

# **(RE)DRAWING THE LINES**

The Science of the Stars in the late Fifteenth Century Sultanate of Cairo

**Fien De Block**

**Supervisor: Prof. Dr. Jo Van Steenberghe**

**Cosupervisor: Prof. Dr. Steven Vanden Broecke**

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# Transcription

The terminology transliterated from Arabic to Latin script follows the transliteration system of the International Journal for Middle Eastern Studies (IJMES). Terminology for which there exists an anglicised variant is spelled according to British English spelling (e.g. Islam, muezzin) rather than according to this transcription system. Turkish and Persian names mentioned in this dissertation are transcribed true to the Arabised form in which they appear in the manuscripts rather than according to their Turkish or Persian original (e.g. Jahānkir instead of Jahāngir)<sup>1</sup>. Citations are always rendered in Arabic script, according to the spelling of the manuscript. All translations from Arabic are my own, unless indicated otherwise.

A = Arabic, P = Persian, OT = Ottoman Turkish, MT = Modern Turkish

	A	P	OT	MT		A	P	OT	MT		A	P	OT	MT
ك	ḳ	ḳ	ḳ	—	ز	z	z	z	z	ك	k	k or g	k or n	k or n
ب	b	b	b	b or p	ژ	—	zh	j	j				or y	or y
پ	—	p	p	p	س	s	s	s	s				or ğ	or ğ
ت	t	t	t	t	ش	sh	sh	ş	ş	ك	—	g	g	g
ث	th	ṯ	ṯ	s	ص	ṣ	ṣ	ṣ	s	ل	l	l	l	l
ج	j	j	c	c	ض	ḍ	ḍ	ḍ	z	م	m	m	m	m
ح	—	ch	ç	ç	ط	ṭ	ṭ	ṭ	t	ن	n	n	n	n
خ	kh	ḫ	ḫ	h	ظ	ẓ	ẓ	ẓ	z	ه	h	h	h <sup>1</sup>	h <sup>1</sup>
د	d	d	d	d	غ	gh	gh	g or ğ	g or ğ	و	w	v or u	v	v
ذ	dh	z	z	z	ف	f	f	f	f	ا	a <sup>2</sup>			
ر	r	r	r	r	ق	q	q	k	k	آ	ā <sup>3</sup>			

<sup>1</sup> When h is not final. <sup>2</sup> In construct state: at. <sup>3</sup> For the article, al- and -l-.

## VOWELS

	ARABIC AND PERSIAN	OTTOMAN AND MODERN TURKISH
Long	ا or آ ā	ā
	و ū	ū
	ي ī	ī
		words of Arabic and Persian origin only
Doubled	آي iyy (final form ī)	iy (final form ī)
	آو uww (final form ū)	uvv
Diphthongs	آو au or aw	ev
	آي ai or ay	ey
Short	ا a	a or e
	و u	u or ū / o or ö
	ي i	i or ī

2

<sup>1</sup> Jean Sauvaget, "Noms et Surnoms de Mamelouks," *Journal of the American Oriental Society* 238 (1950): 31–58.

<sup>2</sup> <https://www.cambridge.org/core/services/aop-file-manager/file/57d83390f6ea5a022234b400/TransChart.pdf>



## Abbreviations

DAK = Dār al-Kutub wa-l-Wathā'iq al-Qawmiyya al-Miṣriyya, or National Library of Egypt

