THE UNIVERSITY OF CHICAGO

ASTROLOGY IN THE SERVICE OF THE EMPIRE:
KNOWLEDGE, PROGNOSTICATION, AND POLITICS AT THE OTTOMAN COURT,
1450s–1550s

A DISSERTATION SUBMITTED TO
THE FACULTY OF THE DIVISION OF THE HUMANITIES
IN CANDIDACY FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

DEPARTMENT OF NEAR EASTERN LANGUAGES AND CIVILIZATIONS

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CHICAGO, ILLINOIS
AUGUST 2016
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Abstract

This dissertation explores the intellectual, cultural, and political history of knowledge in the late-medieval and early modern Ottoman context by examining the fifteenth-and sixteenth-century Ottoman astrological corpus. This corpus consists primarily of taqwīms (almanac-prognostications), occasional horoscopes, textbooks imparting astrological principles, and the examples of the zij literature written in Persian and Ottoman Turkish. This dissertation argues that exploring hitherto neglected astrological sources and visiting the lives of hitherto marginalized astral experts (munajjims) provides important insights into the intersecting dynamics of science, politics, and culture in the late-medieval and early modern Ottoman and Islamicate culture.

This study consists of three major parts, each undertaken with a combination of different historiographical approaches. The first part (Chapter 1) examines the intellectual and cultural history of astrological practice in the late-medieval and early modern Islamicate culture. I argue that contrary to the scholarly convictions in the historiography of Arabic science, astrology retained its prestigious status as a learned discipline with complex astronomical and mathematical underpinnings. The heightened interest during this period in the eastern Islamic lands in conducting observational enterprises and updating the available celestial data in the astronomical tables was inextricably related to the need for undertaking more accurate practice of astrology.

The second part (Chapter 2 and Chapter 3) of the dissertation focuses on the social history of munajjims in the Ottoman realm and tries to understand the complex social and patronage dynamics within which they functioned. By tracking their career trajectories from their
vocational training to professional service, this part addresses several questions about the contents, mechanisms, and institutional structures of learning and practicing astrologically valid knowledge.

The third, and the last, part (Chapter 4 and Chapter 5) examines in a detailed fashion the personal and political implications of the ever-changing textual contents and constituents of almanac-prognostications (*taqwīm*) and other occasional horoscopes. By documenting the political significance and public recognition of astrological prognostications, this part demonstrates the ability of often-marginalized astrological texts to provide surprising complementary details about the early modern Ottoman political culture.
Introduction—The Study of “Wretched Subjects” in the Early-Modern Ottoman History

In 1950, George Sarton, who is usually considered the true founder of the modern academic discipline of the history of science, wrote a brief review of a book on Mandaean astrology. Reflecting the general scholarly biases of his time, Sarton dismissed the work as a “wretched collection of omens, debased astrology and miscellaneous nonsense ultimately derived from Arabic, Greek, Persian and of all the superstitious flotsam of the Near East.”¹ For Sarton, modern historical scholarship should not take seriously the astrological and cognate divinatory texts, unless they are instrumentally used to illustrate the progress of human civilization. For instance, in his own three-volume magnum opus, Introduction to the History of Science, Sarton justified the reasons he had to refer in his study to astrology and other “intellectual delusions” by saying that it is not possible to outline “the progress [of humanity] without giving … a brief account of the intellectual delusions, which often delayed our advance or threatened to sidetrack it.”²

No later than a year after Sarton published his book review, another important historian of science Otto Neugebauer, himself the leading authority on ancient mathematics and astronomy, wrote a one-page long reply to Sarton under the title “The Study of Wretched Subjects.” In his short but influential reply Neugebauer condemned his colleague’s stance and

¹ George Sarton and Frances Siegel, “Seventy-Sixth Critical Bibliography of the History and Philosophy of Science and of the History of Civilization,” Isis 41/3-4 (1950), 328-424, these words are found on page 374. The work reviewed by Sarton was Ethel Stefana Drower’s study entitled “The Book of the Zodiac: Sfar Malwa’sia.”
² George Sarton, Introduction to the History of Science, v. 1 From Homer to Omar Khayyam (Baltimore: The Williams and Wilkins Company, 1927).
pointed out the importance of studying these texts, which, he wrote, provide “an insight into the daily life, religion and superstition, and astronomical methods and cosmogonic ideas” of individuals living in the past. For Neugebauer, Sarton’s words destroy the very foundations of historical and philological studies, that is, “the recovery and study of the texts as they are, regardless of our own tastes and prejudices.”

Although it is difficult to say that Neugebauer’s insightful remarks have decisively won the battle in modern scholarship, over the last few decades a substantial amount of literature has accumulated especially in European historiography, acknowledging the significance of astrological sources for historical purposes. Since astrology, as a focal point of medieval and early modern worldview, had repercussions in a wide array of contexts ranging from social and political to intellectual and cultural, different studies have highlighted diverse aspects to which the study of astrological practice and textual, as well as visual artifacts could be applied. Several studies have examined, for instance, the courtly interest in astrology from the perspective of the political and ideological claims of medieval and early-modern dynasties. Historians of science scrutinized the influence of astrological concerns and activities on the development of new astronomical theories and instruments. Cultural and intellectual historians have explored the

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4 While the literature on the topic is vast, I find the following monographs useful due to their relevance with regard to the questions about the courtly patronage of astrology in the early modern Ottoman context: Hillary M. Carey, Courting Disaster: Astrology at the English Court and University in the later Middle Ages (New York: St. Martin’s Press, 1992); Monica Azzolini, The Duke and the Stars: Astrology and Politics in Renaissance Milan (Cambridge, Mass.: Harvard University Press, 2013); Darin Hayton, The Crown and the Cosmos: Astrology and the Politics of Maximilian I (Pittsburgh, Pa.: University of Pittsburgh Press, 2015).
5 For the role of astrological preoccupations in Copernicus’ scientific endeavors, see: Robert S. Westman, The Copernican Question: Prognostication, Skepticism, and Celestial Order (Berkeley: University of California Press, 2011). The same also applies for Kepler, another
complex social and intellectual dynamics underlying the scientific enterprises of past astrologers and their professional careers.\(^6\) Many social and religious historians have delved into the heated debates among the learned individuals of the medieval and early modern times as regards to the epistemological validity and religious permissibility of astrology.\(^7\) The role accorded to the astrological theory and practice within the broader religious and apocalyptic discussions of the late medieval and early modern European world has also received substantial scholarly consideration.\(^8\) Last but not least, the ways through which astrological symbolism was visually expressed have grasped the attention of art historians.\(^9\)

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\(^7\) For a compact analysis of the conflicting views of some of the leading Renaissance thinkers, see: Steven Vanden Broecke, *The Limits of Influence: Pico, Louvain, and the Crisis of Renaissance Astrology* (Leiden: Brill, 2003).


