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The Uncharted Margins of Arabic Philosophy

Challenges and Prospects in Surveying Philosophical Marginalia
in Arabic Manuscripts

Introduction

From Antiquity until the dawn of Modernity, Aristotelian logic and the corpus of texts known as the *Organon* served as the bedrock of scientific method across a vast geographical area extending far beyond the borders of the Mediterranean. In the Arabo-Islamic tradition, logic appears to have formed a staple part of the curricula of higher-level education until the nineteenth century. However, the contexts and modalities through which the discipline was concretely taught and studied largely elude our understanding to date. This is partly due to the considerable diversity in which education was provided in different geographical and temporal settings. Philosophical and scientific education in the Arabo-Islamic context manifested itself in a variety of non-standardized curricula that changed significantly over the centuries and across the different geographical areas under Islamic influence. Students wishing to educate themselves could rely on educational institutions such as *madrasas*, travel to join the intellectual circles of renowned experts, or pursue self-directed learning.¹ Information on the curricula and texts studied in differ-

¹ For a recent comprehensive historical study of educational practices in the Arabo-Islamic context from the ninth to the eighteenth century, see Sonja Brentjes, *Teaching and Learning the Sciences in Islamicate Societies (800–1700)*, Turnhout: Brepols, 2018. Landmark studies on the educational system in the Arabo-Islamic world are also: George Makdisi, *The Rise of Colleges: Institutions of Learning in Islam and the West*, Edinburgh: Edinburgh University Press, 1981; George Makdisi, *The Rise of Humanism in Classical Islam and the Christian West: With Special Reference to Scholasticism*, Edinburgh: Edinburgh University Press, 1990; Michael Chamberlain, *Knowledge and Social Practice in Medieval Damascus, 1190–1350*, Cambridge (UK): Cambridge University Press, 1994. More specifically on the teaching of Avicennian philosophy, see Gerhard Endress, *Reading Avicenna in the Madrasa: Intellectual Genealogies and Chains of Transmission of Philosophy and the Sciences in*

Funded by the European Union. Views and opinions expressed are, however, those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Council Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.

This work is supported by ERC grant *UnMaP*, 101164324.

ent educational contexts is unfortunately somewhat limited, especially when compared to our knowledge of university education in Latinate Europe during the same period. The activities of many scholars, professors, and students who engaged with philosophy across all regions of Europe, North Africa, and Asia under Islamic influence are, therefore, largely inaccessible.

A promising strategy to access this large missing part of the history of Arabic philosophy is a novel approach to the “common denominator” of philosophical education and practice throughout the Islamicate world: the manuscript book. Professors, students, and individual scholars from the Islamicate world have historically engaged with ideas and concepts of authoritative texts from the margins of the pages of manuscripts. This unconstrained space is the uncharted terrain in which they challenged assumptions, critically assessed the reliability of information, built networks of cross-references, and graphically represented arguments. Philosophical activity largely assumed the form of a multifaceted corpus of textual and visual materials that occupy marginal places in the manuscript book (such as guard-leaves, the margins of the written page, or flyleaves). A large part of this treasure trove of scholarly production, including notes and appending comments (*hawāshī, ta’āliq*) as well as graphic representations and models, stands as the sole point of access to a scholar’s original thoughts, or to the content of lectures and the students’ queries and doubts. These paratexts, to recall Gérard Genette’s terminology,² or “paracontents,” as they have been called more recently,³ possess an inherently relational nature, as they depend on the “main text” (*matn*) they accompany. They defy traditional categorizations, as they often transcend mere commentaries or annotations, and provide original contributions that address lexical and conceptual aspects, establish hypertextual connections with other sources, and graphically display philosophical concepts and arguments. These unexplored sources can offer a brand-new insight into the contents, dynamics, and forms of scholarly debate over the centuries.

Copies of authoritative and widely circulated texts in the history of Arabic philosophy – such as the works of Avicenna (Ibn Ṣinā, d. 428H/1037) – likely served as material platforms for collective intellectual exchanges and scholarly debates surrounding their contents.⁴ This “choral” philosophical enterprise, however, has

the Islamic East, in: *Arabic Theology, Arabic Philosophy: From the Many to the One: Essays in Celebration of Richard M. Frank*, James E. Montgomery (ed.), 371–422, Leuven: Peeters, 2006.

2 Gérard Genette, *Seuils*, Paris: Éditions du Seuil, 1987.

3 Giovanni Ciotti, Michael Kohs, Eva Wilden, Hanna Wimmer, and the TNT Working Group, Definition of Paracontent, *Centre for the Study of Manuscript Cultures Occasional Paper* 6 (2018): 1–5.

4 Cf. George Saliba, *Islamic Science and the Making of the European Renaissance*, Cambridge (MA): The MIT Press, 2007, 241–242.

largely remained on the uncharted margins of manuscripts and on the fringe of the history of philosophy. This assumption forms the basis of my current research on philosophical marginalia within the framework of the ERC project “The Uncharted Margins of philosophy” (*UnMaP*).⁵ The project seeks to integrate the material study of manuscripts – through codicological and philological analysis – with the examination of their philosophical and conceptual content. The central hypothesis is that the material features of these manuscripts can offer a wealth of new data concerning the intellectual environments in which these texts circulated. The project’s proof of concept involves a pioneering large-scale analysis of the traces of philosophical activity found in the manuscripts that preserve Avicenna’s *Book of Healing* (*Kitāb al-Shifā*), the most influential Medieval Arabic encyclopedia of Aristotelian philosophy. With its 207 manuscripts, the Logic section (*mantiq*) of the work has served as a primary “vector” of Aristotelian logic for over eight centuries.⁶ The *UnMaP* project seeks to examine the visual and textual annotations made by professors, students, and scholars over a span of seven centuries (twelfth to nineteenth centuries), across a vast geographical area extending from present-day Spain to India. The analysis of this unique stream of knowledge, which bridges Europe, North Africa, and Asia, holds the potential to reshape our understanding of cross-cultural philosophical exchanges in the Arabo-Islamic world. This essay aims to offer some methodological considerations preliminary to the research that is being conducted within the *UnMaP* project along with the discussion of some case-studies.

1 The Margins of Philosophical Manuscripts: An (Almost) Uncharted Territory

In the past decade, the study of paratexts has gained significant momentum across various disciplinary fields, as evidenced by an increasing number of projects and publications.⁷ Historians of philosophy, too, have begun to focus more on the phil-

⁵ ERC Starting Grant 2024, The Uncharted Margins of Philosophy: An AI-Enhanced Material History of Arabic Logic Across Time (12th–19th c.) and Frontiers (from Spain to India) (*UnMaP*), hosted by Università Ca’ Foscari in Venice, 2025–2030 (project number: 101164324).

⁶ A complete list of the manuscripts with a general presentation of the manuscript tradition will be published in Silvia Di Vincenzo, The “Avicennian Pandemic” in Context: Insights into the Spread of Avicenna’s Logic across the Islamicate World, in: *Persuading and Transmitting in Classical Arabic Philosophy*, Frédérique Woerther and Jawdath Jabbour (eds.). Leiden: Brill, forthcoming.

⁷ Among the several projects and digital initiatives that have recently embarked in an exploration of paratextual sources, see the NWO project “Marginal Scholarship: The Practice of Learning in the

osophical content found in the margins of manuscripts within the Greek,⁸ Latin,⁹ Hebrew,¹⁰ and Judeo-Arabic¹¹ traditions. In the field of Arabic philosophy, this elusive genre has drawn new attention over the last thirty years, eliciting new

Early Middle Ages (c. 800–c. 1000)”; the ERC project “Paratexts of the Bible” (*ParaTexBib*), led by Martin Wallraff at the University of München; the database “Ex(-)libris ex oriente,” hosted by the University of Liège; the DFG project “Manicula: Marginalia Nicolai de Cusa Latina” at the University of Siegen. Publications are also increasingly addressing methodological problems entailed by the study of these sources; cf., for instance, Mariken Teeuwen, Marginal Scholarship: Rethinking the Function of Latin Glosses in Early Medieval Manuscripts, in: *Rethinking and Recontextualizing Glosses: New Perspectives in the Study of Late Anglo-Saxon Glossography*, Patrizia Lendinara, Lore-dana Lazzari, and Claudia Di Sciacca (eds.), 19–37, Porto: Fédération Internationale des Instituts d’Études Médiévales, 2011; Mariken Teeuwen, Writing in the Blank Space of Manuscripts: Evidence from the Ninth Century, in: *Ars Edendi Lecture Series*, vol. 4, Barbara Crostini, Gunilla Iversen, and Brian Møller Jensen (eds.), 1–25, Stockholm: Stockholm University Press, 2016; Ciotti, Kohs, Wilden, Wimmer, and the TNT Working Group, *Definition of Paracontent*; Patrick Andrist, Toward a Definition of Paratexts and Paratextuality: The Case of Ancient Greek Manuscripts, in: *Bible as Notepad: Tracing Annotations and Annotation Practices in Late Antique and Medieval Biblical Manuscripts*, Liv Ingeborg Lied and Marilena Maniaci (eds.), 130–149, Berlin: De Gruyter, 2018; Jaap Mansfeld, Helping the Reader: The Paratextual Elements in the “Placita” in the Context of their Genre, in: *Received Opinions: Doxography in Antiquity and the Islamic World*, Andreas Lammer and Mareike Jas (eds.), 33–50, Leiden: Brill, 2022.

⁸ For example, Sofia Kotzabassi, Aristotle’s “Organon” and Its Byzantine Commentators, *The Princeton University Library Chronicle* 64 (2002): 51–62; Marwan Rashed, Les marginalia d’Aréthas, Ibn al-Tayyib et les dernières gloses alexandrines à l’“Organon”, in: *Scientia in margine: Études sur les marginalia dans les manuscrits scientifiques du Moyen Âge à la Renaissance*, Charles S. F. Burnett and Danielle Jacquart (eds.), 57–73, Geneva: Droz, 2005; Marwan Rashed, *Alexandre d’Aphrodise, Commentaire perdu à la Physique d’Aristote (Livres IV–VIII): Les scholies byzantines: Édition, traduction et commentaire*, Berlin: De Gruyter, 2011; Michele Trizio, Reading and Commenting on Aristotle, in: *The Cambridge Intellectual History of Byzantium*, Anthony Kaldellis and Niketas Siniosoglou (eds.), 397–412, Cambridge (UK): Cambridge University Press, 2017.