DM= Dār al-Kutub Mīqāt collection

MM = Mustafā Fāḍil Mīqāt collection

ṬM = Ṭalacat Mīqāt collection

K = Falak wa-Riyāda collection

Sh = Ḥurūf wa-Awfāq collection

BnF = Bibliothèque Nationale de France

Ar. = Arabe

UL = University Library Leiden

Acad. = Academie (Koninklijke Academie der Wetenschappen Amsterdam)  
collection

Bodl. = Bodleian Library, University of Oxford

Arch. Seld. = Oriental Manuscripts Selden Collection

Topk. = Topkapı Sarayı Museum Library

Ahmet III= Aḥmet al-Thālit collection

Esc. = Real Biblioteca del Monasterio de San Lorenzo de El Escorial

Ar. = Manuscritos Arabes



## Summary

This dissertation questions the role and place of *ʿilm al-nujūm* or ‘the science of the stars’, in the late fifteenth century Sultanate of Cairo on the basis of two different but contemporary and indirectly related collections of manuscripts. The study can be situated in both History of Science and in Oriental Studies and therefore aims to come to terms with some of the big debates and narratives that have reigned these disciplines over the last decades. In the first part of this thesis, I discuss how. In order to come to terms with these debates, I argue that a history of science in Islamicate societies can no longer be humanist but should instead be material in outlook. Drawing on this conclusion, I discuss two collections of manuscripts pertaining to the science of the stars in the second and third part of this dissertation. In the second part, I focus on the collection of *taqwīm* treatises initiated by the *muwaqqit* or Islamic timekeeper Ibn al-Majdī (d. 850/1447). These texts have previously been looked at as scientific treatises used in the service of religion. The practice to which they pertained was explicitly presented as non-astrological. On the basis of a study of Ibn al-Majdī’s *taqwīm* corpus or corpus of texts, that is a corpus of texts on the compilation of ephemerides, I argue that a material approach towards these manuscripts in fact shows how none of the categories in this description is present in the historical actors’ categories. Presented as *ʿilm al-mīqāt*, the science of timekeeping or, more generally as *ʿilm al-nujūm* or the science of the stars, these practices were part of a science of the stars that could in present day terms be labelled scientific as well as religious and astrological. The terminology that is assumed to have been used for astrology in this period, *ʿilm aḥkām al-nujūm*, is never used in these works or by contemporary scholars referring to them. In the third part of this thesis, I discuss another late fifteenth century collection of manuscripts from the same period in which the term of *ʿilm aḥkām al-nujūm* was used. The works of al-Jamālī Yūsuf ibn Qurqumās al-Ḥamzāwī (d. 902/1497) and Aḥmad ibn Aḥmad Timurbāy (fl. late ninth/late fifteenth C.) bear the mark of a tradition of Neopythagorean, *ṣūfī* and illuminationist tradition of scholars studying the stars as signs in order to get closer to the invisible reality beyond the empirical world, and ultimately to God. Rather than using the present day categories of science, religion, and magic, this dissertation focusses on the categories that these scholars themselves used to identify their work and the material ways in which they ordered it. By doing

this, the dissertation aims to open up new avenues for research on the early modern history of science in Islamic societies.

## Samenvatting

Deze doctoraatsthesis handelt over de rol en plaats van *‘ilm al-nujūm* of ‘de wetenschap van de sterren’ in het laat-vijftiende eeuwse Sultanaat van Caïro. Dit onderwerp kan gesitueerd worden binnen de discipline van Wetenschapsgeschiedenis enerzijds en die van Oosterse studies anderzijds en tracht vanuit die gesitueerdheid een uitweg te bieden uit enkele van de grote debatten die deze disciplines de voorbij decennia hebben gekenmerkt. In het eerste deel van dit werk zal ik omschrijven hoe ik denk dat dit mogelijk is. Om tegemoet te komen aan deze debatten, stel ik, is het niet langer mogelijk om een wetenschapsgeschiedenis van de Islamwereld te beoefenen die humanistisch van aanpak is. De weg uit de patstelling die de grote debatten van beide disciplines opleveren, is om ze te combineren. Op basis daarvan wordt hier een materiele benadering van teksten verdedigd. Hiervan vertrekkend, worden er in het tweede en derde deel van deze thesis twee collecties manuscripten besproken. De eerste collectie is een verzameling *taqwīm* teksten oftewel teksten over en met tabellen die de lengtegraden van de planeten voor specifieke momenten oplist. Meer specifiek bespreek ik de traditie *taqwīm*-teksten die werd toegeschreven aan de Islamitische tijdsmeter of *muwaqqit* Ibn al-Majdī (st. 850/1447). Deze teksten werden in eerder onderzoek voorgesteld als wetenschappelijke teksten ten dienste van religie. De praktijk waartoe ze behoorden werd bovendien voorgesteld als expliciet anti astrologie. Op basis van een materieële studie van Ibn al-Majdī’s corpus stel ik hier echter dat geen van bovengenoemde categorieën overeenkomt met de beschrijving gegeven door de historische actoren die deze manuscripten produceerden en gebruikten. De manuscripten worden ingeleid als *‘ilm al-mīqāt* of de wetenschap van tijdsmeting of meer algemeen als *‘ilm al-nujūm* of de wetenschap van de sterren. Hoewel deze manuscripten in hedendaagse termen zowel zouden kunnen worden geclassificeerd als religieus, wetenschappelijk én astrologisch, is dat niet het geval in de terminologie van de historische actoren. De terminologie die wordt gelijkgesteld met astrologie voor deze periode is *‘ilm aḥkām al-nujūm*, maar deze komt niet voor in het *taqwīm*-corpus, noch in contemporaine teksten die ernaar verwijzen. In het derde deel van deze thesis bespreek ik een collectie laat-vijftiende eeuwse manuscripten waarin dat wel het geval is. De werken van al-Jamālī Yūsuf ibn Qurqumās al-Ḥamzāwī (d. 902/ca. 1497) en Aḥmad ibn Aḥmad Timurbāy (fl. late negende/late vijftiende