In the Ottoman, and to a certain extent Islamic studies, however, the old Sartonian reluctance has dominated the field, preventing scholars from recognizing astrology as a legitimate object of historical study, and astrological texts as valuable historical documents. This modern scholarly disdain has several reasons, the foremost of which is the “embarrassment factor” that pushes researchers, especially the historians of science and intellectual historians, to pass over astrological materials in silence, lest these texts and documents reproduce the Orientalist perceptions as regards to the overall incompatibility of exact, rational sciences with Islamic doctrines.10 Ever since the late nineteenth century when French orientalist Ernest Renan gave his controversial lecture “L’islamisme et la Science” in which he argued that Islam is inherently irrational and essentially incapable of producing real “science”, “Muslim” scholars and modern historians of “Arabic” sciences have gone to great lengths to disprove this line of thinking.11 Although the scholarship that has pointed out the global importance of the “scientific” achievements attained in the Islamicate past, especially in the so-called post-classical era, is a welcome development that helps unseat the established misperceptions and Orientalist biases about the perennial question of science vs. religion (or read Islam), the excessive emphasize upon the “legitimate sciences” —legitimate in the sense of modern, positivist, progressive scientific standards— has inevitably led to the marginalization of astrological materials in relevant historical studies.

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With respect to the trends in modern Ottoman studies, the dearth of scholarly interest in Ottoman astrological materials is not surprising indeed, given the fact that throughout the almost century-long history of modern Ottoman historiography, cultural and intellectual history as well as the history of science have attracted much less attention as opposed to the political, social, and economic history.\(^\text{12}\) Up until October 2015 the only attempt to produce a general survey book on the history of science in the Ottoman world was that of Adnan Adıvar’s brief survey, *La Science chez les Turcs Ottomans*, which he first published in 1939 with a certain teleological bent characteristic of the time.\(^\text{13}\) It is true that since the publication of Adıvar’s book, many individual contributions have appeared in the history of astronomy, mathematics, medicine, geography, or applied sciences; and from the mid-1980s on, thanks to the collaborative research projects coordinated by the Research Centre for Islamic History, Art, and Culture (IRCICA) in Istanbul, a series of reliable bio-bibliographical catalogs have been produced to inventorize all the available scientific manuscripts from the Ottoman period.\(^\text{14}\) In all these scholarly efforts, however,


\(^{13}\) Adnan Adıvar, *La Science chez les Turcs Ottomans* (Paris: Maisonneuve, 1939). The work was translated in the early 1940s into Turkish with substantial additions. See: Adnan Adıvar, *Osmanlı Türklerinde İlim* (İstanbul: Maarif Matbaası, 1943). In October 2015, Miri Shefer-Mossensohn published the second derivative work—with limited use of new primary sources—on the Ottoman scientific enterprises. See: Miri Shefer-Mossensohn, *Science among the Ottomans: The Cultural Creation and Exchange of Knowledge* (Austin, TX: University of Texas Press, 2015). In between the works of Adıvar and Shefer-Mossensohn, one may also consider consulting Ekmeleddin İhsanoğlu’s collected essays in *Science, Technology, and Learning in the Ottoman Empire* (Aldershot, UK: Ashgate Variorum, 2004).

astrology and sister divinatory sciences have received the minimum possible scholarly attention. It is highly telling that in his preface to the latest issue of the IRCICA’s catalog series, which was published in 2011 with the aim of introducing Ottoman astrological lore, Ekmeleddin İhsanoğlu expressed, as the editor of the catalogue series, a late apology for having deliberately dismissed such a rich body of astrological materials for so long:

“While we were preparing the first two volumes on astronomy we had chosen to leave aside the works on astrology on account of the latter generally being considered as an ‘occult science.’ This was due to our understanding of the sciences at the time: our intention was to exclude astrology from the body of sciences that are based on observation and experiment and to consider it a ‘pseudo-science.’ But quite a long time passed since then, and given the maturity presently reached in history of science studies we believe that it was not the right choice and we are compensating for it now as we complete the series.”

The scientific activities among the Ottomans, including the so-called “pseudo-scientific” practices of astrology and divination, did not only escape the attention of the Ottoman historians. The broader and more established field of the history of science, learning, and knowledge in the past Islamic societies has also generally underestimated the Ottoman scientific enterprises at the expense of underlining the “Arabic” scientific production during the so-called “classical” era or the “Golden Age.” Although in the past two decades a number of important works have appeared that are critical of the infamous “decline paradigm,” the narrative that still prevails —maybe less so in the current academic environment than in more popular media— is the one recounting that

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"Literature during the Ottoman Empire" (in 2004) in two volumes, "History of the Literature of Natural and Applied Sciences during the Ottoman Empire" (in 2006) in two volumes, "History of the Literature of Medical Sciences during the Ottoman Empire" (in 2008) in four volumes, and "History of Ottoman Astrology Literature" (in 2011) in one volume.

15 Osmanlı Astroloji Literatürü Tarihi ve Osmanlı Astronomi Literatürü Tarihi Zeyli/History of Ottoman Astrology Literature (from now on OASTLT), ed. Ekmeleddin İhsanoğlu (İstanbul: IRCICA, 2011), xxvii.
roughly between the ninth and twelfth centuries, the intellectual and scientific activities in the
Islamic world peaked and yielded the most important scientific achievements of the Islamic
civilization, and that this scientific vitality and productivity was gradually replaced, from Ghazālī
(d. 1111) onwards, by religious conservatism and traditionalism.\footnote{For a succinct evaluation of the problems of the decline paradigm in modern studies on the
history of science in the Islamic context, see: Sonja Brentjes, “The Prison of Categories—