⁹ For example, Silvia Negri, Wege eines Textes: Die “Summa quaestzionum ordinariarum” des Heinrich von Gent von Paris nach Rom, *Bulletin de Philosophie Médiévale* 57 (2015): 117–169; Lisa Devriese, Physiognomy in Context: Marginal Annotations in the Manuscripts of the “Physiognomonica”, *Recherches de théologie et philosophie médiévales* 84 (2017): 107–141; Caterina Tarlazzi, The Latin Tradition of Studying Porphyry’s “Isagoge”, ca. 800–980: A Working Catalogue of Manuscripts, Glosses and Diagrams, *Archives d’Histoire Doctrinale et Littéraire du Moyen Âge* 87 (2020): 7–42; Mario Meliàdò and Hans Gerhard Senger, Cusanus-Marginalien: Zur Edition und Interpretation einer Textüberlieferung am Seitenrand, *Bulletin de Philosophie Médiévale* 64 (2022): 209–241; Mario Meliàdò, The Idiota’s Library, or Cusanus as a Reader of Plato (Cod. Cus. 177), *Vivarium* 62 (2024): 147–177.

¹⁰ For example, the ERC project “Hebrew Philosophical Manuscripts as Sites of Engagement (HEPMASITE),” led by Yoav Meyrav at the University of Hamburg.

¹¹ For example, Colette Sirat and Marc Geoffroy, *L’original arabe du Grand Commentaire d’Averroès au “De Anima” d’Aristote*, Paris: J. Vrin, 2005 and Colette Sirat and Marc Geoffroy, *De la faculté rationnelle: L’original arabe du Grand Commentaire (Šarḥ) d’Averroès au “De anima” d’Aristote (III,*

methodological reflections.¹² The study of philosophical and scientific marginalia has allowed scholars to discover fragments of lost texts of the Arabic tradition and prompted a reevaluation of their circulation and transmission.¹³ Yet systematic work on corpora of philosophical paratexts on a global scale is largely missing. Two key factors may help explain why this endeavor is still in its early stages.

The first is a longstanding prejudice against post-classical Arabic philosophy, referring to the period after the so-called “golden age” (eighth to thirteenth centuries). The philosophical output dating from this period is often seen as emblematic of a decline in intellectual and scientific thought. This bias stems in part from the challenge of defining what constitutes philosophical practice¹⁴ and partly from the proliferation of commentaries and glosses, which are generally perceived as derivative and lacking in originality.¹⁵ This misconception relates, in turn, to the idea

4–5, 429a10–432a14): *Éditions diplomatique et critique des gloses du manuscrit de Modène, Biblioteca Estense, a. J. 6. 23 (ff. 54v–58v)*, Rome: Aracne, 2021.

12 Dimitri Gutas, Aspects of Literary Form and Genre in Arabic Logical Works, in: *Glosses and Commentaries on Aristotelian Logical Texts: The Syriac, Arabic and Medieval Latin Traditions*, Charles S. F. Burnett (ed.), 29–76, London: Warburg Institute, 1993; Gregor Schoeler, Text und Kommentar in der klassisch-islamischen Tradition, in: *Text und Kommentar*, Jan Assmann (ed.), 279–292, Munich: Wilhelm Fink, 1995; Robert Wisnovsky, The Nature and Scope of Arabic Philosophical Commentary in Post-Classical (ca. 1100–1900 AD) Islamic Intellectual History: Some Preliminary Observations, in: *Philosophy, Science and Exegesis in Greek, Arabic and Latin Commentaries*, vol. 2, Peter Adamson, Han Baltussen, and Martin William Francis Stone (eds.), 149–191, London: Institute of Classical Studies, School of Advanced Study, University of London, 2004; Asad Q. Ahmed, Post-Classical Philosophical Commentaries/Glosses: Innovation in the Margins, *Oriens* 41 (2013): 317–348; L. W. C. (Eric) van Lit, Commentary and Commentary Tradition: The Basic Terms for Understanding Islamic Intellectual History, *Mélanges de l'institut dominicain d'études orientales* 32 (2017): 3–26.

13 For example, Roshdi Rashed, Notes sur la version arabe des trois premiers livres des Arithmétiques de Diophante, et sur le problème 1.39, *Historia Scientiarum* 4, no. 1 (1994): 39–46; Sirat and Geoffroy, *De la faculté rationnelle*.

14 Dimitri Gutas, Avicenna and After: The Development of Paraphilosophy: A History of Science Approach, in: *Islamic Philosophy from the 12th to the 14th Century*, Abdelkader Al Ghouz (ed.), 13–65, Göttingen: V&R unipress, Bonn University Press, 2018; Dimitri Gutas, Philosophical Manuscripts: Two Alternative Philosophies, in: *Treasures of Knowledge: An Inventory of the Ottoman Palace Library (1502/3–1503/4)*, Gülrü Necipoğlu, Cemal Kafadar and Cornell H. Fleischer (eds.), 907–933, Leiden: Brill, 2019; Jari Kaukua, Post-Classical Islamic Philosophy – A Contradiction in Terms? *Nazariyat* 6 (2020): 1–21.

15 Gutas, *Aspects of Literary Form and Genre in Arabic Logical Works*; Wisnovsky, *The Nature and Scope of Arabic Philosophical Commentary*; Lit, *Commentary and Commentary Tradition*; Andreas Lammer, Philosophie nach Format: Vermittlung aus dem Griechischen und Aneignung im Arabischen, in: *Heteronome Texte: Kommentierende und tradierende Literatur in Antike und Mittelalter*, Katharina Bracht, Jan Dirk Harke, Matthias Perkams, and Meinolf Vielberg (eds.), 149–176, Berlin: De Gruyter, 2021. For a similar judgement on post-classical logic, see Ibrahim Madkour, *L'Organon*

that exegeses and commentaries denote a minor intellectual and scientific maturity of their authors. Considerable efforts have been made in the field of the history of philosophy to prove that, on the contrary, commentaries have historically been a gateway to the original thoughts of their authors. Pioneering in this regard was Sorabji's work on the late ancient Greek tradition,¹⁶ which profoundly impacted the study of exegetical practices across Greek, Latin, Arabic, and Hebrew philosophical traditions.¹⁷ Over the past two decades, however, scholars have increasingly recognized the richness and originality of post-classical Arabic philosophy. This shift is reflected in the growing number of monographs, collective volumes, and sourcebooks dedicated to key figures and topics from this period,¹⁸ along with new

d'Aristote dans le monde arabe, Paris: J. Vrin, 1934, 240–248 and Nicholas Rescher, *The Development of Arabic Logic*, Pittsburgh: University of Pittsburgh Press, 1964, 81, claiming that by around 1500 “the disintegration of logical study to a purely text-oriented comment-mongering was complete.”

¹⁶ Richard Sorabji (ed.), *Aristotle Transformed: The Ancient Commentators and Their Influence*, London: Duckworth, 1990; Richard Sorabji, *The Philosophy of Commentators 200–600 AD: A Source-book*, vol. 1: *Psychology*, vol. 2: *Physics*, vol. 3: *Logic and Metaphysics*, London: Duckworth, 2004; and Richard Sorabji, (ed.), *Aristotle Re-Interpreted: New Findings on Seven Hundred Years of the Ancient Commentators*, London: Bloomsbury, 2016.

¹⁷ Francesco Del Punta, The Genre of Commentaries in the Middle Ages and Its Relation to the Nature and Originality of Medieval Thought, in: *Was ist Philosophie im Mittelalter? Qu'est-ce que la philosophie au moyen âge? What is Philosophy in the Middle Ages?* Jan Adriaan Aertsen and Andreas Speer (eds.), 138–151, Berlin: De Gruyter, 1998; Marie-Odile Goulet-Cazé (ed.), *Le commentaire entre tradition et innovation: Actes du colloque international de l'Institut des traditions textuelles*, Paris: J. Vrin, 2010; Riccardo Chiaradonna, Commento, in: *Forme letterarie della filosofia*, Paolo D'Angelo (ed.), 71–104, Rome: Carocci, 2012; Pascale Bermon and Isabelle Moulin (eds.), *Commenter au Moyen Âge*, Paris: J. Vrin, 2019; Andrea Falcon, Commentators on Aristotle, in: *The Stanford Encyclopedia of Philosophy (Summer 2022 Edition)*, Edward Nouri Zalta and Uri Nodelman (eds.), Stanford: Metaphysics Research Lab, Stanford University, 2022, <<https://plato.stanford.edu/archives/sum2022/entries/aristotle-commentators/>>, accessed January 26, 2025.

¹⁸ For example, Heidrun Eichner, *The Post-Avicennian Philosophical Tradition and Islamic Orthodoxy: Philosophical and Theological Summae in Context*, habilitation, Martin-Luther-Universität Halle-Wittenberg, 2009; Khaled El-Rouayheb, *Relational Syllogisms and the History of Arabic Logic, 900–1900*, Leiden: Brill, 2010; Khaled El-Rouayheb, Logic in the Arabic and Islamic World, in: *Encyclopedia of Medieval Philosophy*, Henrik Lagerlund (ed.), 686–692, Dordrecht: Springer, 2011; Khaled El-Rouayheb, *The Development of Arabic Logic (1200–1800)*, Basel: Schwabe, 2019; Robert Wisnovsky, Avicenna's Islamic Reception, in: *Interpreting Avicenna*, Peter Adamson (ed.), 190–213, Cambridge (UK): Cambridge University Press, 2013; Abdelkader Al Ghouz, (ed.), *Islamic Philosophy from the 12th to the 14th Century*, Göttingen: V&R unipress, Bonn University Press, 2018; Frank Griffel, *The Formation of Post-Classical Philosophy in Islam*, Oxford: Oxford University Press, 2021; Peter Adamson and Fedor Benevich, *The Heirs of Avicenna: Philosophy in the Islamic East, 12–13th Centuries: Metaphysics and Theology*, Leiden: Brill, 2023.

editions and translations of significant works.¹⁹ International projects and digital initiatives have also proliferated.²⁰ As a result, the time seems ripe for systematic work on philosophical paratexts. However, a second major obstacle has thus far impeded progress in this area.

