King, *World-Maps for Finding the Direction and Distance to Mecca* (Leiden: Brill, 1999), 47-127.

8 See Makdisi, “The Sunni Revival,” in *Islamic Civilization, 950-1150*, ed. Donald Sidney Richards (Oxford: Bruno Cassirer, 1977), 155-68.

9 Cf. Sonja Brentjes, “Sanctioning Knowledge,” *al-Qantara* 35, no. 1 (2014): 277-309.

10 Arabic nomenclature for polymath also includes *‘allāma* (very learned), *mu‘allim* (master teacher), *adīb* (“belle-lettrist”), *‘arīf* (expert, master), *baḥr* [*al-‘ulūm*] (sea [of knowledge]), *mutabaḥḥir* (manifold erudite), *faqīh* (astute), *ḥakīm* (sagacious), *ra‘īs* (master), even perhaps *zarīf* (dandy), and so forth. I thank Prof. Islam Dayeh for his exchange on this matter.

11 Cf. Ahmad Khan, “An Empire of Elites: Mobility in the Early Islamic Empire,” in *Transregional and Regional Elites: Connecting the Early Islamic Empire*, vol. 1, ed. Hannah-Lena Hagemann and Stefan Heidemann (Berlin: De Gruyter, 2020), 147-69.

12 See, e.g., Devin J. Stewart, “The Doctorate of Islamic Law in Mamluk Egypt and Syria,” in *Law and Education in Medieval Islam: Studies in Memory of George Makdisi*, ed. Joseph E. Lowry et al. (Cambridge: E. J. W. Gibb Memorial Trust, 2004), 66-78.

13 See Wolfhart Heinrichs, “The Classification of the Sciences and the Consolidation of Philology in Classical Islam,” in *Centres of Learning: Learning and Location in Premodern Europe and the Near East*, ed. Jan Willem Drijvers and Alasdair A. Macdonald (Leiden: Brill, 1995), 128-29.

14 Cf., e.g., Benjamin Jokisch, *Islamic Imperial Law: Harun-al-Rahid’s Codification Project* (Berlin: De Gruyter, 2007), 573-616.

15 Cf. Luc Deitz, “Ioannes Wower of Hamburg, Philologist and Polymath: A Preliminary Sketch of His Life and Works,” *Journal of the Warburg and Courtauld Institutes* 58 (1995): 145-48; André Roman, “Des relations entre ‘Langue’ et ‘pensée’ dans les textes majeurs d’Ernest Renan sur la philologie,” *Études Renaniennes* 96 (1993): 8-9n19; and Kaj Öhrnberg, “The *terra incognita* of Arabia,” in *Dolce far niente in Arabia: Georg August Wallin and His Travels in the 1840s*, ed. Nina Edgren-Henrichson, trans. David McDuff (Helsinki: Society of Swedish Literature in Finland, 2014), 69n9 (129).

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23 See Susanne Enderwitz, “al-Shu‘ūbiyya,” in *Encyclopaedia of Islam*, 2nd ed., vol. 9, ed. Clifford Edmund Bosworth et al. (Leiden: Brill, 1997), 513-16.

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- 25 Cf. Kristin Gjesdal, “Bildung,” in *The Oxford Handbook of German Philosophy in the Nineteenth Century*, ed. Michael N. Forster and Kristin Gjesdal (Oxford: Oxford Univ. Press, 2015), 695-719.
- 26 See Dimitri Gutas, *Greek Thought, Arabic Culture: The Graeco-Arabic Translation Movement in Baghdad and Early ‘Abbāsīd Society (2nd–4th/8th–10th Centuries)* (London: Routledge, 1998).
- 27 Cf. Abdelhamid Ibrahim Sabra, “The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam,” *History of Science* 25 (1987): 223-43. Sabra’s article, though best understood with respect to the assimilation of the ancient sciences proper in the Arabo-Islamic tradition, provides a model for examining the history of Arabic polymathy, particularly as it corresponds to his division of the three historical periods of Graeco-Arabic science, viz., (i) the translation movement, or appropriation of Greek science, until the third/ninth century; (ii) the development of Arabo-Islamic philosophy, particularly with al-Kindī, al-Fārābī, and Avicenna, and the ensuing naturalization of Greek science in Arabic until the fifth/eleventh century; and (iii) the rise of colleges thereafter and the subsequent systematizing of the Greek sciences in traditional Islamic theology.
- 28 The Baghdad bibliophile Ibn-an-Nadīm also describes Aristotle polymathically as the lover of wisdom (*muḥibb al-ḥikma*), the excelling, the complete (*al-fāḍil al-kāmil*), and the perfect (*al-tām*); see trans., D’Ancona, “‘Aristū ‘inda l-‘Arab,’ and Beyond,” in *Aristotle and the Arabic Tradition*, ed. Ahmed Alwishah and Josh Hayes (Cambridge: Cambridge Univ. Press, 2015), 11.
- 29 See Ulrich Rudolph, “Abū Naṣr al-Fārābī,” in *Philosophie in der islamischen Welt*, 1:8.-10. *Jahrhundert*, ed. Rudolph and Renate Würsch (Basel: Schwabe, 2012), 378-79; trans. Rotraud Hansberger, in *Philosophy in the Islamic World*, vol. 1, *8th–10th Centuries*, ed. Rudolph et al. (Leiden: Brill, 2017), 546-47 (hereafter *PIW*).
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- 32 See D’Ancona, “The Origins of Islamic Philosophy,” *The Cambridge History of Philosophy in Late Antiquity*, vol. 2, ed. Lloyd Gerson (Cambridge: Cambridge Univ. Press, 2011), 869-93, 1170-78 [bibliog.].
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- 35 On the history of post-Avicennan philosophy, see al-Rahim, *Philosophical Tradition*, 1-36.
- 36 See al-Rahim, “Arabic Literary Prose, *Adab* Literature, and the Formation of Islamicate Imperial Culture,” in *The Cambridge History of World Literature*, vol. 1, ed. Debjani Ganguly (Cambridge: Cambridge Univ. Press, 2021), 80-84.
- 37 See Michael Zwetler, *The Oral Tradition of Classical Arabic Poetry: Its Character and Implications* (Columbus: Ohio State Univ. Press, 1978), 98-188.

- 38 See Wolfdietrich Fischer, "Classical Arabic," in *Encyclopedia of Arabic Language and Linguistics*, vol. 1, ed. Kees Versteegh (Leiden: Brill 2006), 397-405.
- 39 See al-Rahim, "Adab Literature," 84-87.
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- 41 See al-Rahim, "Adab Literature," 87-91.
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