Interesting enough, the available scholarship on the history of astrology in the pre-
modern Islamic world does not escape the established Golden Age rhetoric. Over the past few
decades, thanks especially to the meticulous efforts of David Pingree, Richard Lemay, Charles
Burnett, Michio Yano, and Keiji Yamamoto, some of the major texts of Islamic astrological
canon such as the works of Mashāʿīlāḥ (d. 815), Abū Maʿṣhar (d. 886), al-Qābīṣī (d. 967), and
Kūshyār (d. 1029) have been edited, annotated, and translated into English or Latin.\footnote{See the Bibliography for the compete list of edited-published astrological sources.}
Moreover, David Pingree has shed much light upon the transmission of astrological theories and concepts
from the Indian, Sassanian, and Hellenistic traditions into the early Islamic realm.\footnote{David Pingree, “Indian Influence on Sassanian and Early Islamic Astronomy and Astrology,”
(Albany, NY: State University of New York Press, 1975), 5-14; \textit{idem.}, “From Alexandria to
Tradition} 8 (2001), 3-37.} The
controversial status of astrologers in medieval Islamic society, their courtly presence and
services for their clients have also been treated in a few case studies that I will discuss in greater
detail in the third chapter. However, with their implicit focus upon “Arabic” astrological sources
produced in the so-called “classical” period of Islamic history, these valuable contributions either
intentionally or accidentally reproduce the narrative of the “Golden Age.” Even the encyclopedic works of Manfred Ullmann and Fuat Sezgin on the major astrological sources in the Islamic past easily manifest that the production of astrologically significant materials after the twelfth century in languages other than Arabic is not necessarily deemed worthy of examination.\(^{19}\)

Reproducing the “Golden Age” rhetoric is not the only pitfall of current scholarship. The astrological texts that have been edited and studied so far seem mostly to be textbooks that impart the basic theoretical knowledge about the universal rules and principles of the nature and characteristics of the planets, zodiacal signs, and other celestial phenomena. We should not forget, however, that astrology was an applied science that drew on sophisticated astronomical and mathematical knowledge, and was put in use for concrete purposes. Therefore these textbooks, albeit their immense value in regard to their content, present very little on how astrology was actually practiced for specific occasions. For that purpose one should look at a wide array of texts ranging from the \( \textit{zijes} \) (astronomical handbook of tables) that provided necessary mathematical-astronomical information for making astrological calculations, to other and more context-dependent forms of astrological production like annual almanac-prognostications (\( \textit{taqwı̂ms} \)) and occasional horoscopes.\(^{20}\) These types of sources are crucial, because they illustrate how astrology was put into concrete practice in a particular milieu; as such they are by nature responsive to and representative of their immediate historical, political, and cultural contexts. Moreover, these texts provide invaluable information for inquiries into the


\(^{20}\) Relevant information on modern studies about the \( \textit{zijes} \) is given in the first chapter where I will discuss in greater detail the importance of these texts for astrological calculations.
cross-cultural scientific exchanges and developments, as they document which astronomical sources (zījes) and astrological theories were utilized by different munajjims at different times.

I should note here that in terms of the availability of extant astrological materials from diverse genres, historians from other subfields of the Islamic studies are not as fortunate as their Ottomanist counterparts. The amount of taqwīms (almanac-prognostications), occasional horoscopes, and manuals for astrological practice currently held in major manuscript libraries in Turkey and elsewhere outnumber any set of extant astrological materials from other parts and periods of the Islamic past. For example the best bibliographical sources on surviving Ottoman taqwīms, IRCICA’s Osmanlı Astroloji Literatürü Tarihi and the two volumes of Kandilli Rasathanesi El Yazmaları Kataloğu, list more than 200 almanac-prognostications composed during the period 1421-1850.21 This list is far from complete, as many taqwīms have been certainly lost altogether and/or some additional ones doubtless survive undiscovered within obscure collections. IRCICA’s same catalogue also locates a handful of nativities produced for members of the Ottoman house. We should add to these manuscript sources related archival documents now kept primarily in the Prime Ministry Ottoman archives (Başbakanlık Osmanlı Arşivleri), and to a lesser extent in the Topkapı Palace Museum Archive (Topkapı Sarayı Müzesi Arşivi). These archival documents include petitions written by the court munajjims, registers of expenses listing their salaries, and brief astrological memos delivered by astrologers at the behest of different parties from the ruling elites.

21 Günay Kut, Kandilli Rasathanesi el yazmaları : Boğaziçi Üniversitesi Kandilli Rasathanesi ve Deprem Araştırma Enstitüsü astronomi, astroloji, matematik yazmaları kataloğu 1 – Türkçe Yazmalar (İstanbul: Boğaziçi Üniversitesi Yaynevi, 2007); Ibid., Kandilli Rasathanesi el yazmaları : Boğaziçi Üniversitesi Kandilli Rasathanesi ve Deprem Araştırma Enstitüsü astronomi, astroloji, matematik yazmaları kataloğu 2 – Arapça ve Farsça Yazmalar (İstanbul: Boğaziçi Üniversitesi Yayınevi, 2013); OASTLT.
In terms of the distribution of astrological sources across time, the quantity and variety of available materials significantly increases from the late seventeenth century onwards but there is still a considerable amount of surviving texts and documents from the period covered throughout this dissertation. One may question here why I chose this particular period while the source pool is obviously much deeper and wider for later centuries.

It is indeed not arbitrary to select 1450s and 1550s as the two ends of the chronological scope of this project. The period stretching from the Ottoman conquest of Constantinople in 1453 to the eventual “classicization” of the imperial bureaucratic organization and the emergence of a distinctive “Ottoman” culture by the 1550s was the crucial formative stage for the structuring of the empire in the spheres of political, ideological, cultural, and intellectual life. This process, however, was not a linear one. On the contrary, it was marked by a “multiplicity of competing or contradictory cultural and social ideals and assumptions” that were constantly shaped and reshaped by the pressing political and religious dynamics of the time.²² Meḥmed the Conqueror’s (r. 1444-46, 1451-1481) attempts to fashion an imperial identity and culture upon the conquest of Constantinople, the fierce succession struggle between his sons Cem (d. 1495) and Bāyezīd II (r. 1481–1512), the alarming—in the eyes of contemporary Ottoman ruling elites—rise of the Safavids as the ultimate political embodiment of the widespread messianic currents, the sudden territorial expansion during the reign of Selīm I (r. 1512-1520) toward the traditionally Islamic territories, and the grand religio-political ambitions of Süleymān to establish