This second factor resides in the technical difficulty of working on large manuscript traditions. The Arabo-Islamic tradition is a unique case-study in terms of the material evidence available. Two historical circumstances set this tradition apart from Byzantine, Latin, and Hebrew traditions. While Europe was on the brink of a printing revolution as early as the fifteenth century, the Islamicate world fully adopted this transformative technology for book production no earlier than the eighteenth century.²¹ This has resulted in exceptionally long-lasting manuscript traditions for Arabic texts in the Islamicate world, with manuscripts dating to the first half of the twentieth century. The second, concomitant factor is an unparalleled output of manuscripts. The *World Survey of Islamic Manuscripts* estimated that a staggering three million surviving manuscripts were produced in the Arabo-Islamic Near East prior to the adoption of printing.²² This figure is unmatched by any

¹⁹ To mention but a few of the most recent editions and translations of logical works: Khaled El-Rouayheb (ed.), *Afdal al-Dīn al-Khūnajī, Kashf al-asrār’ān ghawāmid al-afkār*, Berlin: Free University of Berlin, Institute for Islamic Studies and Iranian Institute for Philosophy, 2010; Khaled El-Rouayheb, “*Takmil al-Manṭiq*”: A Sixteenth-Century Arabic Manual on Logic, in: *Illuminationist Texts and Textual Studies: Essays in Memory of Hossein Ziai*, Ali Gheissari, Ahmed Alwishah, and John Wallbridge (eds.), 199–256, Leiden: Brill, 2018; Ibn Wāṣil al-Ḥamawī, *Commentary on the “Jumal” on Logic by Khūnajī*, Khaled El-Rouayheb, (ed.), Leiden: Brill, 2022; Fouad Ben Ahmed (ed.), *Ibn Ṭumlūs (Alhagiag Bin Thalmus d. 620/1223)*, *Compendium on Logic al-Muḥtaṣar fi al-manṭiq*, Leiden: Brill, 2019; Asad Q. Ahmed, *Palimpsests of Themselves: Logic and Commentary in Postclassical Muslim South Asia*, Berkeley: University of California Press, 2022; Athīr al-Dīn al-Abharī, “*Isagoge*”: *A Classical Primer on Logic*, Feryal Salem (ed. and trans.), Chicago: Blue Mountain Press, 2022; Ibrahim Safri, *Aḥmad al-Wallālī’s Commentary on al-Sanūsī’s Compendium of Logic: A Study and Edition of Lawāmī’ al-Nazar fi Tahqīq Ma’ānī al-Mukhtaṣar*, Leiden: Brill, 2023; Tony Street, *Najm al-Dīn al-Kātibī’s al-Risālah al-Shamsiyah: An Edition and Translation with Commentary*, New York: New York University Press, 2024.

²⁰ For example, “Knowledge in Post-Avicennian Islamic Philosophy,” Academy of Finland project, 2013–2018; “The Heirs of Avicenna,” DFG project, 2016–2019, LMU Munich; ERC project “ETI,” 2016–2021, University of Jyväskylä; the “Post-classical Islamic Philosophy Database Initiative” led by Robert Wisnovsky at McGill University.

²¹ In Europe, however, texts in Arabic were being printed as early as the fifteenth century; see Jonathan Max Bloom, *Paper Before Print: The History and Impact of Paper in the Islamic World*, New Haven (CT): Yale University Press, 2001.

²² Geoffrey Roper (ed.), *World Survey of Islamic Manuscripts*, London: Al-Furqan Islamic Heritage Foundation, 1992–1994; Geoffrey Roper, The History of the Book in the Muslim World, in: *The Oxford Companion to the Book*, Michael F. Suarez and Henry Ruxton Woudhuysen (eds.), section 38,

other major manuscript tradition in the Mediterranean area: the number of extant Latin manuscripts is estimated at about 300,000, while extant Greek manuscripts stand at 55,000 units²³ and Hebrew codices may be estimated between 70,000 and 100,000.²⁴ Reference works of philosophy in Arabic, such as Avicenna's *Shifa'*, can easily count hundreds of manuscripts spread all over the world. Such manuscripts have long been recorded in loosely accurate catalogues or partial handlists and are sometimes housed in difficult-to-access collections.

Only recently have international projects begun the systematic surveying of this vast manuscript heritage. In 2011, the ERC project "Philosophy in Context (PhIC)"²⁵ initiated a comprehensive cataloguing of Arabic and Syriac philosophical manuscripts from the Mediterranean area. This work is being continued by the "PhASIF" project,²⁶ which has cataloged over 8,000 manuscripts in the ABJAD database, marking a major milestone in the exploration of the philosophical heritage of the Mediterranean. In the meantime, further exploratory work on the Indian manuscript collections has underscored the need for research beyond the Mediterranean, thus contributing to broaden the horizons of research.²⁷ In parallel with these systematic surveys, new critical editions of individual philosophical works in Arabic are increasingly accompanied by a more thorough and methodologically informed study of the surviving manuscript tradition.

These efforts have been greatly aided by the recent launch of systematic digitization programs on Arabic collections in the US, in Europe, and in the MENA region, which has helped to address the longstanding issue of limited access to these sourc-

Oxford: Oxford University Press, 527; Jonathan Max Bloom, How Paper Changed the Literary and Visual Culture of the Islamic Lands, in: *By the Pen and What They Write: Writing in Islamic Art and Culture*, Sheila S. Blair and Jonathan Max Bloom (eds.), 107–127, New Haven (CT): Yale University Press, 2017, 116; Beatrice Gruendler, *The Rise of the Arabic Book*, Cambridge (MA): Harvard University Press, 2020, 2.

23 Alphonse Dain, *Les manuscrits*, Paris: Diderot éditeur, 1997, 77–78.

24 Colette Sirat, *Hebrew Manuscripts of the Middle Ages*, Cambridge (UK): Cambridge University Press, 2002, 8; Malachi Beit-Arié, *Hebrew Codicology: Historical and Comparative Typology of Medieval Hebrew Codices Based on the Documentation of the Extant Dated Manuscripts Until 1540 Using a Quantitative Approach*, Jerusalem: Israel Academy of Sciences and Humanities, 2021, 65–67.

25 The project, led by Maroun Aouad, was hosted at the CNRS – UMR 8230, Centre Jean Pépin.

26 See the website of the project: <<https://www.phasif.fr>>, accessed January 26, 2025.

27 Asad Q. Ahmed, The "Shifā'" in India I: Reflections on the Evidence of the Manuscripts, *Oriens* 40 (2012): 199–222; Asad Q. Ahmed, Logic in the Khayrābādī School of India: A Preliminary Exploration, in: *Law and Tradition in Classical Islamic Thought: Studies in Honor of Professor Hossein Modarressi*, Michael Cook, Najam Haider, Intisar Rabb, and Asma Sayeed (eds.), 227–243, New York: Palgrave Macmillan, 2013.

es.²⁸ It is within this renewed scholarly landscape that projects like *UnMaP* are poised to undertake systematic research on philosophical paratexts in the Arabic tradition, leveraging the groundwork laid by these earlier initiatives.

2 Paratextual Evidence in Arabic Philosophical Manuscripts

The concept of “paratextuality” was famously developed by Gérard Genette to describe the relation between a literary work and the texts that accompany and/or extend it. Scholars have recently exposed the limits of applying this very concept, which was originally intended to apply to works in print, to the study of manuscripts.²⁹ These limits are all the more evident in the specific case of Arabic manuscripts, which present a distinctive set of paratextual elements that stem from educational practices specific to the Arabo-Islamic context. Therefore, a primary methodological challenge to be faced is to provide at least an indicative categorization of paratextual elements to be applied to the analysis of Arabic philosophical manuscripts. Table 1 below is intended to provide a preliminary delimitation of the data that are subject to examination within the *UnMaP* project, classified according to the type of information that can be expected to be obtained from them.

The sources under consideration include a variety of philosophical and scientific paratexts, such as readers’ marginal commentary notes, graphs, and diagrams (type a), alongside a broader range of non-scientific paratexts and material evidence that offer insights into the production and circulation of manuscripts, such as colophons, ownership notes, and more (type-b-d).

Type-a evidence provides a gateway to the philosophical and theoretical content of a largely unknown philosophical activity whose traces are found in the margins of the manuscripts of Avicenna’s *Shifā*. A notable feature of these philosophical paratexts, especially in the manuscripts of the Logic section of this summa, is their tendency to transcend linguistic and cultural frontiers. For example, multilingual annotations are preserved in the left margin of fol. 76r of MS Istanbul, Süleymaniye

²⁸ Among the most recent digitization projects, of special relevance for this project are the vHMML initiative and the programs concerning the collections of the Monastery of St. Catherine (Egypt), now accessible online through the “Sinai Manuscripts Digital Library,” as well as the collections hosted at The National Library of Israel, at the Süleymaniye Library in Istanbul, and at the most important manuscript collections in Iran (Majles Library, Tehran University Central Library, and Malek National Library).

²⁹ For example, Andrist, *Toward a Definition of Paratexts and Paratextuality*.

Table 1: Classification of evidence (C: context, CP: context of production, CC: context of circulation of the manuscript, S: the school transmission of the book, R: the reception of the book and the readers' reactions)

Paratext/Material evidence conveying:	Type of paratexts or material evidence:	Information:			
		C CP	C CC	S	R
(a) Scientific and philosophical content	(a.1) Glosses, appending comments (<i>ḥawāshī, ta’āliq</i>)			■	■
	(a.2) Schemes, diagrams or tables added by readers			■	■
(b) Information on the teaching and study of the book	(b.1) Certificates of authorisation to teach the text (<i>ijāzāt</i>)			■	■
	(b.2) Certificates of audition (<i>samā’āt</i>)			■	■
	(b.3) Certificates of reading (<i>qirā’āt</i>)			■	■
	(b.4) Study notes (<i>muṭāla’āt</i>)			■	■
(c) Verbal information on the copy and transmission of the book	(c.1) Colophons	■		■	
	(c.2) Ownership statements	■	■	■	
	(c.3) Owners' seals	■	■	■	
(d) Information on the production and transmission of the book	(d.1) Illuminations and decorations	■			
	(d.2) Material support and its features	(d.2.1) Bookbinding	■		
		(d.2.2) Paper or parchment		■	
		(d.2.3) Watermarks	■		
		(d.2.4) Inks		■	
	(d.2.5) Region-specific scripts (e.g., <i>nasta’līq, maghribī</i>)			■	

Kütüphanesi, Ayasofya 2442 (Figure 1), a thirteenth-century manuscript produced between Marāgha (northwestern Iran) and Kharbūt (modern-day Elazığ, eastern Turkey). The copy and circulation of this manuscript is associated with intellectuals from the circle of Bar Hebraeus (d. 1286), Maphrian of the Syriac Orthodox Church.³⁰ These annotations, likely written by a scholar from Bar Hebraeus' entou-

³⁰ See Gaia Celli, The Manuscript Istanbul, Süleymaniye Kütüphanesi, Ayasofya 2442: A Thirteenth Century Copy of the “*Kitāb al-Šifā*” with Syriac and Greek Marginalia, *Mélanges de l'Université Saint-Joseph* 67 (2017–2018): 305–326; Silvia Di Vincenzo, Avicenna, “*The Healing, Logic: Isagoge*”:

rage, served as a trilingual lexicon – Arabic, Greek, and Syriac – of technical logical terms needed to comprehend Avicenna's treatment of three forms of argumentation from Aristotle's *Rhetic*: the *enthymeme*, the *sēmeion*, and the *tekmērion*.

