Vassar College

Reusing Antiquity: How the Abbasid Caliphate Wielded Greek Sources

By Helen Ambrose

May 2025

Advised by Barbara Olsen

A Thesis completed in partial satisfaction of the requirements for the degree of the Bachelor of Arts in Greek and Roman Studies.

Acknowledgements

This thesis would not have been possible without the support and collaboration of many people. I owe all my gratitude:

to Professor Barbara Olsen, my thesis advisor, who talked me through many intellectual road bumps and helped me search for increasingly obscure Greek texts. To my fellow GRST seniors, Sean and Max, with whom I developed a supportive and sympathetic academic community despite not having a thesis seminar together.

to my third housemate and friend, Emma, who good-naturedly suffered through many ancient world-related discussions between Sean and I.

to the Vassar Arabic professors, Tagreed and Mootacem, for the endless dedication to your students and all you do to give us access to this beautiful language. And to the Vassar Dance Department, its professors, and Vassar Repertory Dance Theatre for the much needed creative outlet over the past four years.

to the Greek and Roman Studies Department and its professors: Curtis Dozier, Carl Rice, Rachel Friedman, and Carolyn Tobin. Thank you for challenging me and opening my eyes to new historical approaches.

to the Ann Cornelisen Fellowship and my summer in Fez without which I would not have the skills and perspective to complete this project.

to all my friends who joined me for late nights in the library. I greatly appreciated your company and distractions while you worked on your own theses, researched the perfect sneakers, or built a Minecraft world. You made this process light-hearted and enjoyable!

And, finally, to my parents and Fred. Thank you for everything you did to help me get to this point. I love you guys!

Table of Contents

Introduction

The inspiration for this senior thesis came in the required reception class for the Greek and Roman Studies major. The professor made an offhand comment about the existence of a mosque that had sat within the Athenian Parthenon for hundreds of years and my entire historical understanding imploded. The simple fact that there had been active Islamic presence with the Graeco-Roman world motivated the pursuit to uncover instances of cross-cultural interaction. At the time, I had been studying Middle Eastern history and Arabic language while completing the Greek and Roman studies major, however, these two historical and cultural traditions had been completely distinct from one another in classes. Yet, as I dug deeper for evidence of cross-cultural engagement, it became clear that there is a rich history of engagement across time and language. The aim of this research is to shed light on an instance of interaction between two intellectual traditions: ancient Greek authors and their reception by an Islamic caliphate. In examining an understudied reception tradition, the goal becomes to expand the view of what translation and reception looks like by incorporating non-Western perspectives.

There is a pervasive belief with the field of Classics that the Islamic world is the antithesis of the Greek and Roman empires. Henri Pirenne in his infamous 1937 work, *Mohammed and Charlemagne,* claimed that Graeco-Roman civilization officially came to an end with the rise of Islam.[1] With the foundation of the first caliphates in the Arabian Peninsula in the seventh century and the rapid land-conquering expeditions of the Umayyads, Pirenne claimed that the Western world was officially cut off from trade around the Mediterranean and beyond, having been blocked by the Arab empire along North Africa and to the East. This theory remained pervasive among historians of Late Antiquity who could now define the boundaries of

[1] Henri Pirenne, *Mohammed and Charlemagne*, trans. Bernard Miall (Unwin Brothers LTD, 1939), 284, https://archive.org/details/HenriPirenneMohammedCharlemagne/page/n3/mode/2up.

Late Antiquity, claiming that with the death of Muhammad the medieval period begins in Europe. Pirenne's argument especially gains traction in the post-9/11 world where some wished to find parallels in history to categorize the rise of Islamic fundamentalism as threat to Western power and influence.[2] His clear divisions between East and West further enforced a binary approach to defining the transition between the Classical period and the Medieval, Western civilization and the Near East.[3] However, his thesis that the Arab world marked the end of all things Graeco-Roman rings false, especially when we discuss the reception of antiquity under these Islamic powers.

It is easy to dismiss Islam and its interaction with the Classical world because of its temporal and geographical positionality. The prophet Muhammad is said to have lived in Arabia from around 570 to 632 CE, at the tail end of what scholars determine as Late Antiquity. Following his death, Islam spread throughout the Mediterranean world, especially with the widespread conquests during the first caliphate: the Umayyads. At the height of the Umayyad empire, the Islamic power reached from Spain to India and introduced a new religion, culture, and lingua franca to North Africa, Arabia, and Southwest Europe. Simultaneously, the Roman empire had shrunk around Constantinople and lost its footing in Central and Western Europe, turning inward and marking the end of the empire's reign. With the new world order, the second caliphate, the Abbasids, overthrew the Umayyads and took control of their expansive influence around the Mediterranean.

From 750 to 1258 CE, the Abbasid family retained power as the second Islamic caliphate.[4] The Umayyads had risen to power during a politically contentious period and so had

[2] For a more in-depth analysis of the influence of Pirenne's work on the field of Classics see Bonnie Effros, "The Enduring Attraction of the Pirenne Thesis," *Speculum* 92, no. 1 (January 2017): 184, https://www.jstor.org/stable/26154891.
[3] Effros, "The Enduring Attraction of the Pirenne Thesis, 193.
[4] Tayeb El-Hibri, *The Abbasid Caliphate : A History* (Cambridge University Press, 2021), 1.

maintained their control by "projecting brute imperial force" and sending out conquests to distract from internal religious and political questions.[5] The volatile structure of the Umayyad rule appealed little to those living under it, including non-Arab Muslim converts who chose to support the Abbasids' rise to power after they continued to be taxed as though they were non-Muslims, despite their conversion.[6] After a revolution occurred between the two Islamic families, al-Mansur, the first Abbasid caliph, came to power and ushered in the Golden Age of the Abbasid empire. He founded Baghdad as the new government capital on the Tigris River in 762 CE.[7] Baghdad later became the heart of intellectual endeavors in the Islamic caliphate. The empire was comprised of many ancient communities including Arabs, Persians, Jews, Christians, Zoroastrians, Manicheans, and Buddhists.[8] The diversity of the caliphate lended itself to the development of an extensive intellectual community, with scholars from a variety of backgrounds participating and engaging in the pursuit of knowledge.[9]

One such intellectual endeavor was the extensive translation of Greek works into Arabic. Inspired by the School of Alexandria which was known for its critical engagement with ancient sources, Baghdad replicated and developed the strategies of Syriac translators.[10] This academic tradition has since become known as the Graeco-Arabic translation movement. For two centuries, court-funded translation efforts were supported by the caliphs, aristocrats, scholars, and physicians.[11] Initially, the translated works dealt with applied science such as astronomy and geometry in order to build a foundation for scientific pursuits within the caliphate. However, as

---

[5] Ibid.
[6] Ibid., 34.
[7] Ibid., 5.; Baghdad later became known as Madinat al-Salam (مدينة السلام) or the City of Peace.
[8] Ibid.
[9] El-Hussein A Y Aly, *The Graeco-Arabic Translation Movement* (Cambridge University Press, 2023), 15, doi:10.1017/9781009385626.
[10] Ibid., 18-19.
[11] Uwe Vagelpohl, "The User-Friendly Galen: Hunayn Ibn Ishaq and the Adaptation of Greek Medicine for a New Audience," in *Greek Medical Literature and Its Readers: From Hippocrates to Islam and Byzantium*, ed. Petros Bouras-Vallianatos and Sophia Xenophontos (Routledge, 2018),113.

the movement developed the Abbasids turned to more theoretical sources such as philosophic works.[12] The act of translation was a heavily politicized movement and relied on the whims of the ruling caliph who determined which texts he wanted to access.[13] Ancient sources were often translated because the empire's figurehead needed knowledge that was not yet accessible through the Arab intellectual tradition. The Graeco-Arabic translation movement can be characterized as focusing on the "practical usefulness" of translated texts rather than the sweeping preservation of ancient works.[14]

This thesis focuses on the Abbasid caliphate because of its remarkable approach to Classical texts, especially when it is compared to its early Christian counterparts. In the few centuries following the establishment of Christianity, Christian theologists grappled with how to fit their Greek-based education into their religious framework. Much of this tension came from their positionality within the Roman Empire and the clashes between Christianity and Graeco-Roman polytheistic religions. However, even as the religion grew to become the dominant religious identity within the empire, the desire to preserve the works and ideas of Greek authors persisted. Many early theologians were educated under Greek *paideia,* or the resurgence of ancient Greek education based on Greek philosophy and culture during the Roman Empire, and grappled with how their polytheistic foundation fit into their religious beliefs. Many Christian philosophers, such as Origen and Gregory of Nazianzus, came to the conclusion that the study of Greek philosophy was fine as long as it was in service of God and understanding his religion.[15] As long as the interaction with the texts was a preparation for higher study of the Bible

[12] Aly, *The Graeco-Arabic Translation Movement,* 17.
[13] Ibid., 16.
[14] Ibid., 6.
[15] In a letter from Origen to one of his students, the theologian justifies the pursuit classical education for a Christian as a foundation for higher scriptural study, despite the polytheistic influences of the Greek *paideia*: Paul Halsall, "Origen: On Classical Learning," Internet History Sourcebooks: Medieval Sourcebook (Fordham University, January 26, 1996), https://sourcebooks.fordham.edu/source/origen1.asp.

then there should be no issue with including polytheistic texts in the Christian canon. They made sure to establish a clear hierarchy between the Bible and these Greek texts, stating that these polytheistic works should always be used to conceptualize the higher religious text. There were even examples of Christian authors writing biblically inspired prose based on Greek epics and plays.[16] However, the works were preserved in their complete form in the Christian tradition with very little edits or adaptations made to the original text. Greek works remained important to Christianity throughout the medieval ages and into the Renaissance, often being copied and stored in monasteries alongside Biblical texts.[17] This is likely because of the context in which Christianity grew under the Roman Empire. From its inception, Christianity and polytheistic ancient religions existed in the same space. However, this does not give them sole ownership over the reception and interpretation of these works. Their choice to preserve texts as they were became the dominant method of reception with Western historical tradition. However, this limits the acceptance of the validity of other reception traditions, such as the Abbasids.

When analyzing the Graeco-Arabic translation movement as a whole, there is a clear strategy in types of Greek texts chosen by Arabic translators. Notably, there are very few literary texts from the Graeco-Roman world. The Abbasids had very little interest in engaging with the creative projects of the ancient world, instead, an emphasis was placed on applicable knowledge. This was largely due to the fact that Arab intellectuals viewed their language and literature as equal to, if not better than, the ancient Greek works.[18] The sources that were chosen were intended to create an intellectual foundation on which the Arabs could build upon in their own

[16] In response to Julian the Apostate's implementation of law banning Christian children from Greek education system, Christian writers recreate ancient stories with Biblical themes.This event is described by the ancient historian, Sozomen, in his *Ecclesiastical History*: Sozomen, "Book V," *Ecclesiastical History* from *Nicene and Post-Nicene Fathers, Second Series, Vol. 2,* translated by Chester D. Hartranft, edited by Philip Schaff and Henry Wace (Christian Literature Publishing Co., 1890), http://www.newadvent.org/fathers/26025.htm.
[17] Guy G. Stroumsa, *The Scriptural Universe of Ancient Christianity* (Harvard University Press, 2016), 85-87.
[18] Aly, *The Graeco-Arabic Translation Movement*, 2.

work. Literature offered no practical use for the Abbasids, as they wrote their own creative works, and so prose rarely was translated.[19] This approach to textual selection reveals much about the value Greek sources held from an Islamic perspective. The Abbasids were not adopting and assimilating Greek culture because they had no interest in incorporating ancient dramas or epics into their canon. Rather, the Arab intellectual chose texts because they served a purpose for research and other academic pursuits.

In addition to the Abbasids selectivity of textual genres, the caliphate differed from the monastic tradition in how each interacted with the ancient works. Within the Abbasid intellectual community, Graeco-Roman sources were seen as valuable but in no way were they treated as if they needed to be reproduced faithfully to the ancient authors. It was common for Arab translators and commentators to add, delete, and rearrange the content of these Greek works in order to better fit their purposes. For example, a later Arabic translator, Averroes (1126-1198 CE), reproduced a version of Plato's *Republic* in which he entirely reconstructed the work, rearranging the order of ideas and deleting entire sections that he deemed unnecessary.[20] The Western monastic tradition has conditioned Western academia to emphasize the faithful reproduction of ancient writings. Much of the early Christian intellectual movement justified the inclusion of polytheistic works by arguing that study of ancient sources could be in service of Christianity or by re-examining the history of philosophers to argue that they were

[19] The most common genres translated from Greek into Arabic were sciences and philosophy with almost no examples of Greek literature making its way into the canon. There is some evidence for Arab translators being able to recite Homer but this does not survive in the literary tradition. For a comprehensive list of translated ancient sources, see the Appendix of Dimitri Gutas, *Greek Thought, Arabic Culture : The Graeco-Arabic Translation Movement in Baghdad and Early 'Abbasaid Society (2nd-4th/5th-10th C.)* (Oxford: Taylor & Francis Group, 1998), 193-196.