²² What Cornell Fleischer has proposed for describing the vibrancy and significance of the first three decades of Süleymān’s reign can in fact be easily extended into this century-long period starting from the Ottoman conquest of Constantinople. See: Cornell H. Fleischer, “The Lawgiver as Messiah: The Making of the Imperial Image in the Reign of Suleyman,” in Soliman le magnifique et son temps, ed. Gilles Veinstein (Paris: La Documentation Française, 1992), 159-177.
universal rule, particularly identifiable during the first half of his reign, all brought novel issues and problems, leaving their traces upon contemporary history writing, epistolographic documents, legal texts, hagiographical accounts, literary works, and an array of astrological and prognostic materials.\footnote{23}{For the impact upon history writing, see: Kaya Şahin, Empire and Power in the Reign of Süleyman: Narrating the Sixteenth-Century Ottoman World (New York: Cambridge University Press, 2013); for legal writings, see: Snjezana Buzov, “The Lawgiver and His Lawmakers: The Role of Legal Discourse in the Change of the Ottoman Imperial Culture.” (Ph.D. Dissertation, University of Chicago, 2005).} This period also coincided with the growing encroachment, especially in the Eastern Islamic domains, of messianic discourse into the political, intellectual, and religious life that was often validated by the principles of occult sciences, particularly the science of the letters. Concerning the role of this ideological trend in Timurid, Ottoman, Safavid, and Mughal political and cultural contexts, the last decade has witnessed the publication of several important studies.\footnote{24}{One of the pioneering studies is that of Jean Aubin’s “Le mécénat timouride à Chiraz,” Studia Islamica 8 (1957), 71-88. The rest is mostly from the last decade: Cornell H. Fleischer, “Mahdi and Millenium: Messianic Dimensions in the Development of Ottoman Imperial Ideology,” in The Great Ottoman-Turkish Civilization. Vol. 3, Philosophy, Science and Institutions, ed. by Kemal Çiçek (Ankara: Yeni Türkiye, 2000), 42-54; idem., “Seer to the Sultan: Haydar-i Remmal and Sultan Süleyman,” in Cultural Horizons. A Festschrift in Honor of Talat S. Halman vol. 1 (New York: Syracuse University Press, 2001), 290–300; idem., “Ancient Wisdom and New Sciences: Prophecies at the Ottoman Court in the Fifteenth and Early Sixteenth Centuries,” in Falnama: The Book of Omens ed. by Massumeh Farhad and Serpil Bağcı (Washington: Smithsonian Institution, 2009), 231-245; İhsan Fazlıoğlu, “Forcing the Boundaries in Religion, Politics and Philosophy-Science in the Fifteenth Century” (Paper presented at the Conference Before the Revolutions: Religions, Sciences and Politics in the Fifteenth Century, Berlin, January 13-15, 2005); Evrim Binbaş, “Sharaf al-Dīn ‘Alī Yazdī (ca. 770s-858/ca. 1370s-1454): Prophecy, Politics, and Historiography in Late Medieval Islamic History.” (Ph.D. Dissertation, The University of Chicago, 2009); Azfar Moin, The Millennial Sovereign: Sacred Kingship and Sainthood in Islam (New York: Columbia University Press, 2012); Matthew Melvin-Koushki, “The Quest for a Universal Science: The Occult Philosophy of Şā‘īn al-Dīn Turka Isfahani (1369-1432) and Intellectual Millenarianism in Early Timurid Iran.” (Ph.D. Dissertation, Yale University, 2012).} In this growing literature, this period is sometimes even defined as the “Messianic Age” that
hosts messiahs and mystics, and “comprehends in its various iterations everything from metaphysics, cosmogony to numerology, astrology and magic.”

It is true that Islamic history is replete with periods of millenarian activity and heightened apocalyptic expectations. However, the fifteenth-and early-sixteenth-century chapters of this history are quite unprecedented, because this transitional era that follows the devolution of the Abbasid and Chingizid models of rule and preluding the consolidation of the “territorial” Muslim empires of the Ottomans, Safavids, and Mughals provided a suitable political and cultural environment for the messianic movements to gain a stronger foothold. Moreover, the turn of the tenth century Hijra by 900 (1494/1495 in Common Era) might have also intensified the expectations about the imminence of the end of the first Islamic millennium, and thus the end times.

Despite the current promising status of the studies on the impact of messianic claims couched in occult scientific discourse, modern scholars may rush either to stretch their claims without necessarily drawing upon substantial empirical evidence, or to put everything in the same basket without paying required attention to important epistemological nuances between different (occult) “scientific” practices. Azfar Moin, for instance, says at the beginning of his study that this was a period in which “future was as important as the past, divination as important as genealogy, and astrology as valuable as history.”


For the importance of the fifteenth century in term of political experimentation and ideological innovation, see: John E. Woods, *The Aqquyunlu: Clan, Confederation, Empire*, revised and expanded edition (Salt Lake City: The University of Utah Press, 1999), 1-10.

points out the urgency of taking astrological sources seriously, the author does not examine in his own study the extant Safavid and Mughal astrological sources, and relies almost exclusively upon contemporary chronicles, literary writings, and visual materials where one can relatively easily find astral/cosmological references.

I do not intend to undermine here the importance of non-astrological texts to appraise the popular dissemination and political adaptation of astrological theories and metaphors. Quite the contrary, these non-technical texts are crucial to measure the extent of the permeation of astrological theories into more popular variants of the writing culture. For instance, in his Risālat al-hudā, Muḥammad Nūrbakhsh (d. 1464) deployed the views of Ptolemy and Naṣīr al-Dīn Ṭūsī (d. 1274) to bolster his claim of the Mahdi status.29 The ceremonies at the court of Mughal emperor Humāyūn (r. 1530-1540; 1555-1556) were organized based on astrological/cosmological principles.30 Many rulers in the post-Timurid era including some of the Ottoman sultans were touted, on the basis of astrological principles, as the șāḥib-qirān (lord of


the auspicious conjunction) and Mahdī of end times. The narratives of the dreams of sovereignty circulating at the time in both oral and written forms were full of astral imagery, such as Fażlullāḥ Astarābdī’s (d. ca 1394) famous dream of the seven stars or the well-known dream of ʿOṣmān Ghāzī, the eponymous founder of the Ottomans, who saw the full moon rising from the bosom of his shaykh and inclining towards his own.

Notwithstanding these valuable non-technical sources into which astrological concepts and discussions easily penetrated, it is my contention that without exerting an equal effort to examine the surviving astrological and other prognostic materials, such claims about the so-called “the science of the millennium,” which, according to Moin, encouraged individuals to speculate “astrological” (and other “rational”) techniques to predict cosmic changes remain hyperbolic. We should therefore endeavor to prove whether the astrological materials produced and/or circulated at the time were really informed by, and did further promote, these broader messianic and millenarian currents.