Another characteristic of the philosophical paratexts found in Arabic manuscripts is the frequent inclusion of visual elements, such as diagrams, graphs, models, and tables. Examples include the schematization of syllogisms and geometric proofs. Visual materials, which are hardly ever investigated in the domain of Arabic philosophy, can present elements of great philosophical relevance: this is proven, for instance, by two original Arabic versions of the square of opposition³¹ and Abū l-Barakāt al-Baghdādī's (d. ca. 560H/1165) newly discovered model for testing the validity and productivity of syllogistic arguments.³² While the role and richness of such visual representations in the logical tradition in the Latin context has been amply demonstrated,³³ in the study of Arabo-Islamic philosophical heritage, emphasis has been predominantly on textual material, often neglecting the crucial role played by diagrams and models in logical education.

Type-b-d evidence in the manuscripts of the Logic section of the *Shifā'* offers a fair amount of information regarding the contexts where the work was copied and circulated as well as the individuals responsible for the copying of the text (copyists, patrons, sponsors) or for its circulation (teachers, students, owners, heirs, buyers, etc.). Type-b evidence, in particular, offers direct insights into the practices and transmission of the text within educational contexts. It is not uncommon, for

A New Edition, English Translation and Commentary of the “*Kitāb al-Madḥal*” of Avicenna's “*Kitāb al-Šifā'*”, Berlin: De Gruyter, 2021, lxxvi–lxxvii.

31 Saloua Chatti, Two Squares of Opposition in Two Arabic Treatises: al-Suhrawardī and al-Sanūsī, *Logica Universalis* 16 (2022): 545–580.

32 Wilfrid Hodges, Two Early Arabic Applications of Model-Theoretic Consequence, *Logica Universalis* 12 (2018): 37–54; Tony Street, Abū l-Barakāt al-Baghdādī and the Traditions of Arabic Logic, *Studia graeco-arabica* 11, no. 2 (2021): 41–66, esp. 43–44 and 59.

33 Frances A. Yates, *The Art of Memory*, London: Routledge & Kegan Paul, 1996; Frank T. Marchese, The Origins and Rise of Medieval Information Visualization, in: *Proceedings of the 16th International Conference on Information Visualization: IV'12 (Montpellier, France, July 11–13, 2012)*, IEEE Computer Society, Washington, D.C., 389–395 and Frank T. Marchese, Medieval Information Visualization, in: *Proceedings of the IEEE VIS Arts Program (VISAP)*, Atlanta, Georgia, October 2013; Annemiek Verboon, The Medieval Tree of Porphyry: An Organic Structure of Logic, in: *The Tree: Symbol, Allegory and Structural Device in Medieval Art and Thought*, Andrea Worm and Pippa Salomonis (eds.), 83–101, Turnhout: Brepols, 2014; Susanna Berger, *The Art of Philosophy: Visual Thinking in Europe from the Late Renaissance to the Early Enlightenment*, Princeton: Princeton University Press, 2017; Ayelet Even-Ezra, *Lines of Thought: Branching Diagrams and the Medieval Mind*, Chicago: University of Chicago Press, 2020; Tarlazzi, *The Latin Tradition of Studying Porphyry's “Isagoge”*, ca. 800–980; the NWO funded project “The Art of Reasoning: Techniques of Scientific Argumentation in the Medieval Latin West (400–1400)” (2016–2020).

instance, to find certificates attesting to the study of the text in question in a school environment. This is the case, for example, with a certificate for the completion of study of a number of texts (*ijāza*) issued to the scribe of manuscript Istanbul, Nuruosmaniye Kütüphanesi 2710: thanks to this certificate, preserved at the beginning of the manuscript, we have a direct insight into the philosophical education of the copyist of the volume, a thirteenth-century mathematician from the Marāgha circle with a keen interest in Avicenna's logic.³⁴ Type-c evidence offers the elements to trace a history of the circulation of a text from its copy to the shelves of its readers. Readers have often left traces of their interaction with the text, through notes and seals. With the support of systematic catalogues, we are in most cases able to trace each seal back to a specific owner.³⁵ The categorization offered in Table 1 also includes decorative and material elements (type-d), as they allow us to verify or acquire contextual information, especially in the absence of type-c evidence.

3 Readers of Avicenna's Logic: A Case-Study from an Eighteenth-Century Manuscript of *The Healing*

Noteworthy examples of type-a annotations including both graphic and textual elements are found in MS Istanbul, Süleymaniye Kütüphanesi, Atif Efendi 1565. This manuscript is a copy of the Logic section of Avicenna's *Šifā*' produced in Istanbul in the first half of the eighteenth century. It arguably circulated within the school of As'ad Ibn 'Ali Ibn 'Uthmān al-Yānyawī (Yanyalı Esad Efendi, d. 1143H/1730), a professor at the *madrasa* of Abū Ayyūb al-Anṣārī and a distinguished scholar involved in the translation enterprise sponsored by the Grand Vizier Nevşehirli Damad İbrahim Paşa.³⁶ Yānyawī is also known as the author of a logical work with title *The Most Luminous Commentary* (*al-Sharḥ al-anwar*), a revised translation of *The Most*

³⁴ Silvia Di Vincenzo, Early Exegetical Practice on Avicenna's "Šifā": Fahr al-Dīn al-Rāzī's Marginalia to Logic, *Arabic Sciences and Philosophy* 28, no. 1 (2018): 31–66.

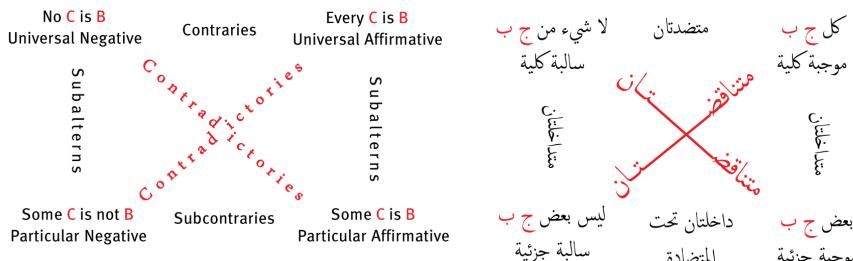
³⁵ For example, Ramaḍān Şeşen, *Muhtārāt min al-Maḥṭūṭāt al-‘Arabīya al-Nādirā fi Maktabāt Turkiyā*, Istanbul: Waqf al-Abḥāt li-l-Tārīḥ wa-al-Funūn wa-al-Taqāfa al-Islāmiya, 1997 and Mohammad Javad Jadi, *Daneshnameh-ye Mohr va Hakaki Dar Iran* (دانشنامه مهر و حکاکی در ایران), Tehran: Farhangestane Honar, 2014.

³⁶ Silvia Di Vincenzo, Reading Avicenna's "Kitāb al-Šifā" in the Ottoman World: The Circulation of the Work Within the School of As'ad al-Yānyawī, *Mélanges de l'Université Saint-Joseph* 67 (2017–2018): 327–350, see 334–343.

Clear Exposition of Universal Logic (Expositio lucidissima universae logices, published in 1651 and 1669) by Ioannes Cottunius, a Greek-born professor of philosophy at the Academy of Padua.³⁷

Yānyawī's students alternated in the copy of Avicenna's text in MS Atif Efendi 1565 and added several annotations, often referring to their professor's lectures and works. As a result, this manuscript serves as a valuable resource for understanding how students actively engaged with Avicenna's text and which texts they consulted as references in their study of Avicennian logic. In a marginal note on fol. 102v of MS Atif Efendi 1565 (Figure 2), in correspondence with the beginning of chapter I.10 of Avicenna's reworking of Aristotle's *De interpretatione* (*Kitāb al-‘Ibāra*) in the *Shifā*, one of Yānyawī's students – who is arguably also the copyist of this section of the manuscript – introduced a graphic representation of the Aristotelian “square of opposition,” accompanied by an extensive discussion of the nature of the oppositions depicted in the diagram. On closer inspection, the note can be divided into two sections: the first includes a representation of the square of opposition along with a concise explanation of the diagram, while the second elaborates further on the nature of the oppositions represented by the square. In the two sections, the anonymous student resorted to bibliographic sources to comment upon the Avicennian interpretation of the Aristotelian theory of oppositions among universal and particular propositions set forth by Aristotle in *De interpretatione* 7, 17b16–37. Below follows a transcription of the first section of the annotation:

37 Among the most recent bibliography on Yānyawī's life and philosophical activity, see Aslan Adnan, As'ad Afandi of Yanya, in: *The Biographical Encyclopedia of Islamic Philosophy*, vol. 1: A–I, Oliver Leaman (ed.), 39–40, London: Bloomsbury, 2006; Naim Şahin and Türk Mantıkçları, *Selçuk Üniversitesi Tırkıyat Araştırmaları Dergisi* 1, no. 17 (2005): 343–354, esp. 349–350; Sait Özvervarlı, Yanyali Esad Efendi's Works on Philosophical Texts as Part of the Ottoman Translation Movement in the Early Eighteenth Century, in: *Europa und die Türkei im 18. Jahrhundert – Europe and Turkey in the 18th Century*, Barbara Schmidt-Haberkamp (ed.), 457–472, Göttingen: V&R unipress, Bonn University Press, 2011; El-Rouayheb, *The Development of Arabic Logic (1200–1800)*, 216–221; Teymour Morel, Al-Yānyawī's Prologue to the “Translation of the Most Luminous Commentary on Logic”: A Short Philosophical Manifesto, *Mélanges de l'Université Saint-Joseph* 69 (2021–2022): 331–362. For a comprehensive bibliography, see Morel, *Al-Yānyawī's Prologue to the Translation*, 332–334, no. 4.



It is customary to present here the following scheme: any two [propositions] that differ in quality but share the same quantity are called “contraries” if they are universal. For it is possible for both to be false – specifically in the matter of possibility – but not for both to be true. If [the propositions] are particular, they are called “sub-contraries,” as they fall under [their corresponding] universals. In this case, both can be true – again, in relation to the same matter³⁸ – but not both false. Any two [propositions] that share the same quality but differ in quantity, positioned along the side of the square, are called “subalterns,” because one is contained within the other. Any two [propositions] that differ in both quality and quantity at the same time, being mutually opposed, are called “contradictories,” since it is impossible for both to be either true or false in any given matter. *Tūsi*.

جرت العادة بأن يوضع هنا لوح هكذا: فمختلفاتنا الكيفية متفقنا الكلية إن كانتا كليتين سفيتا متضادتين لجواز اجتماعهما على الكذب دون الصدق وهو في مادة الإمكاني وإن كانتا جزئيتين سفيتا داخلتين تحت التضاد لدخولهما تحت الكليتين وهو يجوز أن يجتمعوا على الصدق دون الكذب كما في تلك المادة بعيتها ومختلفاتنا الكيفية مختلفاتنا الكلية وهو الواقعتان في الطول سفيتا متداخلتين لدخول إدحها في الأخرى¹ ومختلفاتهما² معاً وهو المتقاطعتان سفيتا متناقضتين لامتناع اجتماعهما على الصدق أو الكذب في شيء من المواد. طوسي

1. «أحدهما في الآخر» في النسخة
2. «ومختلفاهما» في النسخة.