[20] Averroës and Charles E Butterworth, *Averroës' Three Short Commentaries on Aristotle's "Topics," "Rhetoric," and "Poetics,"* trans. Charles E Butterworth, 1st ed. (Albany: State University of New York Press, 1977), 1, 8. See also: Aly, *The Graeco-Arabic Translation Movement*, 20.

proto-Christians.[21] The original texts remain largely unchanged and are preserved as they are, mostly thanks to the monastic emphasis on reading as the method for receiving knowledge.[22] This Western approach to commentaries and scholarship elevates Greek sources to a pseudo-sacred position because there were no efforts to modify these works, especially when the texts were being translated and reproduced in monasteries alongside the Bible. Yet, the Abbasids and their scholars felt no need to faithfully replicate the words of Greek authors. Rather, the translators of this period had an *audience*-centered translation approach, prioritizing the needs and comprehension of their readers over the sanctity of the text.[23] This attitude towards the Graeco-Roman works offers a new perspective on commentary and translation tradition and reframing of how these sources can be thought about as it decenters the ancient authors and instead emphasizes the context and culture in which these texts are received.

This paper examines two Greek authors and their selected works as case studies to explore how the Abbasids cherry-picked and utilized ancient works. The first chapter centers on philosophy and a little known source by Aristotle: the *Topica.* This work was written with the intent to teach dialectical rhetorical strategies and was adopted by the caliphate to be used in theological debates. The second chapter moves on to medicine and the works of Galen, including *On the Usefulness of the Parts* and *On Anatomical Procedures*. The choice to translate and comment on this physician's writings arose from a religious limitation, a ban on dissection, and the need for information that couldn't come from the procedure itself. These two case studies serve to paint a picture of the varied instances of the adoption of the Greek sources. There were

[21] For an example of an early Christian intellectual, Eusebius of Caesarea, advocating that Plato was a proto-Christian, see the discussion in V. Bradley Lewis, "Eusebius of Caesarea's Un-Platonic Platonic Political Theology," *Polis: The Journal for Ancient Greek Political Thought* 34, no. 1 (2017): 94–114, https://doi.org/10.1163/20512996-12340119.
[22] Stroumsa, *The Scriptural Universe of Christianity,* 85.
[23] Vagelpohl, "The User-Friendly-Galen," 120.

many uses of these works under Islamic rule and these two examples serve to highlight a few of the many cross-cultural interactions.

An interesting challenge when researching this particular topic was the difficulty of finding the necessary sources. Because this work includes both the original Greek as well as the translated Arabic, it was vital to find the text in both languages. However, the nature of translation traditions meant that often the sources only existed in one or the other language before being translated into German, Latin, or other reception language. This meant that works like Galen, whose sources are sometimes preserved exclusively in the Arabic tradition, do not have surviving Greek texts. Additionally, the Arabic translation tradition is unique in its emphasis on commentaries. Within the caliphate, the original Greek writings were first translated and then analyzed by relevant commentators. These commentaries were then the texts that were preserved and transmitted, meaning the original Arabic text is rare and the original Greek, through this tradition, almost impossible to find without access to European libraries. On the other hand, the works chosen by the Arabic translators are not popular within Western canon so finding commentaries on the original Greek is extremely difficult. This project has revealed gaps in cross cultural commentaries and any attempts at reuniting the works from their historical linguistic separation.

The unfortunate prevalence of Pirenne's thesis and the belief in an intellectual divergence between the East and the West after the rise of Islam harms the potential to reframe Western academia's understanding of translation and other approaches to classical sources. Rather than abandoning the ancient world, the Islamic caliphate found avenues into the Greek works to utilize them for the empire's own purposes. Through analyzing the reception of two genres under the Abbasids, we can understand how a different translation tradition chose, applied, and

understood specific texts. Through this interpretation, I challenge the dominant Western approach to commentary and translation and offer another valid perspective and use of Graeco-Roman sources.

The *Topica* as a Tool: Aristotle in al-Mahdi's Caliphate

Ideas regarding religion, political systems, and social structure have clashed in the Middle East for millennia, and the era of the Abbasid Empire was no different. In fact, the oldest surviving record of a religious debate between a Christian and a Muslim occurs between an Abbasid caliph, al-Mahdi, and his translator, Timothy I.[24] In this recorded debate, al-Mahdi employs dialectical reasoning after learning it from a source he had requested Timothy to translate. During his rule, Al-Mahdi, concerned with conflicting ideologies in the region, sought this how-to book for conducting religious debates. And, to find this book, he turned to antiquity and solicited Aristotle's *Topica*.

The second caliph, al-Mahdi, controlled the empire from 775 to 785 CE. The rule of al-Mahdi was known as a peaceful one, with little political drama noted in his court.[25] Al-Mahdi was very religious, completing his pilgrimage to Mecca many times and building several mosques during his lifetime.[26] Prior to his ascension to the position of caliph, al-Mahdi held various governing positions in Iran and Syria, giving him the opportunity to tour much of the empire and exposing him to regions and cultures outside Baghdad.[27] This exposure to other beliefs no doubt led to his interest in settling contentious debates through argumentative strategies and al-Mahdi championed the translation, adoption, and widespread use of Ancient Greek philosophical texts for exactly this purpose.[28]

The cultural and intellectual diversity of the region played a large role in the caliph's choice to turn to Ancient Greek texts for advice on finding common ground. Many groups in the

---

[24] Dimitri Gutas, *Greek Thought, Arabic Culture : The Graeco-Arabic Translation Movement in Baghdad and Early 'Abbasaid Society (2nd-4th/5th-10th C.).* (Oxford: Taylor & Francis Group, 1998), 67.
[25] Ibid., 73.
[26] Ibid., 70.
[27] Ibid., 71.
[28] Ibid., 69.

region had supported the Abbasid grab for power, hoping for a more advantageous position under their rule. The Abbasid state promised to open up access to power for new Islamic converts, ensuring equity between Arab and non-Arab Muslims.[29] These promises came with the recognition that Muslims were by far the smallest religious minority in the region after the Abbasid revolution.[30] However, despite the support and inclusion of many cultural groups by the Abbasids, there remained tension between religious and political groups in the area.

Eighth century Christians and Jews, while presenting no political threats due to their lack of influence within the Islamic empire, demonstrated an intellectual challenge to the newly established religious order. Both religions held a historical advantage over their Muslim counterpart, having had centuries of inter-faith debate before the establishment of Islam.[31] In fact, Christians living in Syria were already seen as masters of Aristotelian logic as they had preserved Aristotle works in their own translation tradition.[32] As members of a newly emergent imperial religion, 8th century Muslim leadership sought not just political but intellectual supremacy over Christians and Jews. As such they desired the development of a framework to formulate and disseminate their own views and go head-to-head with Christians and Jews in religious discussions. Al-Mahdi's solution? He requested a translation of Aristotle's *Topica.*

The *Topica's* Objectives

Aristotle's reputation as the most important philosopher of ancient Greece persisted not only into the early Christian period but also into 8th century Islam. More than a thousand years after his birth in 384 in Macedonia, the tutor of Alexander the Great continued to exert his influence, in areas as broad as the topics studied at his Lyceum: astronomy, medicine, and botany

[29] El-Hiribi, *The Abbasid Caliphate,* 5; See also Gutas, *Greek Thought, Arabic Culture*, 62.
[30] Gutas, *Greek Thought, Arabic Culture*, 65.
[31] Ibid., 67.
[32] Cristina D'ancona, "Greek into Arabic," in *The Cambridge Companion to Arabic Philosophy*, ed. Peter Adamson and Richard C. Taylor (Cambridge University Press, 2004), 20, https://doi-org.libproxy.vassar.edu/10.1017/CCOL0521817439.

to music to government and politics.[33] His own works were continuously read and preserved as well, and, by the time of al-Mahdi, a millennium of scholars in the Greek, Roman, and Byzantine worlds had grounded their intellectual pursuits with Aristotle as a foundational thinker.

A major collection of Aristotle's logical treatises was preserved in a larger work titled the *Organon*. *Organon* comes from the Greek word ὄργανον meaning "instrument, implement, tool."[34] The name reflects the work's purpose as a tool for logical argumentative strategies. The *Organon* contains six of Aristotle's writings including *Categories*, *On Interpretation, Prior Analytics, Posterior Analytics, Topics*, and *On Sophistical Refutations.*[35] Aristotle did not originally write these pieces as part of the larger work, so later ancient authors assembled the collection.[36] As such, the collection's title, *Organon*, was not applied by Aristotle but by medieval scholars of the 15th century.[37] Yet, the compilation contains a valuable source for the context of Islamic religious debate.

Aristotle wrote the *Topica*, or the *Topics*, as a handbook for the dialectical method of argument. In dialectical methods of argumentation, the goal is to find commonplaces and core beliefs and, then, to build outward, establishing more and more complex ideas that are generally agreed upon. The *Topica* teaches how to argue about problems or propositions using divisions, called predicates, to find similarities and differences among concepts. These four divisions are definitions, a phrase indicating the essence of a thing; properties, something which does not show the essence of a thing but belongs to it alone and is predicated convertibly of it; genuses,

---

[33] Christopher Shields, "Aristotle," ed. Edward N. Zalta & Uri Nodelman, *The Stanford Encyclopedia of Philosophy* (Winter 2023 Edition), https://plato.stanford.edu/archives/win2023/entries/aristotle/.
[34] *The Liddell-Scott-Jones Greek-English Lexicon,* s.v. "ὄργανον," https://stephanus.tlg.uci.edu/lsj/#eid=77131.
[35] Robin Smith, "Aristotle's Logic," ed. Edward N. Zalta & Uri Nodelman, *The Stanford Encyclopedia of Philosophy* (Winter 2022 Edition), https://plato.stanford.edu/archives/win2022/entries/aristotle-logic/.
[36] Octavius Freire Owen, *The Organon, or Logical Treatises, of Aristotle. With the Introduction of Porphyry. Literally Translated, with Notes, Syllogistic Examples, Analysis and Introduction. By Octavius Freire Owen*, vol. 1 (London: George Bell and Sons, 1901), vi, https://babel.hathitrust.org/cgi/pt?id=hvd.ah53f8&seq=9.
[37] Ibid.

the category of essence of several things which differ in kind; or accidents, which is none of the above but still belongs to the thing. The Topics contains eight books, six of which are a compilation of strategies and principles relating to these ideas.[38] Book I serves as an introduction to dialectical reasoning and the four predicables while Book II introduces strategies of argument dealing with commonplaces of accident. Book III discusses how to use more than one predicate when arguing and Book IV and Book V discuss the uses of *genus* and property, respectively, while Books VI and VII discuss definition. Finally, in Book VIII, Aristotle discusses how one might practice dialectical reasoning, signaling his three purposes for the study of this argumentative style.

The *Topica*, in teaching dialectical argument, has three main purposes: "For mental exercise, for conversations, for scientific philosophic knowledge" (Aristotle, *Topica*, 101a27-28). In describing the uses of each purpose, Aristotle writes,

> ὅτι μὲν οὖν πρὸς γυμνασίαν χρήσιμος, ἐξ αὐτῶν καταφανές ἐστι· μέθοδον γὰρ ἔχοντες ῥᾷον περὶ τοῦ προτεθέντος ἐπιχειρεῖν δυνησόμεθα. πρὸς δὲ τὰς ἐντεύξεις, διότι τὰς τῶν πολλῶν κατηριθμημένοι δόξας οὐκ ἐκ τῶν ἀλλοτρίων ἀλλ᾽ ἐκ τῶν οἰκείων δογμάτων ὁμιλήσομεν πρὸς αὐτούς, μεταβιβάζοντες ὅ τι ἂν μὴ καλῶς φαίνωνται λέγειν ἡμῖν. πρὸς δὲ τὰς κατὰ φιλοσοφίαν ἐπιστήμας, ὅτι δυνάμενοι πρὸς ἀμφότερα διαπορῆσαι ῥᾷον ἐν ἑκάστοις κατοψόμεθα τἀληθές τε καὶ τὸ ψεῦδος. ἔτι δὲ πρὸς τὰ πρῶτα τῶν περὶ ἑκάστην ἐπιστήμην ἀρχῶν· ἐκ μὲν γὰρ τῶν οἰκείων τῶν κατὰ τὴν προτεθεῖσαν ἐπιστήμην ἀρχῶν ἀδύνατον εἰπεῖν τι περὶ αὐτῶν, ἐπειδὴ πρῶται αἱ ἀρχαὶ

[38] Eleonore Stump, "Topics: Their Development and Absorption into Consequences," in *The Cambridge History of Later Medieval Philosophy: From the Rediscovery of Aristotle to the Disintegration of Scholasticism 1100 - 1600*, ed. Norman Kretzmann, Anthony Kenny, and Jan Pinborg (Cambridge: Cambridge University Press, 1982), 273.