This was in fact the initial question that had inspired me to explore fifteenth and sixteenth-century Ottoman astrological materials. I began to explore these texts with a view

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toward examining their function vis-à-vis the contemporary millenarian and messianic debates. Having completed extensive research on surviving astrological materials and documents kept in several manuscript libraries and archival sites in Turkey and Europe, I reached the decisive conclusion that the Ottoman astrological sources I examined rarely echo millenarian expectations and messianic claims. There are, of course, occasional remarks from astral experts, eulogizing the reigning Ottoman sultans as the messianic savior (Mahdī) of the time and the šāhib-qirān of the age, but except for very rare cases, these sycophantic remarks are not accompanied by detailed justifications of the astrological reasoning. What is channeled through these astrological materials, especially through the annual almanac-prognostications (taqwīm), is rather an overwhelming sense of order designed by Divine power and orchestrated by the reigning sovereign.

Despite the fact that available Ottoman astrological materials fall short of revealing millenarian and messianic debates, these sources are still invaluable for providing colorful insights into the political, cultural, and intellectual/scientific realities of the time. In fact, the possibility of weaving together such diverse historiographical coordinates is the most inspiring and promising aspect of studying these hitherto neglected astrological materials and visiting the hitherto marginalized lives of these astral experts (munajjims).

**Sources and Their Problems**

The sources perused throughout this dissertation can be grouped into two main categories: astrological and non-astrological sources. The astrological corpus includes taqwīms (annual almanac-prognostications), extant horoscopes in the form of manuscripts or archival
memos and reports produced for the occasions of the birth of a sultan, construction of an imperial complex, or commencement of a military campaign, and other relevant texts through which astrologically valid information was conveyed. This last group specifically includes astrological textbooks, the zīj literature, and treatises on astronomical instruments utilized by munajjims to equip themselves with the necessary skills and knowledge for practicing astrology.

The overwhelming majority of these astrological texts remain in manuscript form and some of them have not even been properly catalogued. In view of the heavy reliance of this study on unpublished manuscript sources, I should say that there is an immediate need for scholarly editions of several works cited throughout this dissertation. My project is in fact only a modest attempt to provide for future studies a useful inventory of available materials and a number of working assumptions regarding the possibilities these texts present modern historians.

Among these extant materials, taqwīms stand as the genre par excellence for the production and presentation of learned astrological knowledge. To a modern reader, a taqwīm may sound nothing different than a calendar, but one should resist understanding medieval and early modern taqwīms as such. They are rather almanacs produced on a yearly basis to systematically combine astronomical, astrological, and calendric information. The detailed examination and discussion of the textual components of the taqwīms will be provided in the fourth chapter but it should be noted from the outset that these texts were routinely produced by astral experts, around the time of the solar year-transfer, that is, the Spring Equinox and the beginning of the new solar year in early March. The almanac-maker (usually but not necessarily a munajjim) calculates, first, the degree of the ascendant (ṭāliʿ/horoscopus) at the particular
moment Sun completes its yearly rotation and enters the sign Aries. Counting on this degree, he determines other astrological variables and starts interpreting the fortunes of people from different social categories and of earthly affairs. These detailed predictions were followed by the laborious tabulation of astronomical, astrological, and calendric information for each solar month of the upcoming year. He would then place ephemeris tables to demonstrate the daily celestial positions, to mark the corresponding days in different chronology systems used at the time, and to write down astrological remarks for the overall fortunes of each month.

Although the earliest available textual example of an Ottoman taqwīm dates back to the time of Mehmed I (r. 1413-1421), it should be noted that taqwīm was an older and universal genre regularly practiced in the Medieval Islamic society. In addition to those texts surviving — albeit limited— from the pre-Ottoman Islamic world, there are numerous references to the phenomenon from at least tenth century onwards. Yet the surviving Ottoman corpus outweighs all other sets of extant taqwīms from different Islamic societies, and thus coalesces a substantial body of material that enables us to systematically examine its structural development and functioning from the late fifteenth century on.

The existence of this rich corpus of source material is not completely unknown to modern scholars. In the 1950s and 60s, Osman Turan and Nihal Atsız published certain sections, particularly the historical chronology tables of some of the mid-fifteenth century Ottoman taqwīms. As prominent Turkish scholars of the positivist-nationalist historiography, they were of the opinion that these taqwīms were full of astrological credulity, thus had no historical value.

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34 The ascendant (ṭāli) is the point of the ecliptic rising on the eastern horizon at the given moment. See: David King and Toufic Fahd, “al-Ṭāliʿ,” *EI*, Online version.
35 See Appendix C for the complete list.
except for the parts devoted to the narration of universal history.\textsuperscript{36} That was the justification they used when explaining why they published only the sections on chronology and ignored the remaining portions, which usually constituted more than 95% of these accounts.

The selective publication of the chronology sections of earlier \textit{taqwīms} had two negative consequences in the scholarship. First, by giving the impression that \textit{taqwīms} were produced only to provide chronological and calendrical information, these studies allowed for the rich astrological components of these texts to go unnoticed. Secondly and more importantly, they left a false and ahistorical impression that these standard chronology tables were incorporated into all extant \textit{taqwīms}. However, the systematic investigation of \textit{taqwīms} from the fifteenth to the seventeenth centuries clearly reveals that these chronological lists, and several other sub-sections once frequently used in earlier \textit{taqwīms}, ceased to exist identifiably from the 1500s onwards. This change in the structure of the \textit{taqwīms}, which was also accompanied by other sorts of variation in the language, size, and even \textit{mise-en-page}, provides a unique opportunity to historicize these documents and discuss the wider cultural and ideological issues of the time that had repercussions upon the changing tastes and dynamics of \textit{taqwīm} writing.

In addition to tracing the changes in the structural elements of the \textit{taqwīms}, tracking the deviations in the contents, expressions, and even the tone of detailed astrological predictions also helps us historicize these documents. It is true that as a general rule these predictions are couched in very generic narrative elements with the heavy use of impersonal pronouns, platitudes, and

repetitive remarks. Therefore it is difficult, and precarious indeed, to haphazardly attribute each and every prediction to an actual historical occasion. What I would like to offer as a sound methodology to deal with the problems caused by repetitive remarks and boilerplate narrative progression is to treat taqwīms as a cluster of texts and read them in juxtaposition with one another. Comparisons made between the taqwīms written by a single author across time, or between the taqwīms written for a single year by different authors can help us identify more accurately the deviating elements in these predictions. Another comparative method that can provide us even more precise answers about the real value and public recognition of the astrological predictions is reading them in parallel with contemporary historical narratives to detect whether the prognostications expressed in almanacs really influenced contemporary discourse or even manipulated certain political and imperial decisions. As will be detailed in Chapter 4, the Ottoman ruling elites took these astrological predictions seriously to the extent that the remarks of the munajjims on taqwīms could call off a campaign or determine the timing of an open battle.