Both the graphic representation of the square and the subsequent explanation are part of a quotation from the Commentary on Avicenna's *Pointers and Reminders* (*Hall Mushkilāt al-Ishārāt wa-al-tanbīhāt*) by the Persian philosopher and astronomer Naṣīr al-Dīn al-Ṭūsī (d. 672H/1274).³⁹ This is one of the commentaries on Avicenna's work which had the most profound intellectual impact on subsequent tradition. The Arabic tradition of the graphic representation of the square of opposition is still a matter of investigation, and scholars have argued that it was not widespread in the Arabic logical tradition.⁴⁰ The square reproduced in the marginal annotation in Figure 2 was certainly copied from Ṭūsī's commentary along with the explanation. For in fact, while not included in the printed edition of Ṭūsī's commentary, an iden-

38 I.e. possible matter.

³⁹ See Tūsī's commentary in Sulaymān Dunyā, (ed.), *Ibn Sīnā, Al-Ishārāt wa-t-tanbīhāt ma'a Sharḥ Nasīr ad-Dīn al-Tūsī*, Cairo: Dār al-ma'ārif, 1994, 306, no. 7.

40 Chatti, *Two Squares of Opposition in Two Arabic Treatises.*

tical square is found in the manuscript tradition of the work, as evidenced by one of its earliest extant copies, MS Leiden Or. 95, fol. 51r (Figure 3).⁴¹ Avicenna does not appear to have adopted it in his reworking of the *De interpretatione* in the *Shifā*; the reason, as we shall argue, may be that the model fails to represent the Avicennian theory of oppositions in all of its aspects.

The four kinds of opposition represented in the square are contradiction, contrariety, subcontrariety, and subalternation. The explanation drawn from Tūsī's commentary elaborates on Avicenna's own substantial revision of the Aristotelian square based on his own theory of "material" modalities. In the *Kitāb al-Ibāra*, Avicenna revisited the relations of opposition between propositions as represented in the traditional square in light of his modalized conception of propositions that lack explicit modal indicators. According to Avicenna, the truth value of a given proposition is determined not only by its formal structure but also by the nature of the relation that exists between a predicate and its subject. This idea has its roots in the late ancient Greek and Syriac commentaries on Aristotle's *De interpretatione*, where the relation between predicate and subject – the "matter" (Gr. *hylē*, Ar. *mādda*) – is defined as necessary when the predicate always belongs to the subject, possible when it sometimes belongs to it, impossible when it never belongs to it.⁴² Classic examples of propositions with necessary matter provided in commentaries from Ammonius' school in Alexandria are "man is an animal" or "man is rational," where the necessity of the universal affirmative is ensured by the fact that "animal" and "rational" are constituents of the definition of "man" and thus never fail to belong to it. Examples of propositions with impossible and possible matters are, respectively, "man is winged" and "Socrates walks."⁴³

The Avicennian theory summarized in the passage from Tūsī's commentary selected here by the anonymous annotator provides for a classification of the types

41 On this thirteenth-century copy of Tūsī's *Ḫall Muškilāt al-Ishārāt wa-al-tanbīhāt*, see Bruno De Nicola, A Manuscript Witness of Cultural Activity in Mongol Baghdad: Notes on MS Leiden Or. 95, *Journal of Islamic Manuscripts* 14 (2023): 70–108.

42 See, for instance, Ammonius, *In De Int.*, 88.12–28. On the Syriac tradition, see Henri Hugonnard-Roche, La constitution de la logique tardo-antique et l'élaboration d'une logique "matérielle" en syriaque, in: *La logique d'Aristote du grec au syriaque: Études sur la transmission des textes de l'"Organon" et leur interpretation philosophique*, Henri Hugonnard-Roche (ed.), 255–274, Paris: J. Vrin, 2004. For the Arabic development of this theory, see also Asad Q. Ahmed, The Jiha/Tropos-Mādda/Hūlē Distinction in Arabic Logic, in: *The Unity of Science in the Arabic Tradition: Science, Logic, Epistemology and their Interactions*, Shahid Rahman, Tony Street, and Hassan Tahiri (eds.), 229–253, Dordrecht: Springer, 2008; Saloua Chatti, Logical Oppositions in Arabic Logic: Avicenna and Averroes, in: Around and Beyond the Square of Opposition, Jean-Yves Béziau and Dale Jacquette (eds.), 21–40, Basel: Springer, 2012.

43 Ammonius, *In De Int.*, 88.12–17.

of opposition in view of the relationships that exist between predicate and subject, from a stronger form of opposition on all three matters (i.e. contradiction) to a weaker form, which bears on only one matter (i.e. subalternation).⁴⁴ In Table 2 below is a comparison of Aristotelian definitions of oppositions and their Avicennian redefinitions, which take material modalities into account.

Table 2

	Traditional Aristotelian definition	Avicennian definition
def1 Contradiction	Two contradictory propositions can never be true or false together.	Two contradictory propositions can never be true or false together <i>in any of the three matters</i> (i.e., necessary, possible, impossible).
def2 Contrariety	Two contrary propositions can never be true together, but they can be false together.	Two contrary propositions can never be true together, but they can be false together <i>when they are possible</i> .
def3 Subcontrariety	Two subcontrary propositions can never be false together but can be true together.	Two subcontrary propositions can never be false together but can be true together <i>when they are possible</i> .
def4 Subalternation	A proposition is the subaltern of another one if, when the latter is true, the former is true too, and if the former is false, the latter is false too.	The truth-values of two subaltern propositions are the same when the propositions are necessary or impossible, <i>while they are opposed when the propositions are possible</i> .

Without Tūsī's further explanation, the traditional graphic representation of the square alone would fail to account for the Avicennian analysis of each of the four oppositions defined in Table 2 with respect to the three material modalities of propositions. This is because the scheme is based precisely on the assumption that Avicenna's theory challenges, namely that the oppositions among propositions are determined solely by their quantity and quality.

The second part of the marginal annotation in Figure 2 elaborates further on the elements that determine an opposition in truth values in any pair of propositions. Upon closer examination, this passage turns out to be a quotation from another fairly widespread work that formed a staple part of the curriculum in the post-Avicennian logical education, namely Quṭb al-Dīn al-Rāzī al-Taḥtānī's (d. 766H/1365) commentary on Najm al-Dīn al-Kātibī's (d. 675H/1276) *Epistle for Shams al-Dīn*

⁴⁴ As evident from *def4*, Avicenna treats subalternation as a form of opposition, with respect to possible matter.

(*al-Risāla al-Shamsiyya*), with title *Redaction of the Rules of Logic in Commentary on the Epistle for Shams al-Dīn (Tahrīr al-Qawā'īd al-mantiqiyā fī sharḥ al-Shamsiyya)*.⁴⁵ The passage transcribed below, a literal quotation from *Tahrīr al-Qawā'īd al-mantiqiyā* (324–325), comments on the definition of opposition between propositions given in Kātibī's *Shamsiyya*, 2.3: "Contradiction has been defined as a difference between two propositions in affirmation and negation such that it requires of itself that one is true and the other false."⁴⁶

I.e., the difference that determines [the truth of one proposition and the falsity of the other] may do so [(a)] in itself and by its own form or not, but [(b)] through some intermediary or [(c)] due to a [certain] specificity of matter.

[(b)] The case of the intermediary resembles [the relationship between] affirming a proposition and denying its coextensive necessary implication – for example, when we say "Zayd is a man" and "Zayd is not rational." The difference between these propositions determines the truth of one and the falsity of the other because saying "Zayd is not rational" is akin to saying "Zayd is not a man," and saying "Zayd is a man" implies "Zayd is rational."

[(c)] As for the specificity of matter, consider our propositions "every man is an animal" and "no man is an animal," or "some man is an animal" and "some man is not an animal." The difference in affirmation and negation here determines the truth of one and the falsity of the other, not because of its form – namely, whether they are universal or particular – but due to the specificity of the matter. Otherwise, this would necessarily apply to any pair of universal and particular propositions differing in affirmation and negation, but that is not the case. When we say "every animal is a man" and "no animal is a man," both universal propositions differ in affirmation and negation, yet their difference does not determine the truth of one and the falsity of the other, as both are false.

يعني أن الاختلاف المقتضي إما أن يكون مقتضياً لذاته وصورته وإنما أن لا يكون بل بواسطة أو بخصوص المادة. أما الواسطة فكما في إيجاب قضية وسلب لازمها المساوي كقولنا زيد إنسان، زيد ليس بناطق، فإن الاختلاف بينهما إنما يقتضي صدق إداهما وكذب الأخرى إما لأن قولنا زيد ليس بناطق في قوة قولنا زيد ليس بإنسان وإنما قولنا زيد إنسان في قوة قولنا زيد ناطق وإنما خصوص المادة فكما في قولنا كل إنسان بحيوان، لا شيء من الإنسان بحيوان، وقولنا بعض الإنسان حيوان، وبعض الإنسان ليس بحيوان، فإن اختلافهما بالإيجاب والسلب يقتضي صدق إداهما وكذب الأخرى لا لصورته وهي كونهما كليتين أو جزئيتين بل لخصوص المادة وإلا لزم في كليتين أو جزئيتين مختلفتين بالإيجاب والسلب وليس كذلك فإن قولنا كل حيوان إنسان ولا شيء من الحيوان بإنسان كليتان مختلفتان بالإيجاب وسلباً واختلافهما لا يقتضي صدق إداهما وكذب الأخرى بل هما كاذبتان وكذلك قولنا بعض الحيوان إنسان وبعض الحيوان ليس بإنسان جزئيتان مختلفتان وليس إداهماً صادقة وال أخرى كاذبة بل هما صادقتان بخلاف قولنا بعض الحيوان إنسان ولا شيء من الحيوان بإنسان فإن اختلافهما يقتضي لذاته وصورته أن تكون إداهماً صادقة وال أخرى كذبة حتى أن

45 Qutb al-Dīn al-Rāzī al-Tahtānī, *Tahrīr al-Qawā'īd al-mantiqiyā fī sharḥ al-Shamsiyya*, Muhsin Bidārfar (ed.), Qom: Bidār, 1384H/1965.

46 Najm al-Dīn al-Kātibī, *al-Risāla al-Shamsiyya*, 2.3, Arabic text and English translation in Street, *Najm al-Dīn al-Kātibī's al-Risālah al-Shamsiyah*, 42–43.