ἁπάντων εἰσί, διὰ δὲ τῶν περὶ ἕκαστα ἐνδόξων ἀνάγκη περὶ αὐτῶν διελθεῖν (Aristotle, *Topica*, 101a29-101b2)

"Therefore that it is useful for mental exercise, it is evident from itself. For having a method, we will be able to easily attempt to prove the proposed thing. And for conversations it is useful, because the expectations of the many having been accounted for, not from others but from one's own beliefs we will speak with them, forming an argument which they appear to speak to us not well. And for scientific philosophic knowledge it is useful, that we are able to raise difficulties for both sides, we will easily behold the truth and the false in each. And still it is useful for the first of the beginnings of each science. For it is impossible to speak of the related of the beginning of the proposed sciences, since the origins are of nothing, but it is necessary to discuss the generally approved points of each of them." [39]

To Aristotle, conversation was important because you were able to separate an individual's belief from the majority's, focusing on the importance of convincing a singular person rather than a large group. In the section above, Aristotle uses the words τὰς ἐντεύξεις to name the second purpose of the work. Εντεύξεις comes from the verb ἐντυγχάνω can be defined as "meeting with," "conversing with" and "talking to."[40] This verb implies a one-on-one interaction with another rather than with a larger group. Later in the passage, Aristotle mentions "one's own beliefs" and the ability to discuss them with a person with dialectical argumentation. In the Greek, the word οἰκεῖος is used to describe a person's dogma. Οἰκεῖος has many layers of meaning and can mean "one's own," as is translated above, but it also has a domestic connotation

[39] All translations are my own unless otherwise noted.
[40] *Liddell-Scott-Jones,* s.v. "ἐντυγχανω," https://stephanus.tlg.uci.edu/lsj/#eid=37444.

as it can also be defined as "of the house" or "personal and private."[41] The use of this word with its alternate meanings imply that the discussions cultivated using dialectical argumentation deal with one's personal beliefs more than simply their opinions. And in the context of this research, religion is one of those most private and personal beliefs.

Additionally, Aristotle claimed that dialectical reasoning could be used in a scientific context to help narrow down what is the truth and what is a falsehood by determining contradictions and gaps in an argument. Aristotle uses the phrase "διαπορῆσαι ῥᾷον" to describe how one can discover these knowledge gaps. The verb διαπορέω often deals with perplexity and doubt, being defined as "to be quite at a loss, to be in doubt."[42] However, when paired with ῥᾷον the phrase comes to mean "raise difficulties." Aristotle's attitude towards scientific discovery encourages complications. It is clear from his definition that it is important to disagree and feel doubt when attempting to discover the truth. Now, in a religious context where a common truth is believed by all in that group, doubt and challenges to a religious status quo is necessary to confirm the shared belief's truth, by Aristotelian logic. The religious debates of al-Mahdi's time would have offered the perfect opportunity for Muslim scholars to legitimate and prove the validity of Islam by discovering its truth and the falsehood of other religions using dialectical methods.

Aristotle also addresses the relevance of these techniques for establishing the creations of science. He acknowledges that "it is impossible to speak of the beliefs of the beginning of the proposed sciences"[43] because the origins are unknown or nothing (ἀπάντων). Aristotle believes what lies at the foundation of science is impossible to know. Rather, he argues, it is possible to find commonly accepted beliefs about scientific origins and accept them as truth. The idea of

[41] Ibid., s.v. "οἰκεῖος," https://stephanus.tlg.uci.edu/lsj/#eid=74597.
[42] Ibid., s.v. "διαπορέω," https://stephanus.tlg.uci.edu/lsj/#eid=26488.
[43] "ἐκ μὲν γὰρ τῶν οἰκείων τῶν κατὰ τὴν προτεθεῖσαν ἐπιστήμην ἀρχῶν ἀδύνατον εἰπεῖν τι περὶ αὐτῶν."

general acceptance of an unknown foundation is relevant for a religious context. Who or what God is is unknown and, according to the *Topica,* this uncertainty is okay and it is still possible to establish a generally-held opinion about God. In making this claim about science, Aristotle also defines religions and their core beliefs.

While the first use, mental training, was not a significant advantage to the translation of this text by the Arabs, both conversing about personal beliefs and understanding science were two necessary skills to the early Abbasid empire. Aristotle's purposes for writing this text aligned with the goals of al-Mahdi who wished to engage in religious discussions in order to prove what might be true and false about religious beliefs. The philosopher's conceptualization of logic and topical strategies fit into the Islamic worldview of the Abbasid empire and so they approached the text quite differently than their Christian counterparts.

Genus in an Islamic Context

The choice of the *Topica* may seem unusual. In the Western translation tradition, Aristotle is not known for his work on the *Topica* and there is very little literature or commentary on the work. In fact, Perseus, a major online classical database, has no translations nor commentaries for the *Topica* at the time of writing. There is evidence of European scholarly interest in the Aristotelian work between the 12th and 15th centuries CE, with a decrease in interest following the 15th century.[44] Similarly to Arabic commentators, European translators wrote commentaries about Aristotle's *Topica*, albeit often giving it attention as a smaller work within the larger *Organon*. However, European commentators had a different approach to Aristotle's text when compared to Arabic translators, often placing his work in conversation with the works of Cicero and Boethius and their writings on dialectical argumentation. Their focus was less on the

[44] Joël Biard, "THE PLACE OF ARISTOTLE'S 'TOPICS': SOME EXAMPLES IN THE 15TH CENTURY," *Rivista Di Filosofia Neo-Scolastica* 108, no. 4 (2016) 845, http://www.jstor.org/stable/26504850.

potential application of the Aristotelian work but rather on expanding on the ancient questions surrounding the dialectical method.[45] Interest in the *Topica* faltered and fell to the sidelines as other Aristotelian works became more prevalent within the Western consciousness, and today the work is rarely studied.

While European commentators interacted with the *Topica* for intellectual purposes, in the context of the Abbasid Empire, the choice of the *Topica* was a strategic one. As discussed above, the *Topica's* dialectical method of argumentation was useful to the Arabs during the 8th century. They were engaging in religious debates and so they required a method of argument that could be applicable to religion. Because religion is so fundamental to someone's personhood, religious debates of this period necessitated individual discussions of beliefs as well as finding common ground between groups of people. Other argumentative methods, like described in Aristotle's *Rhetoric*, make assumptions that their audience already agrees on more complex ideas when they attempt to be persuasive. In religious dialogues, this is not possible.

Aristotle's *Topica* was the perfect starting ground for not only learning how to have constructive arguments with people of differing beliefs but also as determining a structure of religious inclusion. As mentioned above, in the start of his work, Aristotle lays out the four genres of differentiation for all things. These include definition, property, *genus*, and accident. However, the most interesting category of analysis, and widely mentioned in later Arabic commentaries, is the notion of *genus*. To the Greeks, *genus* was defined as a broad category, often referring to races or families, and signaled a general relation among all the members of a *genus*.[46] In the context of the Islamic empire, establishing broad categories for different ideas was important for two reasons: one, to find common ground in debates by signaling that, despite

[45] Ibid., 865.
[46] *Liddell-Scott-Jones,* s.v. "γένος," https://stephanus.tlg.uci.edu/lsj/#eid=22623.

different religions, common beliefs could be discovered, and two, to establish Islam as the final, culminating religion is was necessary to make Islam a *genus* which included all people and all religions.

In his discussion of *genus*, Aristotle writes,

> Ἐπεὶ δ' ἀναγκαῖον, ὧν τὸ γένος κατηγορεῖται, καὶ τῶν εἰδῶν τι κατηγορεῖσθαι, καὶ ὅσα ἔχει τὸ γένος ἢ παρωνύμως ἀπὸ τοῦ γένους λέγεται, καὶ τῶν εἰδῶν τι ἀναγκαῖον ἔχειν ἢ παρωνύμως ἀπό τινος τῶν εἰδῶν λέγεσθαι (οἷον εἴ τινος ἐπιστήμη κατηγορεῖται, καὶ γραμματικὴ ἢ μουσικὴ ἢ τῶν ἄλλων τις ἐπιστημῶν κατηγορηθήσεται, καὶ εἴ τις ἔχει ἐπιστήμην ἢ παρωνύμως ἀπὸ τῆς ἐπιστήμης λέγεται, καὶ γραμματικὴν ἕξει ἢ μουσικὴν ἤ τινα τῶν ἄλλων ἐπιστημῶν ἢ παρωνύμως ἀπό τινος αὐτῶν ῥηθήσεται, οἷον γραμματικὸς ἢ μουσικός) (Aristotle, *Topica*, 111a34-111b4).
>
> "And so the things of which the genos is predicated, something of the species needs to be predicated also, and so far as those things that have the genos or having a corresponding name said from the genos, it is also necessary for those things to have a species, or to say a corresponding name from some species (for if some knowledge is predicated of someone, then grammatical or musical or some other type of knowledge will be predicated, and if someone has knowledge or he says a corresponding name from one of them, then he will also have grammatical or musical or some other knowledge or he will say a corresponding name from them, being a grammarian or musician)."

Aristotle asserts that knowledge and ideas can be derived from a smaller sort but still fit into a larger category, a *genus*. While the broad category of *genus* was made up of different

species, all those separate species lend themselves to being a part of the larger whole. Aristotle claims that what applies to the larger *genus* must come from the individual species for it to make sense as a *genus*. There is an element of uncertainty about the *genus* as a whole because the definition of "species" comes from τῶν εἰδῶν τι or "something of the known things." This definition implies that the larger *genus* is less concretely known as it is made up of things that are known but not fully understood. Therefore, by this logic, it is necessary that what can be claimed about the *genus* as a whole must also be able to be said by its smaller parts. The use of ἀναγκαῖον in this passage also illustrates the importance of the connectedness between *genus* and species. When ἀναγκαῖον appears with ἔχει, it can be translated as "it must be so."[47] This definition relays the crucial element of establishing a *genus*.

In an Islamic context, the notion of *genus* is a compelling one. For Muslims, Islam is believed to be the final, culminating religion of all the Abrahamic religions. Abraham and Jesus as well as other important religious figures in Christianity and Judaism are believed to be prophets within Islam and are subsumed into the Islamic tradition.[48] For Islam to be the culminating religion, other religions must fit into the order established by Islam. If Islam is understood as a *genus*, other religions with which al-Mahdi and others were debating must be understood as species of Islam. In Aristotle's Greek, he uses the word κατηγορέω which LSJ defines as being "predicate of" or "affirming" in a Logic context.[49] By using Aristotle's dialectical style, religious debaters could assert that the existence of other religions affirms the existence of Islam itself and that Islam affirms the validity of other religions as a smaller part of

[47] Ibid.„ s.v. "ἀναγκαῖος," https://stephanus.tlg.uci.edu/lsj/#eid=6649.
[48] Ruqaiyyah Waris Maqsood, "What Muslims Believe," In *Need to Know? Islam*, 1st ed. Collins (2008). https://search.credoreference.com/articles/Qm9va0FydGljbGU6MjQ2MTc1Mw==?aid=275948.
[49] *Liddell-Scott-Jones,* s.v. "κατηγορέω," https://stephanus.tlg.uci.edu/lsj/#eid=57527.

Islam. Thus *genus* becomes a useful tool to not only validate other religious beliefs but to use those beliefs to illustrate the religious superiority of Islam.

Because of the difficulty of defining *genus*, an equally vague Arabic word was needed to convey the familial, grouping, and racial connotation of *genus*. Arabic translators found a similar word that was equally as difficult to define as *genus*: *jins* (جنس). *Jins* also has many possible translations, including sex, nationality, race, and species.[50] Overall, these definitions all indicate an innate element to an identity. The things which *jins* describes are unchangeable. In the context of Islam and its connection to *genus*, *jins* establishes Islam existence as innate and as related to the prior Abrahamic religions. Both *jins* and *genus* have familial connotations and so, because Christianity, Judaism, and Islam all share their origin stories and founders, Islam is established as not only related to these prior religions but also as an inevitability in the natural progression of the religion.

While religious debaters were drawn to the Aristotelian notion of *genus* to persuade other religious groups of the cumulative nature of Islam, Arabic translators also used Aristotle's dialectical divisions to understand Islam for themselves. al-Farabi, a philosopher and translator who studied in Baghdad during the 10th century, after the reign of al-Mahdi, describes the universe and its structure using Aristotelian divisions. He designates the highest power in the universe as "The First Cause," a name meant to appeal to monotheists, and claims it cannot be defined as it is above the realm of human intellect and should not be pigeon holed into human understanding.[51] However, while the First Cause cannot be defined using the divisions laid out by Aristotle, al-Farabi's hierarchical understanding of the universe can be defined in terms of *genus*.

---

[50] Hans Wehr, *A Dictionary of Modern Written Arabic*, ed. J Milton Cowan, 3rd ed. (Spoken Language Services, Inc., 1971), 141.

[51] David C. Reisman, "Al-Faarabi and the Philosophical Curriculum," in *The Cambridge Companion to Arabic Philosophy*, ed. Peter Adamson and Richard C. Taylor (Cambridge University Press, 2004), 59, https://doi-org.libproxy.vassar.edu/10.1017/CCOL0521817439.