***Taqwīms are also crucial for illustrating the scientific horizons of astral experts, as they reveal which specific astronomical tables and/or astrological sources were consulted by the munajjims for undertaking astrological calculations. Unfortunately, many of the surviving taqwīms from the period bear no autograph; therefore it is not always possible to determine their authors. Moreover, relatively better-known munajjims during the time in question left too little autobiographical information that would have otherwise made it possible to fully reconstruct their scientific inspirations. Yet, through a systematic examination of references in often-anonymous taqwīms and other horoscopes as well as such circumstantial sources as book***
inventories from the period, one can clearly delineate the preferences of Ottoman astral experts and how they changed over time. This kind of knowledge is extremely valuable from the perspective of the history of science and social history of knowledge, which I will specifically visit in chapters 2 and 3 as part of my general discussion on munajjims’ vocational training and the impact of the post-thirteenth century Persian astral tradition on the formation of the Ottoman canon.

Last but not least, taqwīms allow for an investigation of how munajjims thought about their own craft. In the introductory passages preceding the astrological prognostications, munajjims often delved into a brief discussion on the epistemological limits of astrology. These authentic remarks will complement my discussion in the first chapter on the true place and epistemological status of astrological science in the late-medieval and early-modern Islamicate context.

Aside from almanac-prognostications, there are a few horoscopes from the period in question that were produced for such occasions as the birth of the sultan, the construction of an imperial building, or the start of a military campaign. Unfortunately, despite frequent references in contemporary sources to the prevalence of the practice, very few horoscopes have survived. This raises the question of whether the horoscopes produced for such specific occasions were deliberately destroyed upon their presentation in an effort to maintain a certain level of secrecy. The question is not entirely groundless; traces of such concern for secrecy can in fact be found among some extant Ottoman archival documents, which survived contra their authors’ explicit requests for their destruction. For example on one such occasion, Ḥaydar the geomancer reiterates à la Mission Impossible that the geomantic report he is sending to Süleymān to
confidentially inform the sultan of the potential calamitous activities of the Prince Bāyezīd (d. 1561) in cooperation with the Safavid ruler Shāh Tahmāsb (r. 1524-1576) should be destroyed or at least concealed immediately after reading.37

Yet it is difficult to argue that these privacy concerns hold true for all types of astrological production, some of which were not immediately confidential and significant. As for the problem of documentation one should also take into consideration the oral nature of astrological counseling. There are numerous examples of court munajjims, who were in close proximity to the rulers and other patrons, conveying their astrological interpretations verbally. Apart from certain implications in the Ottoman historical narratives as regards to the verbal character of astrological communications, the European historiography has unequivocally documented that astrological predictions were often expressed verbally, lest the written explanations fall in the hands of dangerous rival parties.38

Regarding the discussion on the relative scarcity of extant horoscopes and other confidential astrological reports from the period in question, it should also be noted that since early 2010s there has been an ongoing cataloging project at the Topkapı Palace Museum Archive to identify, classify, and digitize all the available loose documents (evrâk). When I was conducting my research in Istanbul in 2014-2015, only a few volumes of catalogs were mare ready that contained information on mostly eighteenth century documents. At the time I was

37 TSMA E. 1698: “saʾādetli Sultanumun mürvvetinâḏ asârinden söyle ricâ iderüm ki rižâ-yı haḳk için bu garib-i bî-kes ve bî-ḥâminâḏ aḥkâm remillerim bir kimesneye gösterneyüb mütâla a kıldûkda nîhân ve mâḥv idesiz ki bir kimesne ḥâvâle muṭṭaliʿ olmaya.”
38 Monica Azzolini, *The Duke and the Stars*. 4. Hillary Carey also points to the fact that most of the horoscopes are written without textual appendix and only as diagrams, hinting that they were probably expressed on the spot. See Hillary M. Carey, “Astrology at the English Court in the Later Middle Ages,” in *Astrology, Science, and Society: Historical Essays*, ed. Patrick Curry (Woolbridge: Boydell Press, 1987), 41-56.
conducting my research in Istanbul, the Topkapi Palace archive was not even open to researchers, but the directors, who knew my research interests, kindly shared with me a few interesting documents that they had recently chanced upon during their ongoing cataloging work. These documents include a couple of petitions written by anonymous munajjims at the time of Bāyezīd II, which I will occasionally refer to throughout the dissertation. The presence of these hitherto unknown documents is highly encouraging; it is an indication that the current scarcity of evidence about secret astrological and/or other prognosticative correspondences can be slightly rehabilitated in the near future when the information on all the available documents in the Palace archives is finally established with full precision.

In addition to taqwīms and extant horoscopes, I will also occasionally refer to the major examples of the post-thirteenth century Persian zīj literature, several treatises on astronomical instruments, and manuals imparting fundamental astrological teachings, all of which provide important details about both the real epistemological status of astrology in the period in question and the social history of the Ottoman munajjims’ training. The zīj literature is particularly useful and its candidness in revealing the astrological implications of celestial knowledge produced through the systematic study of the heavens will greatly help to understand the necessary scientific context in which taqwīms functioned. The zījes that will be particularly mentioned throughout the dissertation include: i) the Ilkhanid tables (Zīj-i Īkhānī) produced in the mid-thirteenth century by Naṣīr al-Dīn Ṭūsī and his collaborators as part of the brief observational enterprise at the Maragha observatory; ii) several commentaries and later editions of the Ilkhanid tables including the works of ʿAlī-Shāh Būkhārī (d. later than 1291), Shams al-Dīn Wābkanawī (d. 1320), Niẓām al-Dīn Nīsābūrī (d. 1328/9), or Jamshīd al-Kāshī (d. 1429); iii) Ulugh Beg
tables (Zīj-i Ulugh Beg or Zīj-i Jādīd-i Sūlṭānī) compiled in the mid-fifteenth century as the result of the systematic observation program at the Samarqand observatory, and iv) relatively minor attempts in both the Iranian and Ottoman world such as the zīj of Rūkn al-Dīn Āmulī (d. later than 1455) or that of Mevlānā Kūçek (d. later than 1478).