Similarly, when we say “some animals are men” and “some animals are not men,” we are dealing with two particular propositions, but they are not such that one is true and the other false – both are true. This differs from saying “some animals are men” and “no animal is a man,” where the distinction between the two propositions inherently and by its very form determines that one is true and the other is false, so that the difference in affirmation and negation between each [pair formed by] a universal and a particular [proposition] determines this.

الاختلاف بالإيجاب والسلب بين كل كافية وجزئية يقتضي ذلك.

1. «أحدهما وكذب الآخر» في النسخة.]
2. «أحدهما» في النسخة.

Tahtānī introduces in the passage a distinction – absent from Kātibī’s corresponding text – between the cases in which the opposition of a pair of propositions in their truth-values is determined by their forms (a) and those in which it is either determined through some intermediate term (b) or by their matters (c). Tahtānī’s focus here is on cases (b) and (c). The case involving an intermediate term (b) contemplates some instances that would not be classified as oppositions in a strict, technical sense by Aristotle. Propositions like “A is a man” and “A is not rational,” in fact, do not attribute and deny the same predicate of the subject. Nonetheless, as Tahtānī observes, such pairs of propositions do oppose each other in their truth-values, because being rational is a necessary implicate of being a man, so that from “A is not rational,” it is legitimate to infer “A is not a man.”

Besides this somewhat “unorthodox” kind of opposition, what struck the interest of the anonymous annotator of MS Atif Efendi 1565 was arguably Tahtānī’s discussion of the role of the matters of propositions in determining an opposition in the truth-values among any two propositions (b). Tahtānī’s argument in the text above demonstrates that certain oppositions cannot be determined by the mere form of propositions, since propositions that share the form may either oppose or not oppose in their truth-values. What determines the occurrence or non-occurrence of this opposition is the relation established between the subject and the predicate. In this respect, the quotation from Tahtānī’s work may have served the anonymous annotator as a support in understanding Avicenna’s own theory of material modalities.

4 Concluding Remarks

Annotations and paratexts in Arabic manuscripts appear in various forms, conveying a broad spectrum of doctrinal and historical insights crucial for understanding how these texts were read and studied – both by individual scholars and within institutionalized educational settings. Through an analysis of the paratexts that provide context on the production and circulation of manuscripts of the *Book of Healing*, we can identify many “actors” in the transmission of Avicennian philosophy who have been largely overlooked in official accounts.

In addition to these contextual paratexts, manuscripts of Avicenna’s *Book of Healing* contain a wealth of annotations of doctrinal significance, demonstrating varying degrees of originality. However, the importance of examining philosophical marginalia in the Arabo-Islamic tradition extends beyond simply discovering new philosophical texts or ideas. As I aimed to demonstrate in section 3, even annotations derived from earlier commentaries offer valuable information concerning the texts that were most commonly used to engage with Avicennian logic – information that may be otherwise hard to access due to the limited historical records of curricula in Islamicate educational institutions.

More specifically, the case-study in section 3 provides a glimpse into the texts that influenced the reading and interpretation of Avicenna’s theory of oppositions among propositions within the school of As’ad al-Yānyawī in eighteenth-century Istanbul. These annotations shed new light on the textbooks and philosophical sources employed in Yānyawī’s school, revealing part of the interpretive framework through which Avicenna’s work was analyzed and understood. Studying annotations of this type also allows us to explore the circulation of graphic and visual representations accompanying philosophical texts. In the specific case of the Arabic philosophical tradition, this is a field that still has ample room for further study.

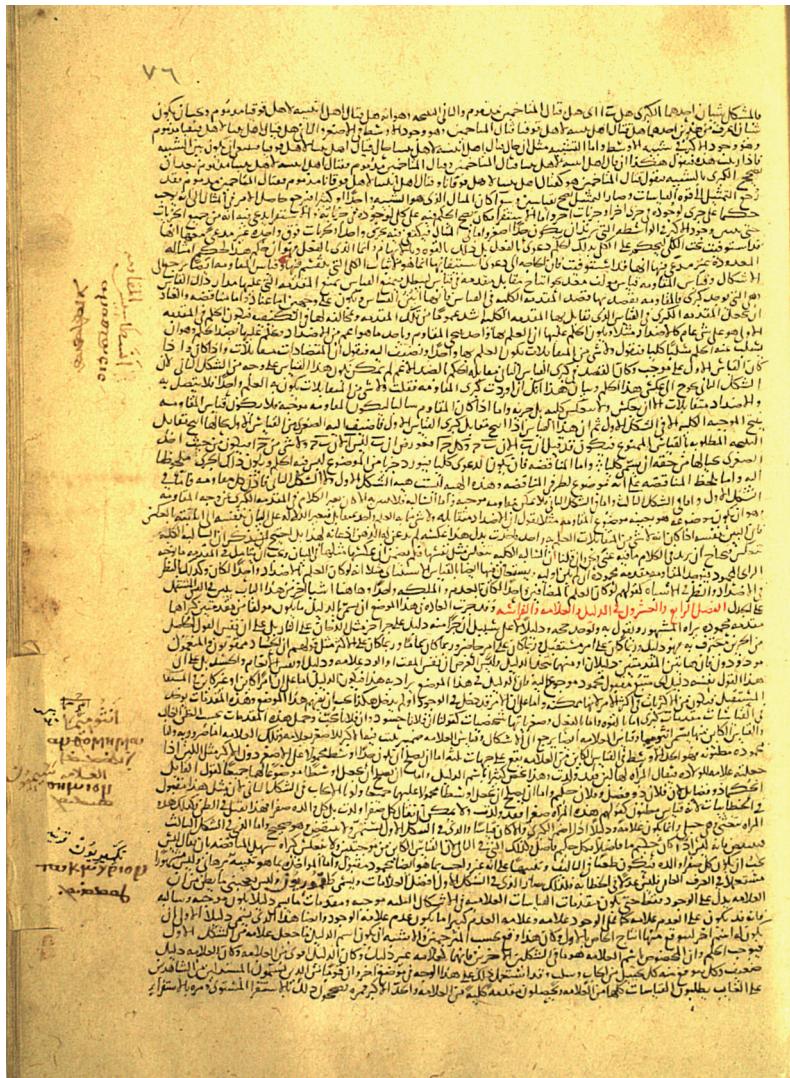


Figure 1: Istanbul, Süleymaniye Kütüphanesi, Ayasofya 2442, fol. 76r.

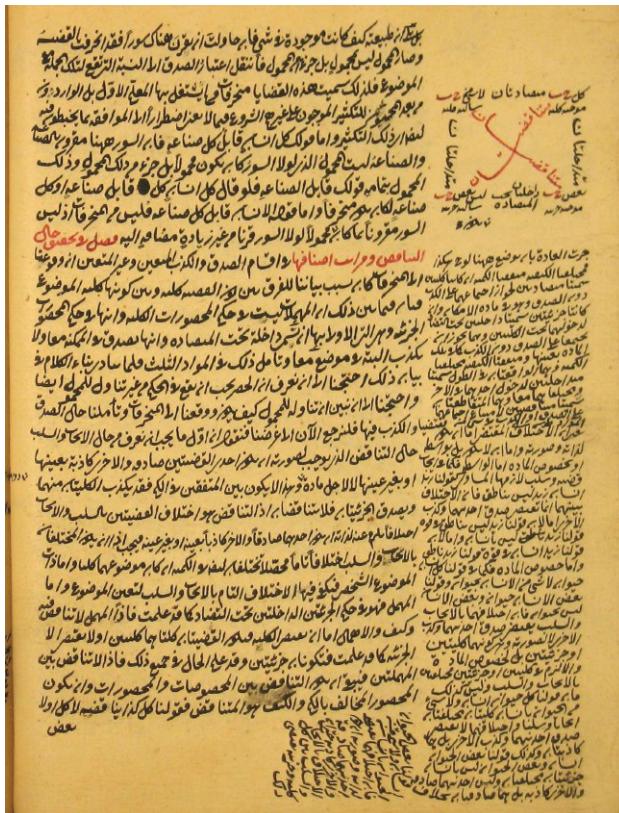


Figure 2: Istanbul, Süleymaniye Kütüphanesi, Atif Efendi 1565, fol. 102v.

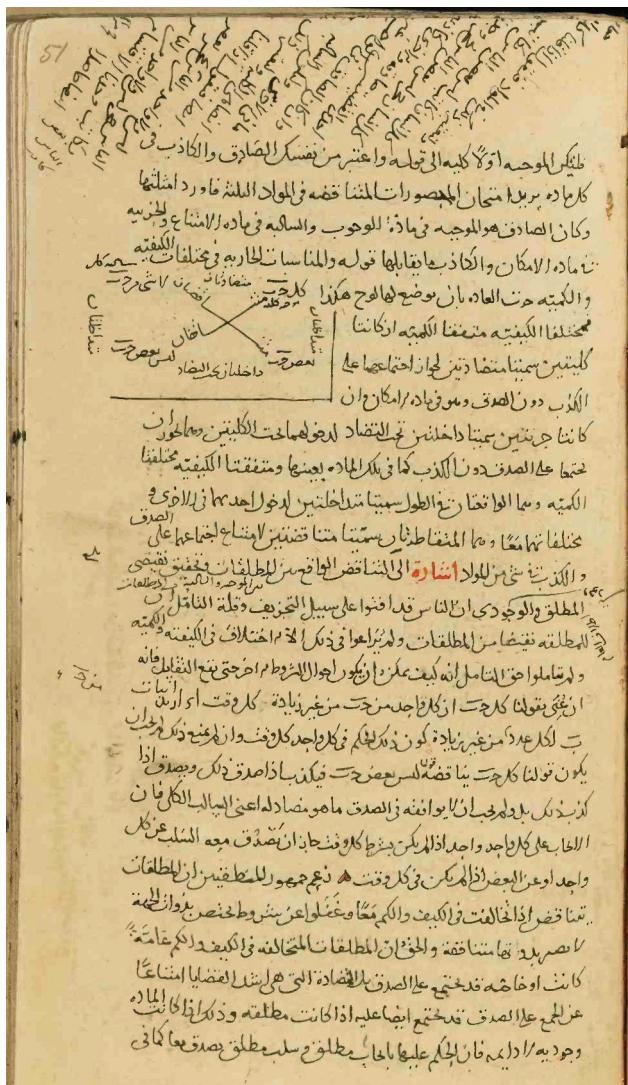


Figure 3: Leiden, Universiteitsbibliotheek, Or. 95, fol. 51r.