The First Cause is understood as the creator of everything and each existent thing emanates from the First Cause. Unlike the First Cause, al-Farabi defined these existent ideas in terms of Aristotelian dialectical methods and laid out a hierarchy of the universe in which every existent comes from the First Cause and the previous existents, other Causes branching out from the First Cause. Therefore, everything that exists is defined by the First Cause and from the purer existents, establishing a universal *genus* in which everything belongs in hierarchical structure where each smaller *genus* fits into a larger *genus* which fits into the First Cause.[52] Al-Farabi's work exemplifies how Aristotelian works were not only used to debate with other religious groups but were also used to help conceptualize Islam for Muslims.

Aristotle even addresses the hierarchical structure of the universe in his discussion of *genus* writing,

> καὶ τὸ τῷ βελτίονι καὶ τιμιωτέρῳ ὑπάρχον αἱρετώτερον, οἷον θεῷ ἢ ἀνθρώπῳ καὶ ψυχῇ ἢ σώματι. καὶ τὸ τοῦ βελτίονος ἴδιον βέλτιον ἢ τὸ τοῦ χείρονος, οἷον τὸ τοῦ θεοῦ ἢ τὸ τοῦ ἀνθρώπου· κατὰ μὲν γὰρ τὰ κοινὰ ἐν ἀμφοτέροις οὐδὲν διαφέρει ἀλλήλων, τοῖς δ᾽ ἰδίοις τὸ ἕτερον τοῦ ἑτέρου ὑπερέχει.
>
> "And the things that are better and more honored are best to be chosen, such as the things of God rather than of man and the things of the soul rather than the body. Also the characteristics of the better things are better than those of the worse, like the characteristics of God than those of man. For the common things in both, nothing is different from the other, but the characteristics of one rises above the other." (Aristotle, *Topica*, 116b12-18).

[52] Abu Nasr al-Farabi, *Al-Farabi on the Perfect State*, trans. Richard Walzer (Great Books of the Islamic World, Inc., 1985), 95.

In his discussion of rules for comparing two dialectical methods, Aristotle makes the argument that it is better to choose something as it relates to the divine rather than to man. He asserts that there may be no difference for what they have in common with each other, i.e. part of the same *genus*, however, the ἰδίος, or property and characteristics, of one is much better than the other. This understanding of a hierarchy between dialectical methods reveals how Arabic translators could use this work to articulate their own beliefs about the universe by understanding that characteristics of the divine are more significant than those of humans. Additionally, the inclusion of the superiority of the divine as an example would appeal to religious commentators who might be wary of using a work from a polytheist. Instead, Aristotle supports their beliefs and justifies them in the use of his work.

al-Mahdi's choice of the *Topica* indicates the combining of theology and philosophy. He saw philosophy as a tool to improve religion and religious beliefs. The dialectical methods described within the work served many purposes in the Islamic context, including providing a structure to argue for Islam as a cumulative religion as well as a method for conceptualizing the religion. The choice to preserve Aristotle's *Topica* arose because it offered a pool of knowledge that Arabic commentators could then build upon. However, the interest in argumentative purposes of the work was not the only reason for Al-Mahdi's choice.

As discussed above, the third and final purpose of Aristotle's *Topica* was for scientific understanding. Aristotle wished to establish a framework for discovering the foundation of different sciences. His inclusion of science in this work indicates his belief in the possibility of agreement on scientific origins. This Aristotelian structure for scientific understanding appealed to those in the Abbasid Empire and their perspective on knowledge.

Science played a significant part in the intellectual tradition throughout the Abbasid Empire. A core belief in Islam is the importance of acquiring knowledge. Within the Qur'an, the responsibility of every Muslim to seek information is emphasized.[53] Much of the success of the Graeco-Arabic translation movement can be attributed to this belief. Throughout the Abbasid caliphate, astronomy, medicine, mathematics, and philosophy were researched and studied. Interest in science first began with applied sciences and then expanded to philosophical sciences, as applied science eventually necessitated a theoretical foundation.[54]

The *Topica's* instinct for division was replicated by Islamic translators who dealt with science. Aristotle, in his other works, breaks the sciences into two parts: the theoretical and the practical. The theoretical included mathematics, natural sciences, and metaphysics, while the practical included ethics, economics, and politics.[55] Arabic scientists and philosophers tended to divide these disciplines into more and more specific realms of knowledge.[56] In their works, these translators tended to enumerate the many possible methods of scientific study and how these different categories would ensure that science is truly mastered and to expose those who have false knowledge.[57] Creating more divisions within scientific fields demonstrates the division of all sciences into genuses and species.

The parallel instincts to understand both religion and science through the realm of Aristotelian divisions indicates the effort by Islamic philosophers and translators to conceptualize their world in relation to what they knew existed. The creation of subdivisions and hierarchical structures indicates the instinct to fit both realms of knowledge into their vision of the world.

---

[53] El-Hussein A Y Aly, *The Graeco-Arabic Translation Movement* (Cambridge University Press, 2023), 16 - 17, doi:10.1017/9781009385626.
[54] Ibid., 17.
[55] Rosenthal Franz, *The Classical Heritage in Islam.*, trans. Emile Marmorstein and Jenny Marmorstein (London and New York: Routledge, 1975), 52.
[56] Ibid., 52-53.
[57] Ibid., 55.

Additionally, in understanding both religion and science in the same ways and with the same Aristotelian work, religion and science are related and can exist in the same sphere of reality and there is no conflict between the two fields of knowledge.

Implications of Translation

al-Mahdi's introduction of this work into the Islamic context encouraged the evaluation of theological ideas through dialectical reasoning. The strategies outlined by Aristotle were used by theologians working under the caliph to write books against "the heretics and other infidels."[58] He urged them to produce proofs to counter disputers, eliminate heretical problems, and clear up doubt by expounding the truth.[59] These uses illustrate a calculated approach to the translation endeavors made under the Abbasids. The goal of translation in this context was not to preserve knowledge or build off previously established work but rather to use the information gained from the translations to fight an ideological battle and to conceptualize their own religion.[60]

This instinct to turn to Greek sources illuminates two interesting perspectives about the value of antiquity in an Islamic context. First, it is clear these works hold inherent value in the Islamic worldview. These sources' potential knowledge was seen as valuable to the development of the Islamic intellectual tradition. The choice to turn to Greek sources illustrates an inclination to demonstrate the capabilities of the Arabic intellectual movement. Following the decline of the Byzantines and their monopoly on Greek heritage, Islamic culture made the case through their translation movement that they were the legitimate heir of Greek knowledge.[61] The ancient sources' information was desirable in the context of the Islamic Empire to address the problems

[58] Gutas, *Greek Thought, Arabic Culture*, 65.
[59] Ibid.
[60] Muḥammad ʻābid Jābirī, Arab-Islamic Philosophy : A Contemporary Critique, trans. Aziz Abbassi (Austin: Center For Middle Eastern Studies, University Of Texas At Austin, 1999), 49.
[61] D'ancona, "Greek into Arabic," 20.

and questions that plagued al-Mahdi and other caliphs and philosophers. Therefore, the Abbasid caliphate claimed ownership over the literature that would help them gain religious and intellectual power in their empire.

Secondly, although these works were important to societal needs, they were not translated and preserved because the Abbasids believed the Greeks to be intellectually superior to them but, rather, this text was useful. When looking at an overview of the works translated into Arabic, almost all of the texts deal with philosophy, science, or astronomy. This indicates that Muslims were looking for previous research that would further their own work in a subject area. Similarly to modern academia which cites past research, they knew they didn't have to start at square one with their inquiries, often commissioning more translations when they came across a problem they knew was addressed in ancient texts.[62] Arabic translators believed Greek thought should be welcomed, "despite its foreign provenance," because "inquiry into the truth is greatly assisted by those who have achieved truth in the past."[63]

Aristotle's *Topica* played a significant role within the Abbasid caliphate. It offered the framework for religious discussions across Abrahamic religions while also aiding in developing a structure for religious and scientific fields of knowledge. The Aristotelian work was not simply preserved under the Islamic tradition but analyzed and applied to the pressing questions within the caliphate. Ancient sources were believed to be useful and only existed within the intellectual tradition while they held practical knowledge. This approach reveals another application of translation. Compared to the Western tradition that translated this particular work to preserve and analyze the ancient world's argumentative methods, al-Mahdi saw the *Topica* as an instrument

---

[62] Gutas, *Greek Thought, Arabic Culture*, 117.
[63] Peter Adamson, "Al-Kindi and the Reception of Greek Philosophy," in *The Cambridge Companion to Arabic Philosophy*, ed. Peter Adamson and Richard C. Taylor (Cambridge University Press, 2004), 34, https://doi-org.libproxy.vassar.edu/10.1017/CCOL0521817439.

that fit his needs and could apply to an Islamic context. This implementation exemplifies the universal claim to Classical works beyond the traditional Western claim to the ancient world.

Dissection and the Galenic Solution

Medical theory during the Abbasid period stood at a crossroads of conflicting influences. Works focused on medicine were some of the most translated and commented on within the medieval Islamic world. From Syria to India, Greece to Persia, medical treatises were seen as valuable enough to translate into Arabic and incorporate into medical practice and education. However, the Islamic nature of the empire demanded that the practice of medicine conform to Islamic law. In order to uphold religious standards, some procedures, cures, and treatments recommended by other medical traditions fell outside the boundaries of religious law. In order to circumvent these scriptures, then, creative strategies were required.

Before the appearance of the Prophet Muhammad and during the early Islamic caliphates in the seventh century, medical tradition in the Arabian peninsula remained largely based upon traditional medicine, in contrast with the more established medical practices in neighboring regions. Diseases like malaria and leprosy ran rampant and, while some anatomical knowledge is evident, a general ignorance about the body was commonplace.[64] Treatments relied much more on incantations as well as apothecarial cures gathered under suitable astrological conditions. With the arrival of Muhammad, the condition of diseases remains unchanged; however, the new religious influences shift how medicine is practiced. Although, in the Qu'ran, doctors nor medicine nor anatomy is discussed or mentioned, in the hadiths, teachings attributed to the Prophet, there are several instances where Muhammad is said to have commented on proper medical practices.[65]

In Islam, the Qu'ran is only one part of the religious corpus and is not a prescriptive source. Other works, the hadiths, supplemented the religion with theological, legal, and religious

[64] Manfred Ullmann, *Islamic Medicine* (Edinburgh University Press, 1978), https://www.jstor.org/stable/10.3366/j.ctvxcrv7d, 1-2.
[65] Ibid., 4.

traditions in order to build a complete picture of how to act as a Muslim.[66] The hadiths are the recorded words and actions of the Prophet and are viewed by Islamic theologians as the Qu'ran in actions.[67] As opposed to the holy book which was gathered and recorded closely after the death of the Prophet, the hadiths have a complicated transmission history as they were compiled years after Muhammad's life.[68] As a result, the authority of the hadiths was a major concern of early Muslim scholars.[69] Therefore, hadiths have two elements: the text and the chain of transmission, or who is credited with introducing the story.[70] For Sunni Islam, only hadiths coming from Muhammad's Companions, or anyone who saw the Prophet while a Muslim and died a Muslim, were given credibility.[71] However, it is quite possible that forged anecdotes entered into the hadith corpus but have since been practiced as if they were real.[72] The words of the Prophet recorded within the hadiths address all elements of life from prayer practices to food and drink to dreams to animals.[73]

Within the hadiths', the body remains a place of constant regulation. What someone must wear, drink, and eat are all addressed within the hadiths. Bathing and purification are also major themes within the hadiths. For example, when a person wakes up, they must clean their nose three times because "the devil spends the night in the interior of one's nose,"[74] and it is forbidden to wear silk because, if they wear it now, they will not in the afterlife.[75] This focus on the body continues into hadiths centered on medicine. The general overarching belief about medicine in

---

[66] Ram Swarup, *Understanding the Hadith: The Sacred Traditions of Islam* (Prometheus Books, 2002), 4.
[67] Ibid., 4.
[68] For a more thorough timeline and analysis of the transmission of the hadiths, see Jonathan A.C. Brown, *Hadith : Muhammad's Legacy in the Medieval and Modern World* (Oneworld Publications, 2009), 3.
[69] Ibid., 4.
[70] Ibid., 6.
[71] Ibid., 17.
[72] J. Christoph Bürgel, "Secular and Religious Features of Medieval Arabic Medicine," in *Asian Medical Systems: A Comparative Study*, ed. Charles Leslie (University of California Press, 1976), 46, https://www.jstor.org/stable/jj.7968031.9.
[73] Swarup, *Understanding the Hadith,* 5.
[74] Ibid., 26.
[75] Ibid., 145.

the sayings was that there were no ailments for which Allah had not already created a treatment.[76] The Prophet defined healing as three cures: "a gulp of honey, cupping, and branding with fire (cauterizing)."[77] However, in the same breath, he forbade cauterization for his followers and is said to have recommended hot compresses instead.[78] For this ban, Muhammad gave no reasoning but it can be hypothesized that, with the emphasis on cleansing and caring for a body, the permanent scarring of cauterization for the purpose of healing wouldn't have appealed.