While taqwīms, horoscopes, and other technical texts funneling astrologically valid knowledge constitute the first group of sources that I define as “astrological materials”, the second group consists of non-astrological materials, including: i) archival registers of palace expenses where useful information about the salaries and professional status of court munajjims can be found; ii) contemporary chronicles, historical narratives, and biographical dictionaries that provide anecdotal evidence about the social and personal dynamics of astrological practice; and iii) books on the classification of sciences and select examples of the kalām literature in which a thorough discussion on the epistemological status of astrological knowledge can be found.

The Ottoman experience of astrological practice is unique in the sense that unlike other parts and periods of Islamic history where the existence of munajjims could only be reconstructed through unreliable anecdotal evidence the courtly presence and service of munajjims is documented in the Ottoman case on the basis of hard, archival evidence. This evidence is gleaned primarily from the registers of palace payments and budgets, some of which were already published thanks to the scholarly efforts of Ömer Lütfi Barkan and Halil Sahillioğlu. The earliest of such registers of payment that furnished information about a munajjim dates back to 1478, listing only one munajjim under the rubric of the loosely defined
müteferrika status. From the crucial period of Bāyezīd II’s reign—crucial in the sense of cultivating astrological knowledge and institutionalizing the patronage of the munajjims—we have a large register of gifts and payments recording the names of all individuals who received cash and/or other kinds of gift on various occasions. This register is generous enough for our purposes as it clearly documents the names of court munajjims and other astral experts presenting the court with the taqwīms. The same register also alludes to the status of their professional careers—whether listed under the müsāherehorān [monthly salaried officials] status or not—and makes evident the amount they received.

The use of these archival records is twofold. First, it is possible to create a prosopographical list of those munajjims tied to the Ottoman court during the period in question. Unfortunately, these archival records do not allow modern researchers to delve into the personal lives of the astral experts as they only provide information, if we are lucky, on their names, status, and salaries and/or gifts received. This information is still invaluable though; because one can combine this archival evidence with the information gleaned from manuscript sources to closely track the careers of, at least, certain munajjims. The second and more important use of


40 For the müsāherehorān see, Linda Darling, “Ottoman Salary Registers as a Source for Economic and Social History,” Turkish Studies Association Bulletin 14/1 (1990), 13-33. The accounts for the years 909 and 910 are already published. Ömer Lütfi Barkan, “İstanbul Saraylarına Ait Muhasebe Defterleri,” Belgeler IX/13 (1979), 1-380; Mustafa Açıkgöz, “II. Bayezid Devri İnamat Defteri (Muharrem-Zilhicce 910/Haziran-Mayıs 1504-1505)” (MA Thesis, Marmara University, 1995). Based upon this register İsmail Erünsal brought together all the poets and authors that received gifts upon presenting to the palace their most recent literary works. See: İsmail E. Erünsal, “Türk Edebiyatının Arşiv Kaynakları I: II. Bayezid Devrine Ait bir İnamat Defteri,” İÜEF Tarih Enstitüsü Dergisi 10-11 (1981), 303-347.
the archival evidence is that these documents scattered across different periods lucidly portray how the “office” of the court munajjims constantly underwent changes from the late-fifteenth through the mid-sixteenth century in terms of the number of personnel and the amount of their salaries. This provides substantial insights into the dynamics of patronage at the courts of different Ottoman sultans, a question I will particularly tackle in the third chapter.

Aside from the archival documents, I will occasionally have recourse to contemporary chronicles, biographical dictionaries, and other narrative sources to reconstruct the personal dynamics of astrological practice. Quite surprisingly, Ottoman narrative sources from the period in question provide very little anecdotal information concerning the lives of munajjims. First of all, there is no such source in the early-modern Ottoman literary culture that one may compare to the Faraj al-mahmūm of Ibn Ṭāwūs (d. 1266), a thirteenth-century biographical dictionary written specifically on the lives of munajjims, or the Chahār maqāla of Niẓāmī-i Arūḍī (d. later than 1156), who dedicates one of his four chapters to anecdotes solely about practicing munajjims. Although one can find frequent references, in the late-fifteenth and sixteenth-century Ottoman chronicles and historical narratives, to the munajjims’ calculation of astrologically auspicious moments, these brief remarks do not reveal the identity of these astral experts or imply any court intrigue they partook. Famous examples of the sixteenth-century

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Ottoman biographical dictionaries of scholars or poets such as Ṭaşköprizade’s (d. 1561) al-Shaqa’iq al-nu’māniyya fī ‘ulamā’ al-dawla al-’uthmāniyya, ‘Āşık Çelebi’s (d. 1572) Meşā’irü’s-ṣu‘arā’, or Laṭīfī’s (d. 1582) Tezkiretü’s-ṣu‘arā also furnish scant information on the lives of munajjims or other names involved in astral activity. While the tezkires of poets often provide more personal details, these collections by nature contain information only about those individuals that have composed poetry. Thus, except one or two cases, it is difficult to find in these sources useful information to reconstruct the lives and careers of the court munajjims.

Finally, for the discussion on the epistemological status of astrology in the eyes of contemporary learned individuals, which I will undertake especially in the first chapter, I will delve into numerous examples of the taṣnīf al-’ulūm (classification of the sciences) genre and a few select kalām texts produced in the late-medieval Turko-Persian intellectual context. The dominant narrative in the current scholarship resorts to a rather thick definition of astrology and tends to describe it as an unsophisticated occult craft and/or a folk practice of magic without necessarily taking into consideration the complex cosmological, astronomical, and mathematical underpinnings of learned astrological pursuits. There is in fact a rich literature on how astrologers were attacked and condemned —mostly by theologians and jurists— in medieval Islamic society. Despite the fact that these studies focusing upon the views of Ibn Sīnā (d. 1037), Ghazālī, Ibn Taymiyya (d. 1328), Ibn Qayyim al-Jawziyya (d. 1350), or Ibn Khaldūn (d. 1406) have contributed to our understanding of the arguments directed against the practice of astrology in the Islamicate world, they nevertheless fail to differentiate the vehement attacks toward astrologers, who were often charged with the alleged belief in astral determinism, from the more neutral, if not always tolerant, assessment of astrological/cosmological principles. The
perspective brought by some of the Ottoman sources including Ṭaşköprizade’s encyclopedic work, Miftāḥ as-saʿāda wa miṣbāḥ as-siyāda, or Mūʿeyyedzade’s (d. 1516) kalām text, al-Ḥawāshīʿ alā Sharḥ al-Mawāqif challenges this dominant narrative, which facilely assumes that traditional scholars categorically dismissed astrology as a valid and religiously licit branch of knowledge.