eeuw) getuigen van een traditie neopythagoreïsche *ṣūfī* denkers en aanhangers van de illuminatieleer die de wetenschap van de sterren beschouwden als een opstap naar inzicht in de onzichtbare, immateriële wereld achter het empirisch waarneembare, en uiteindelijk ook in God. Eerder dan te teksten in te delen door gebruik te maken van de hedendaagse categorieën van wetenschap, religie en magie, focust deze doctoraatsthesis enerzijds op de categorieën die deze geleerden zelf gebruikten om zichzelf voor te stellen en anderzijds op de materiële wijze waarop ze de circulatie van hun teksten richting gaven. Op deze manier wil deze thesis nieuwe wegen openen voor voor wetenschapsgeschiedenis van de vroegmoderne Islamwereld.



# Introduction

## Preamble: The Traces of the Manuscripts

The research question that provided the starting point for this project was that of the role and place of astrology in late fifteenth century Egypt and Syria. This question has a history of its own. It started with a manuscript that I studied for my master's thesis, which focused on the manual for timekeeping "*al-Zij al-Jadīd*" written by the Damascene scholar and *muwaqqit* Ibn al-Shāṭir (d. 777/1375-6). Whereas earlier literature argued that astrology was absent during the period of the so-called 'Mamluk Sultanate' (ca. 648/1250-923/1517), or the Sultanate of Cairo, as it has more accurately been called in recent research<sup>3</sup>, some chapters in this manual would nowadays be categorised as astrology.<sup>4</sup> They concern, for example, the calculation of conjunctions (*qirānāt*), the projection of rays (*maṭraḥ al-shu'cā'*) and the compilation of ephemerides for specific moments in time (*taqwīm*).<sup>5</sup> On the basis of these findings, I started looking into the circulation of the manuscript I had been studying: who used these texts and in which contexts? It turned out that ms. Oxford (Bodl.) Selden Collection A 30 had been written down in the fifteenth century in Cairo rather than by the author itself, who had lived in fourteenth century Damascus. This finding made me curious about the further circulation of timekeeping manuals. *Zijes* were compiled for specific places, but they appeared to have been circulating throughout – and even across the borders of<sup>6</sup> – the Sultanate of Cairo. I had already noticed during the research

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<sup>3</sup> Throughout this dissertation, I will use the terminology of the 'Cairo Sultanate' or the 'Sultanate of Cairo' rather than the more commonly used 'Mamluk Sultanate', following the argument made for this shift by Jo Van Steenberghe in: Jo Van Steenberghe, "Revisiting the Mamluk Empire. Political Action, Relationships of Power, Entangled Networks, and the Sultanate of Cairo in Late Medieval Syro-Egypt," in *The Mamluk Sultanate from the Perspective of Regional and World History: Economic, Social and Cultural Development in an Era of Increasing International Interaction and Competition*, ed. Reuven Amitai and Stephan Conermann (Göttingen: V&R Unipress - Bonn University Press, 2019), 75–106. The terminology of the Cairo Sultanate is closer to the historical actors' categories. It also moves away from the focus on the alleged significance of the Mamluk-system in the self-identification of the Sultanate.

<sup>4</sup> 'Alī ibn Ibrāhīm Ibn al-Shāṭir, "Kitāb Al-Zij al Jadīd" (Oxford, Early 15th C.), Bodleian Library; Fien De Block, "Al-Zij al-Jadīd as an Instrument for Fifteenth Century Timekeeping in Cairo: The Materiality of Ms. Oxford (Bodleian Library) Arch. Seld. A30," *Mamluk Studies Review*, 2021.

<sup>5</sup> Ibn al-Shāṭir, "Kitāb al-Zij al Jadīd." (Cairo, early 15th C), Ms. Oxford (Bodleian Library), Arch. Seld. A 30.