The reliance on the hadiths for medical knowledge is where the first split in Islamic attitudes about medicine emerges. Differing schools of thought developed around how central the hadiths should be in determining law and other social and political aspects, including practicing medicine.[79] This is not to say anyone ignored the hadiths and went against the Prophet's words, but rather, there were varying degrees of reliance on the hadiths as the sole source of medical knowledge in an Islamic context. There were those that insisted on only using the hadiths for all medical knowledge and those who believed that the hadiths' practices could be expanded upon with other medical sources. Books, such as the Shī'ī treatise from the ninth-century titled *The Medicine of the Imams,* gathered the hadith traditions concerned with medicine and were used as a guide for how to approach medical science.[80] These books either served as a framework for secular physicians who could then apply other medical texts so long as they fit into the boundaries of the religious laws; or, for the traditionalists, as the culmination of all necessary medical information which could not be supplemented by non-religious texts. These two perspectives, the secular and the traditionalist, created a division that continued under Abbasid rule.

---

[76] Sahih al-Bukhari, Vol. 7, Book 71, Hadith 582, https://sunnah.com/bukhari/76.
[77] Ibid., Vol. 7, Book 71, Hadith 584.
[78] Ullmann, *Islamic Medicine,* 4.
[79] Emilie Savage-Smith, "Attitudes toward Dissection in Medieval Islam," *Journal of the History of Medicine and Allied Sciences* 50, no. 1 (January 1995): 67–110, https://www.jstor.org/stable/24623557?sid=primo, 70.
[80] Ibid., 72.

Traditionalist Muslims were those who refused to rely on the secular sciences championed by Greek works. Though they were a relatively small group during the Abbasid caliphate, they were outspoken in their reliance on the traditions of the Prophet for proper medical practices alone. While the Abbasids were funding translations of Greek medical texts, orthodox Muslims instead established a practice called the medicine of the Prophet, relying solely on the hadiths as the basis for all things medical.[81] Though Greek medical works were in circulation during the development of this Prophetic medicine, the existence of medical theories and understanding had little influence on this medicine.[82] Rather, the hadiths, real and forged, as long as they were viewed as authentic, were the last word for guidance on medicine.[83] The emphasis on religion as the source of medical knowledge was not the most popular view under the Abbasid caliphate, however, this perspective was influential within contemporary discussions and informed elements of medical practice across the empire.

On the other hand, with the rise of the Abbasids and the emphasis on translation and knowledge acquisition from ancient sources, secular science grew in influence and became the dominant medical practice between the 8th and 10th centuries. Secular science, to the Arabs of the time, meant medicine that had been adapted from other cultures and not rooted in Islamic beliefs. Most commonly, this science refers to the translation and adoption of medical texts from the Greek world. Physicians in this category often relied on Greek writers to inform their practice and understanding of bodily anatomy and function. It is important to note that, although the science was seen as secular, they themselves were not secular and were still informed by Islamic religious principles, however, not to the extreme of the Orthodox Muslims of the time. Samar Farage highlights one example of the interconnected relationship between religion, discussing

[81] Bürgel, "Secular and Religious Features of Medieval Arabic Medicine," 46.
[82] Ibid.
[83] Ibid.

the similar attitude between Islamic and Greek medical theory about the pulse. Both traditions believed the pulse was a messenger about the condition of the body and the soul and a physician could advise about both aspects just based on the strength of the pulse.[84] This tie between the physical body and the spiritual, ephemeral soul disproves the claim that the "secular" Arab physicians were not secular as it is understood from a modern understanding. Yet, despite a shared religious background, tensions remained between groups on how prominent a role religion should play in a medical context.

Greek Influence in Abbasid Medicine

Despite conflicting perspectives about the role of Islam in a medical context, a similarity between the groups was the reliance on Greek medical texts as a source of information. Under the Abbasids, the introduction of Greek medicine can be traced to the first caliph, al-Mansur. When al-Mansur was dealing with stomach disease, a physician from Gondeshapur, a pre-Islamic medico-philosophical academy near Susa run by Nestorian scholars, came to Baghdad and healed the caliph.[85] This episode inspired al-Mansur to support medical learning within his empire and kickstart the widespread translation of Greek medical texts.[86] In fact, with the blessing of al-Mansur, the family of the Gondeshapur physician remained in Baghdad and were pivotal in introducing Greek medicine into the caliphate through their teaching in the city.[87]

The influence of Greek medicine on the Islamic world cannot be overstated. From medical education to proper physician behavior, from how the body functions to what cured a headache, almost every aspect of medical practice in the Abbasid Empire drew from Greek sources. Similarly to philosophy, medicine was a genre of knowledge the caliphate was heavily

[84] Samar Farage, "The Ethics of the Physician in the Galeno-Islamic Tradition," in *Muslim Medical Ethics: From Theory to Practice*, ed. Jonathan E. Brockopp and Thomas Eich (University of South Carolina Press, 2008), 24, https://www.jstor.org/stable/j.ctv1ffpd0n.7.
[85] Bürgel, "Secular and Religious Features of Medieval Arabic Medicine," 48.
[86] Ibid.
[87] Ibid.

invested in. In the era of the translation movement, the exposure to and practical need for medicine inspired prominent translators to turn to Greek authors for guidance in establishing general medical practice and knowledge.[88] The early translators, like Hunayn ibn Ishaq (809 - 873 CE), chose works that had both practical and methodological implications.[89] Hunayn's approach to translation was influential as his translations were notably reader-oriented rather than text-oriented. Rather than exactly preserving the words of the ancient author, he focused on how the information could be applied to the context of the caliphate and doing his best to correct any possible misconceptions surrounding the material by using accessible language and adding exposition in potentially vague sections.[90] Hunayn's work established an intelligible Arabic medical canon based entirely on Greek medical writings which contributed to the growing medical world under the Abbasids.

A vital aspect of medicine, especially if the desire is to establish a sophisticated medical system across a region, is the creation of an educational structure. For the Abbasids, this was adopted from established medical practices; their preferred foundational text for much theoretical instruction was the Alexandrian Canon which featured sixteen medical books by Galen. This compendium of medical texts had been gathered by Byzantine Alexandrian scholars as early as the 6th century CE. Later Syriac and Arabic translators adopted the works and added more Galenic writings to the original twelve items.[91] The Islamic medical curriculum was based almost entirely on this collection of medical writings. It was believed that, after students had extensively studied these works, they would have sufficient knowledge to read and understand

---

[88] Vagelpohl, "The User-Friendly-Galen," 123.
[89] For more information on Hunayn's approaches to translation in the Abbasid caliphate, see Vagelpohl, "The User-Friendly-Galen."
[90] Ibid., 120-121.
[91] Michael W. Dols, "Part I Medieval Islamic Medicine," in *Medieval Islamic Medicine: Ibn Ridwan's Treatise "on the Prevention of Bodily Ills in Egypt,"* ed. Adil S. Gamal (University of California Press, 1984), 27-28, https://www.jstor.org/stable/jj.8501296.

further texts.[92] Greek medicine was the core of all medical understanding and was a commonality among Arabic medical students.

However, Greek influence on medical education went beyond strictly medical writings. In formal Islamic medical education, preparatory courses were required to begin training. These courses included study of language, grammar, arithmetic, geometry, astrology, ethics, and logic.[93] Many of these required classes also drew from antiquity, including Aristotle's *Organon* which was the basis for logic classes for prospective physicians.[94] In fact, the inclusion of other topics in Islamic medical education was a Greek element as many Greek medical writers were trained in philosophy and incorporated logic into their works. Within medical classes, students were taught to engage in dialectical argumentation to challenge the professor.[95] However, the purpose of this exercise was not to challenge medical concepts or come to new conclusions but, rather, to solidify religious doctrine. Disputation was encouraged because doctors could raise their voice if they felt a medical practice impinged upon religious law.[96]

Under the Abbasid caliphate, there were systems for the religious regulation of practicing physicians.[97] Rather than receiving accreditation from a university, students needed to be granted a license from a government-authorized doctor.[98] These said physicians were accredited by a so-called market inspector, a *muhtasib* (المحتسب), whose job was to enforce the moral standards of

---

[92] Bürgel, "Secular and Religious Features of Medieval Arabic Medicine," 48-49.
[93] Dols, "Part I Medieval Islamic Medicine," 28.
[94] Ibid.
[95] Huff, 156-157.
[96] Ibid., 156.
[97] Dols in "Part I Medieval Islamic Medicine," 32-35, makes the argument that no systematic examinations or diplomas existed within the Medieval Islamic education, proving that there was no empire-wide regulation of doctors. However, the author acknowledges that students often received an accreditation (*ijaza)* from his teacher, allowing him to transmit the Greek medical texts himself. On the other hand, Huff in *Rise of Early Modern Science*, 165-166, points to the existence of the *muhtasib* as evidence for an unofficial accreditation system on behalf of the government as he had the power to punish those not following religious practices. Both authors agree that there was no nonreligious, secular structure for measuring physician capabilities.
[98] Toby Huff, *Rise of Early Modern Science : Islam, China, and the West.* (Cambridge University Press, 2003), 165, https://doi.org/10.1017/CBO9781316257098.

the Islamic state. His existence comes from the Islamic idea of *hisbad,* or the role of every Muslim to promote good and dissuade evil.[99] This system ensured the enforcement of adherence to religious practices and proper medical training, all based on Greek works. These medical *madrasas* (المدارس), or schools, as well as hospitals, were not independent institutions and were founded and funded by the caliphate.[100] In fact, Michael Dols claims that medicine should be seen as the bridge between Islam and the "ancient sciences" as, prior to the establishment of formal schools, this science was taught in mosques in addition to private tutoring settings.[101] This meant that practitioners from the very beginning of their medical education were bound by Islamic laws.[102] Therefore, "secular" physicians still needed to adhere to religious standards.

Within this established medical education, an ancient debate was settled because of the religious element within Islamic medicine. The Dogmatists and the Empiricists had been debating the role of experimentation and practice in medicine since antiquity and the creation of the Hippocratic corpus. The Dogmatists were a group that wished to develop an exact science of medicine based solely on Hippocratic writings and philosophical speculation. Since the age of Hippocrates, they insisted that physicians could diagnose and comprehend the body from a series of principles that applied to all medical knowledge.[103] On the other hand, Empiricists believed that only observation and experience could inform medical knowledge. They insisted that no one could properly understand medicine and the body with just theory and logic and, instead, dissection and observation was necessary to build a full picture.[104] Different medical authors had different opinions within this debate. Galen himself incorporated elements of both views, yet, he often encouraged observation and hands-on learning for physicians for the purpose of gathering

[99] Ibid., 166.
[100] Ibid., 170.
[101] Dols, "Part I Medieval Islamic Medicine," 26.
[102] Huff, *Rise of Early Modern Science,* 170.
[103] Dols, "Part I Medieval Islamic Medicine," 21.
[104] Dols, "Part I Medieval Islamic Medicine," 21.

knowledge. For these physicians, they believed these observations could only come from the practice of dissection and Empiricists advocated for their students to engage in the dissection of animals, and, in some cases, humans. Yet, because of religious limitations on certain practices under the Abbasids, Empirian attitudes took a backseat to the Dogmatist approach. While there were individuals in the caliphate who mused about performing dissections, the education system pushed a philosophical and logical approach to medicine as well as a dependence on the observations and knowledge of older authors, including the Greek writer Galen.