Bibliography

Primary Sources

al-Abharī, Athīr al-Dīn. *“Isagoge”: A Classical Primer on Logic*, Feryal Salem (ed. and trans.). Chicago: Blue Mountain Press, 2022.

al-Ḥamawī, Ibn Wāṣil. *Commentary on the “Jumal” on Logic by Khūnajī*, Khaled El-Rouayheb (ed.). Leiden: Brill, 2022.

al-Rāzī al-Taḥtānī, Qutb al-Dīn. *Tahrīr al-Qawā’id al-mantiqiyā fi sharḥ al-Shamsiyya*, Muhsin Bīdārfar (ed.). Qom: Bīdār, 1384H/1965.

Ben Ahmed, Fouad (ed.). *Ibn Ṭumlūs (Alhagiag Bin Thalmus d. 620/1223), Compendium on Logic al-Muhtaṣar fī al-mantiq*. Leiden: Brill, 2019.

Di Vincenzo, Silvia. *Avicenna, “The Healing, Logic: Isagoge”: A New Edition, English Translation and Commentary of the “Kitāb al-Madḥal” of Avicenna’s “Kitāb al-Šifā”*. Berlin: De Gruyter, 2021.

Dunyā, Sulaymān (ed.). *Ibn Sīnā, Al-Ishārāt wa-t-tanbīhāt mā’ā Sharḥ Naṣīr ad-Dīn al-Ṭūsī*. Cairo: Dār al-ma’ārif, 1994.

El-Rouayheb, Khaled (ed.). *Afḍal al-Dīn al-Khūnajī, Kashf al-asrār’ān ghawāmiq al-afkār*. Berlin: Free University of Berlin, Institute for Islamic Studies and Iranian Institute for Philosophy, 2010.

Rashed, Marwan. *Alexandre d’Aphrodise, Commentaire perdu à la Physique d’Aristote (Livres IV–VIII): Les scholies byzantines: Édition, traduction et commentaire*. Berlin: De Gruyter, 2011.

Safri, Ibrahim. *Al-Ḥamad al-Wallālī’s Commentary on al-Sanūsī’s Compendium of Logic: A Study and Edition of Lawāmi’ al-Naẓar fī Tahqīq Ma’ānī al-Mukhtaṣar*. Leiden: Brill, 2023.

Sirat, Colette and Marc Geoffroy. *De la faculté rationnelle: L’original arabe du Grand Commentaire (Šarḥ d’Averroès au “De anima” d’Aristote (III, 4–5, 429a10–432a14): Éditions diplomatique et critique des gloses du manuscrit de Modène, Biblioteca Estense, a. J. 6. 23 (ff. 54v–58v)*. Rome: Aracne, 2021.

Street, Tony. *Najm al-Dīn al-Kātibī’s al-Risālah al-Shamsiyyah: An Edition and Translation with Commentary*. New York: New York University Press, 2024.

Secondary Sources

Adamson, Peter and Fedor Benevich. *The Heirs of Avicenna: Philosophy in the Islamic East, 12–13th Centuries: Metaphysics and Theology*. Leiden: Brill, 2023.

Adnan, Aslan. As’ad Afandi of Yanya. In *The Biographical Encyclopedia of Islamic Philosophy*, vol. 1: A–I, Oliver Leaman (ed.), 39–40. London: Bloomsbury, 2006.

Ahmed, Asad Q. The Jiha/Tropos-Mādда/Hūlē Distinction in Arabic Logic. In *The Unity of Science in the Arabic Tradition: Science, Logic, Epistemology and their Interactions*, Shahid Rahman, Tony Street, and Hassan Tahiri (eds.), 229–253. Dordrecht: Springer, 2008.

Ahmed, Asad Q. The “Shifā” in India I: Reflections on the Evidence of the Manuscripts. *Oriens* 40 (2012): 199–222.

Ahmed, Asad Q. Logic in the Khayrābādī School of India: A Preliminary Exploration. In *Law and Tradition in Classical Islamic Thought: Studies in Honor of Professor Hossein Modarressi*, Michael Cook, Najam Haider, Intisar Rabb, and Asma Sayeed (eds.), 227–243. New York: Palgrave Macmillan, 2013.

Ahmed, Asad Q. Post-Classical Philosophical Commentaries/Glosses: Innovation in the Margins. *Oriens* 41 (2013): 317–348.

Ahmed, Asad Q. *Palimpsests of Themselves: Logic and Commentary in Postclassical Muslim South Asia*. Berkeley: University of California Press, 2022.

Al Ghouz, Abdelkader (ed.). *Islamic Philosophy from the 12th to the 14th Century*. Göttingen: V&R unipress, Bonn University Press, 2018.

Andrist, Patrick. Toward a Definition of Paratexts and Paratextuality: The Case of Ancient Greek Manuscripts. In *Bible as Notepad: Tracing Annotations and Annotation Practices in Late Antique and Medieval Biblical Manuscripts*, Liv Ingeborg Lied and Marilena Maniaci (eds.), 130–149. Berlin: De Gruyter, 2018.

Beit-Arié, Malachi. *Hebrew Codicology: Historical and Comparative Typology of Medieval Hebrew Codices Based on the Documentation of the Extant Dated Manuscripts Until 1540 Using a Quantitative Approach*. Jerusalem: Israel Academy of Sciences and Humanities, 2021.

Berger, Susanna. *The Art of Philosophy: Visual Thinking in Europe from the Late Renaissance to the Early Enlightenment*. Princeton: Princeton University Press, 2017.

Bermon, Pascale and Isabelle Moulin (eds.). *Commenter au Moyen Âge*. Paris: J. Vrin, 2019.

Bloom, Jonathan Max. *Paper Before Print: The History and Impact of Paper in the Islamic World*. New Haven (CT): Yale University Press, 2001.

Bloom, Jonathan Max. How Paper Changed the Literary and Visual Culture of the Islamic Lands. In *By the Pen and What They Write: Writing in Islamic Art and Culture*, Sheila S. Blair and Jonathan Max Bloom (eds.), 107–127. New Haven (CT): Yale University Press, 2017.

Brentjes, Sonja. *Teaching and Learning the Sciences in Islamicate Societies (800–1700)*. Turnhout: Brepols, 2018.

Celli, Gaia. The Manuscript İstanbul, Süleymaniye Kütüphanesi, Ayasofya 2442: A Thirteenth Century Copy of the “Kitāb al-Šifā” with Syriac and Greek Marginalia. *Mélanges de l’Université Saint-Joseph* 67 (2017–2018): 305–326.

Chamberlain, Michael. *Knowledge and Social Practice in Medieval Damascus, 1190–1350*. Cambridge (UK): Cambridge University Press, 1994.

Chatti, Saloua. Logical Oppositions in Arabic Logic: Avicenna and Averroes. In *Around and Beyond the Square of Opposition*, Jean-Yves Béziau and Dale Jacquette (eds.), 21–40. Basel: Springer, 2012.

Chatti, Saloua. Two Squares of Opposition in Two Arabic Treatises: al-Suhrawardī and al-Sanūsī. *Logica Universalis* 16 (2022): 545–580.

Chiaradonna, Riccardo. Commento. In *Forme letterarie della filosofia*, Paolo D’Angelo (ed.), 71–104. Rome: Carocci, 2012.

Ciotti, Giovanni, Michael Kohs, Eva Wilden, Hanna Wimmer, and the TNT Working Group. Definition of Paracontent. *Centre for the Study of Manuscript Cultures Occasional Paper* 6 (2018): 1–5.

Dain, Alphonse. *Les manuscrits*. Paris: Diderot éditeur, 1997.

De Nicola, Bruno. A Manuscript Witness of Cultural Activity in Mongol Baghdad: Notes on MS Leiden Or. 95. *Journal of Islamic Manuscripts* 14 (2023): 70–108.

Del Punta, Francesco. The Genre of Commentaries in the Middle Ages and Its Relation to the Nature and Originality of Medieval Thought. In *Was ist Philosophie im Mittelalter? Qu'est-ce que la philosophie au moyen âge? What is Philosophy in the Middle Ages?* Jan Adrianus Aertsen and Andreas Speer (eds.), 138–151. Berlin: De Gruyter, 1998.

Devriese, Lisa. Physiognomy in Context: Marginal Annotations in the Manuscripts of the “Physiognomonica”. *Recherches de théologie et philosophie médiévales* 84 (2017): 107–141.

Di Vincenzo, Silvia. Reading Avicenna's "Kitāb al-Šifā'" in the Ottoman World: The Circulation of the Work Within the School of As'ad al-Yānyawī. *Mélanges de l'Université Saint-Joseph* 67 (2017–2018): 327–350.

Di Vincenzo, Silvia. Early Exegetical Practice on Avicenna's "Šifā": Faḥr al-Dīn al-Rāzī's Marginalia to Logic. *Arabic Sciences and Philosophy* 28, no. 1 (2018): 31–66.

Di Vincenzo, Silvia. The "Avicennian Pandemic" in Context: Insights into the Spread of Avicenna's Logic across the Islamicate World. In *Persuading and Transmitting in Classical Arabic Philosophy*, Frédérique Woerther and Jawdath Jabbour (eds.). Leiden: Brill, forthcoming.

Eichner, Heidrun. *The Post-Avicennian Philosophical Tradition and Islamic Orthodoxy: Philosophical and Theological Summae in Context*. Habilitation, Martin-Luther-Universität Halle-Wittenberg, 2009.

El-Rouayheb, Khaled. *Relational Syllogisms and the History of Arabic Logic, 900–1900*. Leiden: Brill, 2010.

El-Rouayheb, Khaled. Logic in the Arabic and Islamic World. In *Encyclopedia of Medieval Philosophy*, Henrik Lagerlund (ed.), 686–692. Dordrecht: Springer, 2011.

El-Rouayheb, Khaled. "Takmīl al-Mantiq": A Sixteenth-Century Arabic Manual on Logic. In *Illuminationist Texts and Textual Studies: Essays in Memory of Hossein Ziai*, Ali Gheissari, Ahmed Alwishah, and John Wallbridge (eds.), 199–256. Leiden: Brill, 2018.

El-Rouayheb, Khaled. *The Development of Arabic Logic (1200–1800)*. Basel: Schwabe, 2019.

Endress, Gerhard. Reading Avicenna in the Madrasa: Intellectual Genealogies and Chains of Transmission of Philosophy and the Sciences in the Islamic East. In *Arabic Theology, Arabic Philosophy: From the Many to the One: Essays in Celebration of Richard M. Frank*, James E. Montgomery (ed.), 371–422. Leuven: Peeters, 2006.

Even-Ezra, Ayelet. *Lines of Thought: Branching Diagrams and the Medieval Mind*. Chicago: University of Chicago Press, 2020.

Falcon, Andrea. Commentators on Aristotle. In *The Stanford Encyclopedia of Philosophy (Summer 2022 Edition)*, Edward Nouri Zalta and Uri Nodelman (eds.). Stanford: Metaphysics Research Lab, Stanford University, 2022. <<https://plato.stanford.edu/archives/sum2022/entries/aristotle-commentators/>>, accessed January 26, 2025.