**Theses Proposed in the Dissertation**

I should underline at the very outset that this dissertation strives not for writing the history of astrology in the Ottoman realm, but rather for exploring the astrological knowledge produced and circulated in the Ottoman realm to scrutinize its broader cultural, intellectual, political, and social implications. Therefore, although I will have to refer, every now and then, to the complex methods and techniques appealed by the munajjims for practicing their own craft, I have no intention of testing the veracity of their planetary calculations and/or astrological interpretations on the basis of modern astral knowledge. This kind of endeavor would have certainly been useful from a mere history of science perspective, yet my own academic formation does not allow me to undertake such a demanding business.

In the light of my preoccupation in the past few years with the Ottoman astrological lore, I will advance a number of theses, instead of a single grand claim, that touch upon different historiographical coordinates in Ottoman as well as Islamic studies.

I. The Ottoman astrological materials, which have long been neglected by both conventional Ottoman historians and historians of scientific enterprises in past Islamic societies, provide important insights into the intersecting layers of science, politics, and
culture in the late-medieval and early-modern Islamicate and/or Ottoman context. This is the richest astrological corpus surviving from any part or period of Islamic history. Unlike astrological textbooks of earlier periods in Islamic history that were produced primarily to instruct the universally applicable rules of the astrological craft, the extant Ottoman astrological texts such as the complete set of almanac-prognostications and a few scattered occasional horoscopes are the applied forms of astrological knowledge into concrete occasions. Hence they are inherently sensitive to their immediate historical, political, and cultural realities. The systematic examination of their contents enables one to closely track the scientific inspirations, cultural orientations, and socio-political contentions, which were subject to change over time.

II. The epistemological status of astrology in the pre-modern Islamicate context was much more complex than assumed by modern historians of science. The widely accepted model in the current historiography of science that asserts a strict separation between ‘ilm al-hay’ā (lit. science of the configuration of the entire universe), ‘ilm al-nujūm (lit. science of the stars), and ‘ilm ḥākām al-nujūm (lit. science of the judgments of the stars) on the basis of earlier Arabic sources fails to notice the complex dynamics of the astral production in the post-thirteenth century Turko-Iranian context. While many astral experts from the period were definitely aware of the nuances between the astronomical investigation of the heavens (i.e. hay’a and nujūm) and astrological interpretations of the celestial knowledge (i.e. ḥākām), they still recognized the strong dependence of astrology on the detailed knowledge of mathematical and astronomical state of the heavens.
III. The heightened interest in the post-thirteenth century Persianate East in establishing observatories, conducting systematic observational enterprises, and updating the available data on the motions of planets was intimately related to the need for more precise astronomical information to undertake more accurate astrological practice. While the current state of the field is not mature enough to make bigger claims, it seems plausible to argue, on the basis of promising evidence in the zij literature, that not unlike in the early modern Europe, the urge to practice a mathematically precise and scientifically valid astrology was closely linked to the contemporary renaissance of mathematics and astronomical instrumentation in the eastern Islamic lands.

IV. The late-fifteenth and early-sixteenth century Ottoman context is a perfect laboratory to trace the impact of the Persian astral tradition upon the formation of the Ottoman astral corpus and professional cadres under the aegis of the court. The curious stories of astral experts as well as the scientific manuscripts and instruments, moving from the diyar-ı ʿAcem into the diyar-ı Rūm, stand as one of the most illuminating chapters of the history of scholarly mobility and circulation of knowledge in the late-medieval and early modern Islamicate world.

V. The practice of learned astrology required the courtly patronage. For the cultivation of astral sciences in the Ottoman context, credits should go to Bāyezīd II, whose significance in the cultural and political transformation of the Ottoman polity has largely
escaped the attention of modern historians. Bāyezīd II’s genuine learned interests in personally studying the astral sciences and patronizing an unprecedented number of astral experts facilitated the formation of the Ottoman astral canon and institutionalization of the office of the court munajjims, which would function as the prime mechanism of would-be munajjims’ vocational training and professional service.

VI. Modern scholarship presumes a vague definition of astrology and regards such diverse practices of celestial magic, talisman making, or mystical/numerological interpretation of celestial phenomena as its inextricable constituents. While these practices of “magic” essentially require the knowledge about the qualities and characteristics of the celestial objects, to equate the learned practice of astrology—which was rather an applied science for predictive purposes — with magic would not always do justice to the actual contents and discussions in the Ottoman astrological materials explored in this dissertation.

VII. The details from the lives of Ottoman astral experts (munajjims) clearly portray the learned character of the astrological craft. Although majority of the modern scholarship imagines munajjims as back-street charlatans or magicians promoting the idea of astral determinism, the real agents were well trained in the diverse branches of mathematical, natural, and traditional sciences. Moreover, the great majority of the trained munajjims was aware of the epistemological problems inherent in the art of astrology and often expressed in their writings the limits of this science. Some of these experts even relinquished their craft due to spiritual anxieties, wishing to steer clear of challenging
God’s omniscience and omnipotence.

VIII. Besides the fact that overwhelming majority of the munajjims serving the Ottoman court was self-critical about the epistemological limits of their craft, several madrasa-educated scholars and ʿālims had a somewhat lenient attitude towards the practice of astrology as long as certain fundamental principles of Islamic belief were preserved. Some of these scholars, like Mü‘eyyedzâde (d. 1516), were even keenly interested in studying and practicing the science itself. The strict objections raised against the practice of astrology by the earlier Hanbali jurists such as Ibn Taymiyya or Ibn Qayyim al-Jawziyya did not take hold among the Ottoman scholars. Quite the contrary, these names were sometimes explicitly criticized for their redundant counter arguments.

IX. Intriguingly, the most severe objections against the practice of astrology came from eminent Sufis who vilified astrologers on account of their claims and methods, though they did not necessarily reject the fundamental cosmological principles underlying the practice of astrology. This brings the immediate need to appreciate the nuances inherent in the polemical literature, which often heavily criticizes astrologers without necessarily denouncing some of the scientific principles upon which astrological practice relied.