Galen and His Philosophy

The second-century doctor and philosopher, Galen (129 - c. 216 CE), received a broad education during his childhood with an emphasis on philosophy. He later was inspired to study medical practices after a dream turned him towards medicine.[105] He traveled around the Mediterranean including to Alexandria where he developed his knowledge about anatomy and surgery.[106] Having studied and practiced medicine, he wrote several works dealing with anatomy, surgery, physiology, pharmacology, and general health and wellness.[107] Many of these works survive only to us through the Arabic translation tradition and were held in high regard within the Abbasid Empire. Some biographical traditions, especially those preserved in Arabic, claim that Galen lived for 87 years, having spent 17 years as a student and 80 as a practicing doctor.[108] Many of his medical writings have philosophic inspiration from both Plato and Aristotle as he centered philosophical logic in his work. Often beginning with a theory, he set out to prove that

[105] R. J. Hankinson, "The Man and His Work," in *The Cambridge Companion to Galen*, ed. R. J. Hankinson (Cambridge University Press, 2008), 3-4, https://doi.org/10.1017/CCOL9780521819541.
[106] Ibid., 4.
[107] Ibid., 1.
[108] Ibid.

philosophy with empirical evidence, relating his work to that of ancient philosophers and their insistence on demonstration, or proofs for logical theories.[109]

In Western medical tradition, Galen emerged as the foundational physician and medical genius for most of European history up to the sixteenth century.[110] Prior to Galen, other anatomical works existed, however, Galen offered an extensive compendium of bodily anatomy. It is hard to know what Galen discovered and what he adopted from previous medical writers, however, it seems a large part of his work comes from his own observations.[111] Producing over 130 works during his life, Galen was a prolific writer, so much so that many of his works do not survive far beyond his lifetime as scholars had to determine what texts to preserve.[112] Almost immediately after his death, his work began to dominate the medical field of Late Antiquity and was copied around the Mediterranean.[113] Similarly to the *Topica,* Galen's works fade from the Western Medieval translation tradition until they are picked back up in the 14th, 15th, and 16th centuries. However, an interesting phenomenon occurs where rather than preserving the text in the original Greek, Galen's works are translated into Latin. *On Anatomical Procedures* remains largely untouched until 1531 when it is translated into Latin by Johannes Guenther in Paris.[114] These Latin translations were produced from both the Greek and Arabic traditions and were incorporated in the Renaissance medical corpus for the university study of anatomy.[115] The instinct to translate the Greek into Latin immediately upon the rediscovery of these texts

---

[109] Teun Tieleman, "Methodology," in *The Cambridge Companion to Galen*, ed. R. J. Hankinson (Cambridge University Press, 2008), 51, https://doi.org/10.1017/CCOL9780521819541.
[110] Vivian Nutton,"The Fortunes of Galen," in *The Cambridge Companion to Galen*, ed. R. J. Hankinson (Cambridge University Press, 2008), 355, https://doi.org/10.1017/CCOL9780521819541.
[111] Margaret Tallmadge May, "Introduction to," *Galen on the Usefulness of the Parts of the Body,* trans. Margaret Tallmadge May (Cornell University Press, 1968), 39-40.
[112] Nutton, "The Fortunes of Galen," 355 - 356.
[113] Ibid., 359.
[114] Charles Singer, "Introduction to," *Galen on Anatomical Procedures*, trans. Charles Singer (Oxford University Press, 1956), xx.
[115] Nutton, "The Fortunes of Galen," 373-374.

illustrates the desire to make these texts accessible to a larger populace, similarly to the Arabic translators, who had used these texts for their educational purposes earlier. However, unlike the Islamic tradition, Western physicians followed Galen's philosophy more closely and soon adopted his systematic dissection, introducing it into Renaissance classrooms where it became a popular event which drew crowds to watch, despite the gore.[116]

Galen's school of thought closely ties philosophy with medical theory. He adopted the Hippocratic teaching of four humors: blood, mucus, yellow bile, and black bile. It was believed that these humors could have four qualities including warmth, cold, moisture, and dryness.[117] In the Hippocratic ideology, an ideal equilibrium between the humors could be reached, however, Galen claimed that no perfect equilibrium existed and was influenced by external factors such as climate, age, and profession.[118] He claimed it was the job of the physician to help a man return to his symmetry and preserve it.[119] Therefore, to be an effective doctor, a grasp of logic was necessary to predict how to balance humors on an individual basis.[120] Here, his early training as a philosopher shines through, a trait which likely endeared him to Arabic translators who were simultaneously translating philosophic texts from antiquity.

Galen is famous for his inclusion of dissection as a source of knowledge for his writings. He believed that having a complete grasp of human anatomy was vital for being an effective physician. Throughout his career, he completed a series of dissections, including those on monkeys, sheep, pigs, and goats.[121] There is no evidence that he was able to dissect a human cadaver, however, he asserts his authority on human anatomy by applying his findings from "the

[116] Ibid. 373-375.
[117] Bürgel, "Secular and Religious Features of Medieval Arabic Medicine," 47.
[118] Ibid.
[119] Ibid., 48.
[120] Ibid.
[121] May, "Introduction to," 40.

animals most closely resembling man" to mankind.[122] He cataloged the information he gained from these dissections, writing numerous medical treatises about bodily anatomy which built upon and disproved previous anatomical works. His dedication to understanding anatomy as the basis of medicine sets him apart from other ancient medical writers who placed less emphasis on its importance. In Book III of *On Anatomical Procedures,* Galen discusses his motivation for focusing on anatomy in works, recognizing the danger of a physician treating a patient without proper knowledge of veins, muscles, nerves, and arteries.[123] As a result, his works give detailed descriptions of body parts to ensure a comprehensive survey of anatomy, to the best of Galen's knowledge, to mitigate damage.

Two of Galen's works stand out within the Islamic context due to their focus on anatomical knowledge and its practice. Galen's *On Anatomical Procedures* and *On the Use of the Parts* both detail his practical knowledge of bodily anatomy.[124] *On Anatomical Procedures* is intended to be a practical work on how to conduct dissections whereas *On the Use of the Parts* is much more theoretical and includes discussion of the idea of "Nature" as a creator of human anatomy.

Galen's *On the Use of the Parts* transformed beyond a medical treatise under Arabic translation. This work was an example of a translation that reached beyond its intended medical audience and became a philosophical and theological source for non-physicians.[125] In this piece, Galen discusses the nature and existence of the human body, citing the perfection of the human body as evidence for a universal creator (ὁ δημιουργος). This monotheist justification for

---

[122] Ibid., 40.
[123] Galen, *Galen on Anatomical Procedures*, trans. Charles Singer (Oxford University Press, 1956), 60.
[124] De Anatomicis Administratinonibus (Περι Ανατομικων Εγχειρησεων) and De Usu Partium (Περι χρειας μοριων).
[125] For a discussion of the Arabic reception of Galen's *On the Use of the Parts,* see Elvira Wakelnig, "Medical Knowledge as Proof of the Creator's Wisdom and the Arabic Reception of Galen's *On the Usefulness of the Parts*," in *Greek Medical Literature and Its Readers*, ed. Petros Bouras-Vallianatos and Sophia Xenophontos (Routledge, 2018), 132.

anatomy was readily accepted by Arabic translators, who could apply Galen's vague idea of a benevolent creator to Allah.[126] This source added to Galen's credibility within the Islamic world and eased his widespread translation and dissemination throughout the Abbasid caliphate.

Although he discusses the source of anatomical complexity, Galen also addresses the proper way to gain medical knowledge. He is insistent that his audience not only rely on his words for proper medical education. He emphasizes the necessity for one's own observation to be a successful physician. In *On the Use of the Parts,* he addresses this, writing,

> ὅστις οὖν βούλεται τῶν τῆς φύσεως ἔργων γενέσθαι θεατής, οὐ χρὴ τοῦ τὸν ἀνατομικαῖς βίβλοις πιστεύειν, ἀλλὰ τοῖς ἰδίοις ὄμμασιν, ἤτοι πρὸς ἡμᾶς ἀφικόμενον ἤ τινι τῶν ἡμῖν ὁμιλησάντων συγγενόμενον ἢ αὐτὸν ἐφ' ἑαυτοῦ φιλοπόνως γυμναζόμενον ἐν ταῖς ἀνατομικαῖς ἐγχειρήσεσιν · | ἔστ ᾽ ἂν δ ᾽ ἀναγιγνώσκῃ μόνον, ἅπασι τοῖς ἔμπροσθεν ἀνατομικοῖς ἡμῶν πιστεύσει μᾶλλον, ὅσῳ καὶ πλείους εἰσίν. (99.2-10).
>
> Therefore, if the spectator wishes to know of the works of Nature, he ought not to trust in anatomical books, but his own eyes and coming to us, or conversing with someone of our company, or practice diligently himself trying his hand at anatomy. But if he reads aloud only, he will trust all earlier anatomical knowledge more than ours, for there are many of them.

In Galen's perspective, there were many different ways that a student can gain the necessary skills and knowledge to be a practicing physician. Galen is insistent on mitigating the possible dangers of an ill-informed physician practicing medicine without proper observational experience. In this passage, he attributes the pitfalls to the possibility that a student relying only

[126] Wakelnig, "Medical Knowledge as Proof of the Creator's Wisdom," 131.

on books will read old authors who have since been corrected and therefore make a grave mistake when practicing medicine. He lists a few acceptable paths for acquiring this information including coming to us (ἀφικόμενον), implying Galen, or conversing with someone of Galen's company (ὁμιλησάντων), other physicians. Ἀφικόμενον is a form of the verb ἀφικνέομαι, which LSJ defines as "extend, reach, coming to" with the intended meaning that a student will reach out to and engage with Galen.[127] In describing his colleagues, Galen writes "τῶν ἡμῖν ὁμιλησάντων," ὁμιλησάντων comes from the verb ὁμιλέω, meaning to "be in company with or consort with." These two avenues for knowledge acquisition both concern discussion and interaction with Galen or someone in his sphere. Yet, the final, and most important, way to study was by trusting one's own eyes and "diligently" (φιλοπόνως) practicing anatomical procedures. By mentioning twice the possibility of self-study, Galen illustrates that the best way to learn is through practical application.

However, in a historical context hundreds of years removed from Galen's era and with religious parameters, these potential pathways for generating anatomical mastery were not available to the Abbasids. Galen's Empiricist attitude towards medical knowledge acquisition conflicted with the Islamic theory about dissection, yet, the information included in Galen's works remained invaluable for Arabic medicine as it developed. As a result, this caliphate turned toward the final, less-ideal option: turning directly to the written anatomical books which Galen would have considered outdated, even if they were from himself.

[127] *Liddell-Scott-Jones,* s.v. "ἀφικνέομαι," https://stephanus.tlg.uci.edu/lsj/#eid=18760.

A Case Study: Dissection

To illustrate the constant tensions present in the medical world of the Abbasid caliphate, this chapter will focus on one example of a contentious procedure: dissection.[128] Even during the age of Galen, human dissection wasn't a widespread procedure, although, "occasional human dissection was normal".[129] There is no verified record that Galen ever performed a human dissection, but he performed plenty of dissections of monkeys and other animals. Despite his own experience, Galen stood strong in his conviction of empirical study for anatomical knowledge, especially of the human body. In his books, the clear descriptions of human anatomy illustrate his attention to detail and emphasize the specificity of knowledge he encouraged aspiring physicians to gain.

One of Galen's works, *On Anatomical Procedures,* only survives in its completion thanks to the Arabic translation tradition. The first nine books survive in Ancient Greek while the following six books only exist in Arabic. The ninth book, describing the brain and its dissection, contains fourteen chapters, yet, only the first five exist in Greek. In the Western tradition, the only surviving exemplar, from which all manuscripts were derived, cut off abruptly in this book. It was not until the nineteenth century that the existence of the Arabic translations, and the remaining six books, became known.[130]

In discussing the anatomy of the brain, Galen writes:

ʽΕξῆς δὲ τὰς ἀποφυομὲνας ἑκατέρωθεν τῶν ληνῶν θεάσῃ φλέβας λεπτάς. Ἐνίας μὲν ἰσχνὰς πάνυ καὶ τριχὸς μόνης δεχομένας κάθεσιν, ἐνίας δε μείζους. ὄψευ δὲ

[128] For a more complete discussion about the development of Islamic attitudes surrounding dissection, see Emilie Savage-Smith, "Attitudes toward Dissection in Medieval Islam," *Journal of the History of Medicine and Allied Sciences* 50, no. 1 (January 1995): 67–110, https://www.jstor.org/stable/24623557?sid=primo.
[129] Lesley Dean-Jones, "Galen and the Culture of Dissection," in *At the Crossroads of Greco-Roman History, Culture, and Religion: Papers in Memory of Carin M. C. Green*, ed. Sinclair W. Bell and Lora L. Holland (Archaeopress Publishing, 2018), 231, https://ebookcentral.proquest.com/lib/vcl/detail.action?docID=6207601.
[130] W.L.H. Duckworth, "Introduction to," *Galen on Anatomical Procedures: The Later Books,* ed. by M.C. Lyons and B. Towers, trans. by W.L.H. Duckworth (Cambridge University Press, 1962), xii.

τὰς μὲν ἀπὸ τῆς ἐπιπολῆς ληνοῦ τῆς μικρᾶς εἰς τὰ πλησίον ἐγκεφάλου μόρια τὰ ἐπιπολῆς διασπειρομένας, τὰς δ᾽ ἀπὸ τῆς διὰ βάθους τῆς μεγάλης εἴς τε τοὐπίσω μέρος ὅλον ἐγκεφάλου, τὸ καλούμενον ὑπό τινων ἐγκράνοιν εἴς τε τὸ πρόσω κατυσχιζομένας, ἃς καὶ πρὶν εἰς αὐτο τό σῶμα καταδύεσθαι τοῦ ἐγκεφάλου, θεάσῃ σαφῶς ἐκπιπτόυσας τῶν κατὰ τὴν μήνιγγα φλεβῶν, ἐάν γε μὴ τύχης αὐτὰς διεσπακώς. (Kuhn, 713-14).

And from there you should see delicate blood vessels sending out branches on either side of the torculars. Some are very thin and only accept a hair one after the other, but others are bigger. And you will see those vessels from the smaller superficial torcular spreading out on the nearby parts of the brain's surface, and you will see those from the larger torcular in the depth scattering to the whole back part of the brain, which is called the cerebellum by some and also dividing to the front. Even before they plunge in the whole of the brain, you should clearly see them falling from the membrane of the blood vessels, if at least they do not happen to be torn.