Genette, Gérard. *Seuils*. Paris: Éditions du Seuil, 1987.

Goulet-Cazé, Marie-Odile (ed.). *Le commentaire entre tradition et innovation: Actes du colloque international de l'Institut des traditions textuelles*. Paris: J. Vrin, 2010.

Griffel, Frank. *The Formation of Post-Classical Philosophy in Islam*. Oxford: Oxford University Press, 2021.

Gruendler, Beatrice. *The Rise of the Arabic Book*. Cambridge (MA): Harvard University Press, 2020.

Gutas, Dimitri. Aspects of Literary Form and Genre in Arabic Logical Works. In *Glosses and Commentaries on Aristotelian Logical Texts: The Syriac, Arabic and Medieval Latin Traditions*, Charles S. F. Burnett (ed.), 29–76. London: Warburg Institute, 1993.

Gutas, Dimitri. Avicenna and After: The Development of Paraphilosophy: A History of Science Approach. In *Islamic Philosophy from the 12th to the 14th Century*, Abdelkader Al Ghouz (ed.), 13–65. Göttingen: V&R unipress, Bonn University Press, 2018.

Gutas, Dimitri. Philosophical Manuscripts: Two Alternative Philosophies. In *Treasures of Knowledge: An Inventory of the Ottoman Palace Library (1502/3–1503/4)*, Gülrü Necipoğlu, Cemal Kafadar, and Cornell H. Fleischer (eds.), 907–933. Leiden: Brill, 2019.

Hodges, Wilfrid. Two Early Arabic Applications of Model-Theoretic Consequence. *Logica Universalis* 12 (2018): 37–54.

Hugonnard-Roche, Henri. La constitution de la logique tardo-antique et l'élaboration d'une logique "matérielle" en syriaque. In *La logique d'Aristote du grec au syriaque: Études sur la transmission des textes de l'"Organon" et leur interprétation philosophique*, Henri Hugonnard-Roche (ed.), 255–274. Paris: J. Vrin, 2004.

Jadi, Mohammad Javad. *Daneshnameh-ye Mohr va Hakaki Dar Iran* (دانشنامه مهر و حکاکی در ایران). Tehran: Farhangestane Honar, 2014.

Kaukua, Jari. Post-Classical Islamic Philosophy – A Contradiction in Terms? *Nazariyat* 6 (2020): 1–21.

Kotzabassi, Sofia. Aristotle's "Organon" and Its Byzantine Commentators. *The Princeton University Library Chronicle* 64 (2002): 51–62.

Lammer, Andreas. Philosophie nach Format: Vermittlung aus dem Griechischen und Aneignung im Arabischen. In *Heteronome Texte: Kommentierende und tradierende Literatur in Antike und Mittelalter*, Katharina Bracht, Jan Dirk Harke, Matthias Perkams, and Meinolf Vielberg (eds.), 149–176. Berlin: De Gruyter, 2021.

Lit, L. W. C. (Eric) van. Commentary and Commentary Tradition: The Basic Terms for Understanding Islamic Intellectual History. *Mélanges de l'institut dominicain d'études orientales* 32 (2017): 3–26.

Madkour, Ibrahim. *L'Organon d'Aristote dans le monde arabe*. Paris: J. Vrin, 1934.

Makdisi, George. *The Rise of Colleges: Institutions of Learning in Islam and the West*. Edinburgh: Edinburgh University Press, 1981.

Makdisi, George. *The Rise of Humanism in Classical Islam and the Christian West: With Special Reference to Scholasticism*. Edinburgh: Edinburgh University Press, 1990.

Mansfeld, Jaap. Helping the Reader: The Paratextual Elements in the "Placita" in the Context of their Genre. In *Received Opinions: Doxography in Antiquity and the Islamic World*, Andreas Lammer and Mareike Jas (eds.), 33–50. Leiden: Brill, 2022.

Marchese, Frank T. The Origins and Rise of Medieval Information Visualization. In *Proceedings of the 16th International Conference on Information Visualization: IV'12* (Montpellier, France, July 11–13, 2012), IEEE Computer Society, Washington, D.C., 389–395.

Marchese, Frank T. Medieval Information Visualization. In *Proceedings of the IEEE VIS Arts Program (VISAP)*, Atlanta, Georgia, October 2013.

Meliadò, Mario and Hans Gerhard Senger. Cusanus-Marginalien: Zur Edition und Interpretation einer Textüberlieferung am Seitenrand. *Bulletin de Philosophie Médiévale* 64 (2022): 209–241.

Meliadò, Mario. The Idiota's Library, or Cusanus as a Reader of Plato (Cod. Cus. 177). *Vivarium* 62 (2024): 147–177.

Morel, Teymour. Al-Yānyawī's Prologue to the "Translation of the Most Luminous Commentary on Logic": A Short Philosophical Manifesto. *Mélanges de l'Université Saint-Joseph* 69 (2021–2022): 331–362.

Negri, Silvia. Wege eines Textes: Die "Summa quaestionum ordinariarum" des Heinrich von Gent von Paris nach Rom. *Bulletin de Philosophie Médiévale* 57 (2015): 117–169.

Özverarlı, Sait. Yanyali Esad Efendi's Works on Philosophical Texts as Part of the Ottoman Translation Movement in the Early Eighteenth Century. In *Europa und die Türkei im 18. Jahrhundert – Europe and Turkey in the 18th Century*, Barbara Schmidt-Haberkamp (ed.), 457–472. Göttingen: V&R unipress, Bonn University Press, 2011.

Rashed, Marwan. Les marginalia d'Aréthas, Ibn al-Ṭayyib et les dernières gloses alexandrines à l'"Organon". In *Scientia in margine: Études sur les marginalia dans les manuscrits scientifiques du Moyen Âge à la Renaissance*, Charles S. F. Burnett and Danielle Jacquot (eds.), 57–73. Geneva: Droz, 2005.

Rashed, Roshdi. Notes sur la version arabe des trois premiers livres des Arithmétiques de Diophante, et sur le problème 1.39. *Historia Scientiarum* 4, no. 1 (1994): 39–46.

Rescher, Nicholas. *The Development of Arabic Logic*. Pittsburgh: University of Pittsburgh Press, 1964.

Roper, Geoffrey (ed.). *World Survey of Islamic Manuscripts*. London: Al-Furqan Islamic Heritage Foundation, 1992–1994.

Roper, Geoffrey. The History of the Book in the Muslim World. In *The Oxford Companion to the Book*, Michael F. Suarez and Henry Ruxton Woudhuysen (eds.), section 38. Oxford: Oxford University Press.

Şahin, Naim. Türk Mantıkçıları. *Selçuk Üniversitesi Türkイヤt Araştırmaları Dergisi* 1, no. 17 (2005): 343–354.

Saliba, George. *Islamic Science and the Making of the European Renaissance*. Cambridge (MA): The MIT Press, 2007.

Schoeler, Gregor. Text und Kommentar in der klassisch-islamischen Tradition. In *Text und Kommentar*, Jan Assmann (ed.), 279–292. Munich: Wilhelm Fink, 1995.

Şeşen, Ramaḍān. *Muḥṭārāt min al-Maḥṭūṭāt al-‘Arabiya al-‘Nādīra fī Maktabāt Turkiyā*. Istanbul: Waqf al-Abḥāṭ li-l-Tārīḥ wa-al-Funūn wa-al-Taqāfa al-‘Islāmīya, 1997.

Sirat, Colette. *Hebrew Manuscripts of the Middle Ages*. Cambridge (UK): Cambridge University Press, 2002.

Sirat, Colette and Marc Geoffroy. *L'original arabe du Grand Commentaire d'Averroès au "De Anima" d'Aristote*. Paris: J. Vrin, 2005.

Sorabji, Richard (ed.). *Aristotle Transformed: The Ancient Commentators and Their Influence*. London: Duckworth, 1990.

Sorabji, Richard. *The Philosophy of Commentators 200–600 AD: A Sourcebook*, vol. 1: *Psychology*, vol. 2: *Physics*, vol. 3: *Logic and Metaphysics*. London: Duckworth, 2004.

Sorabji, Richard (ed.). *Aristotle Re-Interpreted: New Findings on Seven Hundred Years of the Ancient Commentators*. London: Bloomsbury, 2016.

Street, Tony. Abū l-Barakāt al-Baġdādī and the Traditions of Arabic Logic. *Studia graeco-arabica* 11, no. 2 (2021): 41–66.

Tarlaži, Caterina. The Latin Tradition of Studying Porphyry's "Isagoge", ca. 800–980: A Working Catalogue of Manuscripts, Glosses and Diagrams. *Archives d'Histoire Doctrinale et Littéraire du Moyen Âge* 87 (2020): 7–42.

Teeuwen, Mariken. Marginal Scholarship: Rethinking the Function of Latin Glosses in Early Medieval Manuscripts. In *Rethinking and Recontextualizing Glosses: New Perspectives in the Study of Late Anglo-Saxon Glossography*, Patrizia Lendinara, Loredana Lazzari, and Claudia Di Sciacca (eds.), 19–37. Porto: Fédération Internationale des Instituts d'Études Médiévales, 2011.

Teeuwen, Mariken. Writing in the Blank Space of Manuscripts: Evidence from the Ninth Century. In *Ars Edendi Lecture Series*, vol. 4, Barbara Crostini, Gunilla Iversen, and Brian Møller Jensen (eds.), 1–25. Stockholm: Stockholm University Press, 2016.

Trizio, Michele. Reading and Commenting on Aristotle. In *The Cambridge Intellectual History of Byzantium*, Anthony Kaldellis and Niketas Siniossoglou (eds.), 397–412. Cambridge (UK): Cambridge University Press, 2017.

Verboon, Annemieke. The Medieval Tree of Porphyry: An Organic Structure of Logic. In *The Tree: Symbol, Allegory and Structural Device in Medieval Art and Thought*, Andrea Worm and Pippa Salomis (eds.), 83–101. Turnhout: Brepols, 2014.

Wisnovsky, Robert. The Nature and Scope of Arabic Philosophical Commentary in Post-Classical (ca. 1100–1900 AD) Islamic Intellectual History: Some Preliminary Observations. In *Philosophy, Science and Exegesis in Greek, Arabic and Latin Commentaries*, vol. 2, Peter Adamson, Han Baltussen, and Martin William Francis Stone (eds.), 149–191. London: Institute of Classical Studies, School of Advanced Study, University of London, 2004.

Wisnovsky, Robert. Avicenna's Islamic Reception. In *Interpreting Avicenna*, Peter Adamson (ed.), 190–213. Cambridge (UK): Cambridge University Press, 2013.

Yates, Frances A. *The Art of Memory*. London: Routledge & Kegan Paul, 1996.