فاذا انت الآن عاودت تحريك ذلك الجرم الذى يغطى المجرى وشلته مع تحريك اياه قليلا رايت الطرف النافذ الى البطن الموخر من طرفى المجرى ينهغلق وينطبق بالشعبة الشبيهة بالدودة التي من خلف كانها طبق له عندما تذهب بجملة الجرم الذى على المجرى الى خلف وينفتح عندما يذهب هذا الجرم الى قدام وأنفذ ايضا في هذا الوقت خاصة من البطن المقدم الى البطن الموخر آلة من آلالات الحاضرة عندك مستديرة ملساء ويكون مقدار غلظها على مقدار فتح المجرى خشبا كانت آلالة ام نحاسا ام حديدا ام فضة ام ذهاب. (Sieben Bücher, Anatomie des Galen, 1)

> Now if you move again that body which covers the channel and, with this little movement, you see the penetrating end to the posterior abdomen from both ends of the duct. This is closed up and covered by a branch which looks like a worm that from behind is like a cover for it when you go from the whole of the body that is over the passage to the back and it opens when this body goes forward. Also at this time implement from the front ventricle to the back ventricle a smooth and round tool of the tools you have present. The thickness of the tool is based on the width of the passage's opening and can be wood or copper or iron or silver or gold.

These hyper-specific descriptions, like the ones above detailing the nervous system and the brain, paint a vivid picture of human anatomy.[131] The language is meant to be comprehensible and the sentence structure is fairly simple in both Arabic and Greek. The paragraphs are intended to create a layer-by-layer list of the observations someone should make as they dissect a brain. An interesting element when comparing the two languages is the inclusion of medical terms within the anatomical descriptions. The Greek work has a much more specific vocabulary than its Arabic counterpart. Torculars (ἡ ληνός), blood vessels (ἡ φλέψ), and cerebellum (ἡ ἐγκέφαλος) are technical medical terms which required a separate Greek medical dictionary to define. However, on the other hand, the Arabic text describes a part of the brain as "a branch which looks like a worm" (بالشعبة الشبيهة بالدودة). In his translation, W.L.H. Duckworth identifies

[131] When tracing the etymology of the word "anatomy" in English, we find parallels between Ancient Greek and Arabic. "Anatomy" comes from the Greek word ἡ ἀνατομη which is derived from the verb ἀνατεμνω, "to cut up." In Arabic, *tashrih* is a verbal noun form of the root *sh-r-sh* which can also be defined as "to cut up." This also indicates the early association of anatomy with dissection and the continuation of this idea under the Arabic tradition. Savage-Smith, "Attitudes toward Dissection in Medieval Islam," 68.

this part as the vermis inferior, a structure on the cerebellum, which does, in fact, look similar to a worm.[132] While we cannot compare this translation to the original Greek, this description signifies the intention of Arabic translators who wanted these medical texts to be accessible to students. However, regardless of the specificity of the vocabulary, this work was applicable for anatomical study due to the clear observations which crossed the language barriers.

However, Galen's focus on details as evidence of the need for empirical observation would eventually be the reason he was widely adopted and assimilated by the Arab empire. Under Islamic religious law, the standing concerning human dissection is unclear. In an article by Emilie Savage-Smith, the author details the complicated perceptions of human dissections within the religion. In early Islamic jurisprudence, there seems to be no mention of anatomy and dissection.[133] It is unclear if this is a tolerance or simply an oversight when addressing medicine. However, despite no spelled-out restrictions, there are passages from Islamic jurisprudence emphasizing Prophet Muhammad's prohibition of the mutilation of a dead body.[134] He is said to have believed that the harm inflicted on a corpse has the same effect as if the person had been alive, with the statement that "breaking the bones of a person when dead is like breaking them while they are living".[135] From this hadith, the general opinion formed that dissection was prohibited as it could harm a person after their death.

Much of the religious aversion to dissection comes from the Islamic belief in the resurrection for a final judgment before God. While resurrection is a facet of Christianity, Islam ties the physical body to the soul, a coupling Christianity does not enforce. Thanks to the words of the Prophet asserting that the body is affected by what happens to it after death, a consensus

[132] Duckworth, *Galen on Anatomical Procedures,* 1.
[133] Savage-Smith, "Attitudes toward Dissection in Medieval Islam," 71.
[134] Ibid., 75.
[135] Ibid., 76.

arose that the mutilation of a corpse might affect resurrection.[136] The damage or abuse of a corpse could have negative impacts on one's afterlife, especially if, under Islamic thought, physical pleasures are promised.[137] While Muhammad's words did not directly address dissection, the procedure was not practiced because it required the body to be disturbed after death.

This general avoidance of dissection leads to a conflict between religion and the intellectual goals of the Abbasid caliphate. The establishment of foundations like the House of Wisdom (بيت الحكمة), a caliphate-funded intellectual center and school which was tasked with promoting the translation of medical and other scientific texts, illustrates the enthusiasm of the empire's elites to invest in the acquisition of information.[138] As discussed above, schools and hospitals became an integral part of the educational sphere of the caliphate. Yet, while medicine was important to the ruling class, the state religion and its rules trumped the intellectual endeavors of the time. Those who wanted to expand upon the field of medicine had to find new avenues for acquiring the necessary knowledge for teaching and Greek texts, like Galen, were the perfect place. The widespread translation and adoption of Galen and his medical information as guidebooks for education meant that the Arabs could cultivate doctors and physicians without compromising their morals for the sake of their education. In this way, any potential religious tensions that might occur with the practice of dissection would be avoided.

And yet, using Galen as the only source of information about anatomy was contradictory to Galen's own philosophy. His Empiricist approach to anatomical knowledge would have chafed at the Arabic medical education system, which adopted a Dogmatist philosophy. Yet, despite the author's original goal for his work, the Arabs felt no need to adhere to his wishes.

---

[136] Ibid., 106.
[137] Ibid., 108.
[138] Ibid., 83.

Even though the Islamic ruling on animal dissection is unclear, there was no evidence of systematic dissection regardless. Under the Islamic medical system, Galen's writings served a purpose: they filled a gap in information that the Arabic physicians could not morally fill. Religious limitations on the capabilities of doctors necessitated that the sanctity of Galen's words was not preserved. As mentioned above, under the Abbasid physicians, the ancient conflict between Dogmatists and Empiricists was reconciled and the Empiricist attitude fell to the wayside.

The Arab approach to Galen illustrates a unique perspective among Islamist scholars to ancient Ancient works. The words and information of the physician were clearly valuable enough to translate and utilize to establish an educational and medical system. However, the philosophy of the author was not important enough to follow. Religious ideals outweighed the potential knowledge that could be obtained from adhering to Galen's beliefs. The assimilation of Empiricist text into a Dogmatist society indicates a desire for the information and a confidence in their intellectual tradition and its choices to use the text as they needed. Galen's work was chosen and used because the physicians could not start at ground zero and acquire the information themselves. Due to an Islamic hesitancy around dissection, anatomical knowledge could not be acquired in another way. This notion is supported by the trend in medical commentary after the initial translation of Galen's works. After the dissemination of these works, Arabic physicians actively engaged with the texts, writing commentaries and analyzing the ideas. Slowly these commentaries became the sources for medical education and medicine in general and the original translation from Greek, having served its original purpose of information, faded from the intellectual sphere of the caliphate.[139]

[139] Bürgel, "Secular and Religious Features of Medieval Arabic Medicine," 48-49.

Galen's works created an entente under the Abbasid caliphate within the contentious relationship between medicine and religion lingering from prior eras. The scientific divisions between Orthodox Muslims and "secular" physicians disagreed on many elements of medical education and understanding. Yet, in the example of dissection, the religious faction dictates the practice of this procedure. In an empire where there were many different groups and religions residing within it, Islam was given the authority to dictate important intellectual elements, regardless of individual religious beliefs. In fact, in an anecdote concerning the founder of the House of Wisdom (bayt al-hikmah), a translation school in Baghdad, the leading physician threatens his son with dissection.[140] He rages that he would have won acclaim for his wife and her family with the anatomical book he could have written about their son but that "the sultan prevented that."[141] This man, Abu Zakari ya ibn Masawayh, was a Nestorian Christian and, by his own religion, was not forbidden to engage in dissection. However, because he was living in Baghdad under the Abbasid caliphate, he mentioned the practice as an extreme threat, one that was unlikely to ever occur, putting aside the fact that he was threatening his son.

An important element that Galen's treatment under the Islamic world reveals is the lack of authority the author had. It is clear that his information was valuable to Arabic physicians and was utilized to establish medical education and fill in knowledge gaps, however, the texts were not elevated above their use. There was a clear hierarchy within the intellectual field: Islam and Islamic writings above other sources. In modern Western understanding, classical works have been elevated to an almost reverential position. As mentioned above, during the Renaissance, the Galenic corpus was also the basis of the medical education system, yet, Western physicians more closely followed Galen's methods, including engaging in dissection despite similar religious

[140] Savage-Smith, "Attitudes toward Dissection in Medieval Islam," 84.
[141] Ibid., 83.

tensions with the practice in early Christianity.[142] Even in the monastic tradition, Graeco-Roman works were stored and recorded alongside the Bible in a Christian site of worship.[143] Yet, under the Abbasids, Galen was treated much more similarly to how scholars treat sources today: finding useful information but not taking the author's words as gospel. Galen served an intellectual purpose and was extremely useful to those who needed his sources. However, it would be incorrect that they engaged with him for the purpose of preservation. Rather, he provided a starting point for an independent medical movement under the Abbasids.

[142] Dols, "Part I Medieval Islamic Medicine," 22.
[143] Ṣtroumsa, *The Scriptural Universe of Ancient Christianity,* 87.

Conclusion

Analyzing Greek works in the Islamic context helps expand the field of Classics and opens up new possibilities for the use of these ancient works. The Western monastic tradition of commentary and preservation remains pervasive in academia. Often, the goal of scholarship is to understand texts in the original context in which they were written. As a result, the commentaries and analyses of ancient Greek works can be extremely particular, discussing the form of a word and how that conjugation might change the meaning of a singular sentence.[144] The specificity of Western scholarship has its benefits and it is thanks to this specificity that we have so many surviving works from thousands of years ago. However, this tradition is not the only legitimate way to engage with these sources.

In this thesis, I have examined two ancient authors and their works as case studies for how the Abbasid caliphate engaged with Greek sources across two different genres. In my first chapter, I discuss Aristotle and his lesser known work, the *Topica,* which deals with dialectical argumentation. Under the supervision of al-Mahdi, this text is translated into the *lingua franca* of the age, Arabic, and used as a handbook for engaging in religious debates. The political atmosphere of the age necessitated the adoption of a previously existing collection of knowledge for a new application. However, not only is the *Topica* used as a how-to for finding common ground across differences in beliefs, the work also helped to conceptualize Islam for early religious scholars. The notion of *genus* aided in the creation of a framework for establishing a hierarchy and relation between Islam and the other Abrahamic religions. The use of philosophy in both a practical and theoretical application illustrates the wide-ranging utilization of Greek sources. The Abbasids actively engaged with the theories and ideas laid out by Aristotle. Their

[144] An example of this is E.R. Dodd's commentary on Plato's *Gorgias* (1959) where the goal is to stick as closely to the original Greek as possible. He makes notes on the absence of potential words, conjugations scholars debated about, and what phrases might have been added to Plato's original work.

choice to turn to him and his words for support in their religious debates came about because of their respect for his opinion and scholarship and less so because of his position as a major philosopher from the ancient world. The Islam reception of this Greek philosopher exemplifies another, non-Western intellectual movement's interaction with the Graeco-Roman world, illustrating how he could be applied to a non-European, non-Christian context.

In my second chapter, I turned to medicine and examined the assimilation of Galen and his work surrounding dissection. Due to an Islamic law, which limited the abilities of physicians to practice dissection for the purpose of gaining anatomical knowledge, the Abbasid medical practitioners used Galen and his detailed description of the human body to inform their practice. Much of the medical educational system centered on Galen and his studies because of the limitations on acquiring the information by their own volition. However, despite the reverence and reliance on Galen in the Arab medical system, the advice of Galen was not followed. In his writings, Galen emphasizes the importance of acquiring anatomical knowledge by engaging in dissection oneself. He discourages the reliance on written medical texts alone. Yet, despite his expression of this idea, the Islamic physicians feel no need to adhere to this notion because they valued their own holy scripture and the rules laid out by the Prophet more so than the opinion of an ancient author. This choice establishes a clear hierarchy between Greek sources and religious works. To the Muslim caliphate, there was no thought to follow the wishes of Galen when it meant it could compromise their religious ideals. In this way, it is clear that the Abbasids relied on Greek works to fill knowledge gaps, however, the texts are in no way pseudo-sacred or requiring adherence to the opinions or words of their ancient authors.

These two examples provide an overview of the Abbasids' general attitude towards ancient works and their adoption and assimilation into the Arabic tradition. Across the genres,

including philosophy and medicine, the instinct is not the preservation of these texts but, rather, the preservation of the information. In the Graeco-Arabic translation movement, as mentioned above, there are very few instances where literature, including prose, dramas, or poetry, is translated into Arabic. This is because there is little interest by the Abbasids in what the ancients had to say in a creative context. Instead, they focused on what research and philosophic inquiry had been performed by these Greek scholars. Additionally, the academic trend was not to translate these works and then retain the translations as references. After the Greek sources existed in the Arabic, Arab intellectuals wrote commentaries explaining, building upon, and rearranging the works to make them more accessible to a wider audience. It was these commentaries that were then preserved to the point that the original translations faded from the general canon, replaced by Arab commentaries. Therefore, the themes and information of the original works persisted in the culture but as human knowledge, not tied to their origins within Graeco-Roman antiquity.

This commentary tradition reveals another important element to this translation movement: the wider accessibility to these works when compared to their Western counterparts. Traditionally, in Western academia, access to classical sources was limited to elite education and required extensive language study to read the works in their original language. This exists as a trend from the monastic tradition which established an educational structure through the assimilation of the Greek *paideia,* the elite education system of the later Roman empire, into Christian culture.[145] *Paideia* was considered elite and difficult to access and this persisted into the monastic tradition, who preserved most Greek works into the medieval period.[146] This is not to say that the Arab tradition was not catering to the elites of the caliphate. Of course, the

[145] Stroumsa, *The Scriptural Universe of Ancient Christianity,* 72.
[146] Ibid., 43.

funding and support for much of the translation came from the most elite members of the empire. However, the intention of translation was for the use of these texts in education and application. In fact, the fact that these sources were found in the widely-used language of the region meant that accessibility was a goal of translation rather than the preservation of the text in the original language and the limiting of access due to a linguistic barrier. These translations were widely used by students across disciplines for foundational knowledge.[147]

Understanding how this Islamic caliphate approached the adoption and utilization of Greek sources helps expand the field of Classics beyond the Western method of preservation. The dominant system of Classical scholarship in the modern world focuses on analyzing these works in the context they were created and the preservation of these texts is the goal. However, analyzing how the Abbasids incorporated and commented on ancient sources provides a new approach to Classical study. Interrogating the Western approach to the utilization of these sources in comparison to the Islamic tradition globalizes the field. What does it mean if Classics moves beyond the study of these sources in their context and instead focuses on how different cultures approached the adoption of these works differently? New entries into the intellectual field are discovered. To ignore how these works exist in other religious and cultural contexts is to forget entire intellectual traditions that believed they had equal ownership over the content produced during Graeco-Roman antiquity. For too long, Western scholars have disregarded the claim of the Near East over classical heritage. However, the active interaction of the Abbasids with these classical texts illustrates that there is a vibrant, relevant tradition that could offer us new approaches and avenues into the field of Classics.

[147] Dols, "Part I Medieval Islamic Medicine," 31.

Bibliography

Adamson, Peter. “Al-Kindi and the Reception of Greek Philosophy.” In *The Cambridge Companion to Arabic Philosophy*, edited by Peter Adamson and Richard C. Taylor. Cambridge University Press, 2004. https://doi-org.libproxy.vassar.edu/10.1017/CCOL0521817439.

Aly, El-Hussein A Y . *The Graeco-Arabic Translation Movement*. Cambridge University Press, 2023. doi:10.1017/9781009385626.

Averroës and Charles E Butterworth, *Averroës’ Three Short Commentaries on Aristotle’s “Topics,” “Rhetoric,” and “Poetics,”* trans. Charles E Butterworth, 1st ed. (Albany: State University of New York Press, 1977).

Biard, Joël. “THE PLACE OF ARISTOTLE’S ‘TOPICS’: SOME EXAMPLES IN THE 15TH CENTURY.” *Rivista Di Filosofia Neo-Scolastica* 108, no. 4 (2016): 845–56. http://www.jstor.org/stable/26504850.

Brown, Jonathan A.C. *Hadith : Muhammad’s Legacy in the Medieval and Modern World*. Oneworld Publications, 2009.

Bücher, Sieben. *Anatomie Des Galen: I. Band Arabischer Text*. Druck Von W. Drugulin, 1906.

Bürgel, J. Christoph. “Secular and Religious Features of Medieval Arabic Medicine.” In *Asian Medical Systems: A Comparative Study*, edited by Charles Leslie. University of California Press, 1976. https://www.jstor.org/stable/jj.7968031.9.

D’ancona, Cristina. “Greek into Arabic.” In *The Cambridge Companion to Arabic Philosophy*, edited by Peter Adamson and Richard C. Taylor. Cambridge University Press, 2004. https://doi-org.libproxy.vassar.edu/10.1017/CCOL0521817439.

Dean-Jones, Lesley. “Galen and the Culture of Dissection.” In *At the Crossroads of Greco-Roman History, Culture, and Religion: Papers in Memory of Carin M. C. Green*, edited by Sinclair W. Bell and Lora L. Holland. Archaeopress Publishing, 2018. https://ebookcentral.proquest.com/lib/vcl/detail.action?docID=6207601.

Dols, Michael W. “Part I Medieval Islamic Medicine.” In *Medieval Islamic Medicine: Ibn Ridwan’s Treatise “on the Prevention of Bodily Ills in Egypt,”* edited by Adil S. Gamal. University of California Press, 1984. https://www.jstor.org/stable/jj.8501296.

Effros, Bonnie. “The Enduring Attraction of the Pirenne Thesis.” *Speculum* 92, no. 1 (January 2017): 184–208. https://www.jstor.org/stable/26154891.

El-Hibri, Tayeb. *The Abbasid Caliphate : A History*. Cambridge, United Kingdom ; New York: Cambridge University Press, 2021.

Farabi, Abu Nasr al-. *Al-Farabi on the Perfect State*. Translated by Richard Walzer. Great Books of the Islamic World, Inc., 1985.

Farage, Samar. “The Ethics of the Physician in the Galeno-Islamic Tradition.” In *Muslim Medical Ethics: From Theory to Practice*, edited by Jonathan E. Brockopp and Thomas Eich. University of South Carolina Press, 2008. https://www.jstor.org/stable/j.ctv1ffpd0n.7.

Franz, Rosenthal. *The Classical Heritage in Islam.* Translated by Emile Marmorstein and Jenny Marmorstein. London and New York: Routledge, 1975.

Galen. *Claudii Galeni Opera Omnia*. Edited by Karl Gottlob Kuhn. Vol. 2. 1821. Reprint, Cambridge University Press, 2011.

Galen. *Galen on Anatomical Procedures*. Translated and edited by Charles Singer. Oxford University Press, 1956.

Galen. *Galen on Anatomical Procedures: The Later Books,* edited by M.C. Lyons and B. Towers, translated by W.L.H. Duckworth.Cambridge University Press, 1962.

Gutas, Dimitri. *Greek Thought, Arabic Culture : The Graeco-Arabic Translation Movement in Baghdad and Early 'Abbasaid Society (2nd-4th/5th-10th C.).* Oxford: Taylor & Francis Group, 1998.

Halsall, Paul. “Origen: On Classical Learning.” Internet History Sourcebooks: Medieval Sourcebook. Fordham University, January 26, 1996. https://sourcebooks.fordham.edu/source/origen1.asp.

Hankinson, R. J. “The Man and His Work.” In *The Cambridge Companion to Galen*, edited by R. J. Hankinson, 1–33. Cambridge University Press, 2008. https://doi.org/10.1017/CCOL9780521819541.

Huff, Toby. *Rise of Early Modern Science : Islam, China, and the West.* Cambridge University Press, 2003. https://doi.org/10.1017/CBO9781316257098.

Jābirī, Muḥammad ʻābid. *Arab-Islamic Philosophy : A Contemporary Critique*. Translated by Aziz Abbassi. Austin: Center For Middle Eastern Studies, University Of Texas At Austin, 1999.

Lewis, V. Bradley. “Eusebius of Caesarea’s Un-Platonic Platonic Political Theology.” *Polis: The Journal for Ancient Greek Political Thought* 34, no. 1 (2017): 94–114. https://doi.org/10.1163/20512996-12340119.

Maqsood, Ruqaiyyah Waris. “What Muslims Believe.” *In Need to Know?* Islam. 1st ed. Collins, 2008. https://search.credoreference.com/articles/Qm9va0FydGljbGU6MjQ2MTc1Mw==?aid=275948.

May, Margaret Tallmadge. “Introduction to.” *Galen on the Usefulness of the Parts of the Body,* translated and edited by Margaret Tallmadge May. Cornell University Press, 1968.

Nutton, Vivian. "The Fortunes of Galen." in *The Cambridge Companion to Galen*, edited by R. J. Hankinson. Cambridge University Press, 2008. https://doi.org/10.1017/CCOL9780521819541.

Owen, Octavius Freire. *The Organon, or Logical Treatises, of Aristotle. With the Introduction of Porphyry. Literally Translated, with Notes, Syllogistic Examples, Analysis and Introduction. By Octavius Freire Owen*. Vol. 1. London: George Bell and Sons, 1901. https://babel.hathitrust.org/cgi/pt?id=hvd.ah53f8&seq=9.

Pirenne, Henri. *Mohammed and Charlemagne*. Translated by Bernard Miall. Unwin Brothers LTD, 1939. https://archive.org/details/HenriPirenneMohammedCharlemagne/page/n3/mode/2up.

Reisman, David C. “Al-Faarabi and the Philosophical Curriculum.” In *The Cambridge Companion to Arabic Philosophy*, edited by Peter Adamson and Richard C. Taylor, 52–71. Cambridge University Press, 2004. https://doi-org.libproxy.vassar.edu/10.1017/CCOL0521817439.

Savage-Smith, Emilie. “Attitudes toward Dissection in Medieval Islam.” *Journal of the History of Medicine and Allied Sciences*50, no. 1 (January 1995): 67–110. https://www.jstor.org/stable/24623557?sid=primo.

Shields, Christopher, "Aristotle", *The Stanford Encyclopedia of Philosophy* (Winter 2023 Edition), Edward N. Zalta & Uri Nodelman (eds.), https://plato.stanford.edu/archives/win2023/entries/aristotle/.

Smith, Robin, "Aristotle's Logic", *The Stanford Encyclopedia of Philosophy* (Winter 2022 Edition), Edward N. Zalta & Uri Nodelman (eds.), https://plato.stanford.edu/archives/win2022/entries/aristotle-logic/.

Sozomen "Book V." In *Ecclesiastical History from Nicene and Post-Nicene Fathers, Second Series, Vol. 2.* Translated by Chester D. Hartranft, edited by Philip Schaff and Henry Wace. Christian Literature Publishing Co., 1890. http://www.newadvent.org/fathers/26025.htm.

Ṣtroumsa, Guy G. *The Scriptural Universe of Ancient Christianity*. Harvard University Press, 2016.

Stump, Eleonore. "Topics: Their Development and Absorption into Consequences." In *The Cambridge History of Later Medieval Philosophy: From the Rediscovery of Aristotle to the Disintegration of Scholasticism 1100 - 1600*, edited by Norman Kretzmann, Anthony Kenny, and Jan Pinborg. Cambridge: Cambridge University Press, 1982.

sunnah.com. "Book of Medicine - Sahih Al-Bukhari - Sunnah.com - Sayings and Teachings of Prophet Muhammad (صلى الله عليه و سلم)," n.d. https://sunnah.com/bukhari/76.

Swarup, Ram. *Understanding the Hadith: The Sacred Traditions of Islam*. Prometheus Books, 2002.

The Online Liddell-Scott-Jones Greek-English Lexicon, https://stephanus.tlg.uci.edu/lsj/#eid=1.

Tieleman, Teun. "Methodology." In *The Cambridge Companion to Galen*, edited by R. J. Hankinson. Cambridge University Press, 2008. https://doi.org/10.1017/CCOL9780521819541.

Ullmann, Manfred. *Islamic Medicine*. Edinburgh University Press, 1978. https://www.jstor.org/stable/10.3366/j.ctvxcrv7d.

Vagelpohl, Uwe. "The User-Friendly Galen: Hunayn Ibn Ishaq and the Adaptation of Greek Medicine for a New Audience." In *Greek Medical Literature and Its Readers: From Hippocrates to Islam and Byzantium*, edited by Petros Bouras-Vallianatos and Sophia Xenophontos. Routledge, 2018.

Wakelnig, Elvira. “Medical Knowledge as Proof of the Creator’s Wisdom and the Arabic Reception of Galen’s on the Usefulness of the Parts.” In *Greek Medical Literature and Its Readers*, edited by Petros Bouras-Vallianatos and Sophia Xenophontos, 131–49. Routledge, 2018.

Wehr, Hans. *A Dictionary of Modern Written Arabic*. Edited by J Milton Cowan. 3rd ed. Spoken Language Services, Inc., 1971.