<sup>6</sup> This is for example the case for the Ulugh Beg manual for timekeeping, of which the *muwaqqit* Ibn Abī al-Faḥ al-Ṣūfī made a fifteenth century revision for Cairo. E.S. Kennedy, "A Survey of Islamic Astronomical Tables," *Transactions of the American Philosophical Society* Vol. 46, no. 2 (1956): 123–77; İhsan Fazlıoğlu, "Ibn Abī Al-Faḥ Al-Ṣūfī: Shams Al-Dīn Abū 'Abd Allāh Muḥammad

I conducted for my master's thesis in the Bodleian Library in Oxford, that some of Ibn al-Shāṭir's tables were copied in other manuscripts, where they were bound together with texts that seemed to have used them in the context of prognostication based on the observation of the stars and planets. All these texts had been copied by *muwaqqits* or timekeepers, the scholars who, according to earlier research 'did not engage in astrology because of their associations with religious institutions'.<sup>7</sup> This was what I initially wanted to study throughout the period of my PhD research. I wanted to study the circulation and use of the works of *muwaqqits*: the role these texts played in the fifteenth century rather than who their 'original author' was or 'what their original version' might have been.<sup>8</sup> I intended to focus on the work of three timekeepers in particular: Shihāb al-Dīn Aḥmad Ibn al-Majdī (d. 850/1447), ʿAbd al-ʿAzīz al-Wafāʿī (d. 875/1471) and Ibn Abī al-Faṭḥ al-Ṣūfī (d. 899/1494). These scholars are known to have written about and reacted upon each other's work in the fifteenth century Sultanate, a period that has been discussed in earlier research for its growing circulation of occult texts, as well as the growing popularity of Sufism (here used as the translation for the actors' category of *taṣawwuf*)<sup>9</sup> and millenarianist tendencies.<sup>10</sup>

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Ibn Abī Al-Faṭḥ Al-Ṣūfī," in *The Biographical Encyclopedia of Astronomers*, ed. Thomas Hockey (New York: Springer, 2007), 547.

<sup>7</sup> François Charette, "Ibn al-Majdī: Shihāb Al-Dīn Abū al-ʿAbbās Aḥmad Ibn Rajab Ibn Ṭaybughā al-Majdī al-Shāfiʿī," in *The Biographical Encyclopedia of Astronomers*, ed. Thomas Hockey (New York: Springer, 2007), 562.

<sup>8</sup> I refer to this approach as 'material' in chapter III of this dissertation, where I discuss this topic in detail.

<sup>9</sup> I follow Nathan Hofer in his choice not to define Sufism as mysticism – or in any other fixed and predefined way – but rather as the equivalent of the actors' categories of *taṣawwuf* and/or the adjective *ṣūfī*, which were themselves ever changing and flexible terms. Hofer states: 'I will use 'Sufi' and 'Sufism' [...] as an organising heuristic, in much the same way that Shahzad Bashir describes Sufism in his study of Sufi bodies as an 'analytical horizon that allows me to explore a set of issues in intellectual and social history'. That is to say that my investigation [...] takes for its object the history of those who have claimed, contested, embraced or rejected the traditions associated with *taṣawwuf* (Sufism) and the label *ṣūfī* (Sufi).' Nathan Hofer, *The Popularisation of Sufism in Ayyubid and Mamluk Egypt, 1173-1325*, Edinburgh Studies in Classical Islamic History and Culture (Edinburgh: Edinburgh University Press, 2015), 4.

<sup>10</sup> İlker Evrim Binbaş, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn 'Alī Yazdī and the Islamicate Republic of Letters*, Cambridge Studies in Islamic Civilization (Cambridge: Cambridge University Press, 2016); Noah Gardiner, "Esotericism in a Manuscript Culture: Aḥmad al-Būnī and His Readers through the Mamlūk Period" (PhD, Michigan, University of Michigan, 2014); Azfar Moin, "The 'Ulama' as Ritual Specialists: Cosmic Knowledge and Political Rituals," in *The Wiley Blackwell History of Islam*, ed. Armando Salvatore, Wiley Blackwell Histories of Religion (Oxford: John Wiley & Sons Ltd, 2018), 377–92; Matthew Melvin-Koushki, "Early Modern Islamicate Empire: New Forms of Religiopolitical Legitimacy," in *The Wiley-Blackwell History of Islam*, ed. Armando Salvatore, Roberto Tottoli, and Babak Rahimi (Hoboken: Wiley-Blackwell, 2018).

Where I first thought that this small network of *muwaqqits* would provide me with enough manuscripts to study the circulation of *zīj*es, it actually provided me with an incredibly large amount of yet unstudied tables. The amount of actual *zīj*es or manuals for timekeeping may be small, but the amount of copied and adapted tables appeared to be vast.<sup>11</sup> Moreover, the supposed difference between fragmentary copies of tables or chapters from *zīj*es and the actual manuals posited in secondary literature<sup>12</sup>, turned out to be nonexistent in the manuscript sources themselves.<sup>13</sup> At this point, I narrowed down my research to the study of Ibn al-Majdī's work, as he seemed to have been the most central figure in this network of timekeepers. However, even a study of the circulation of his work provided me with too much material for this PhD. When I studied some of his texts in libraries in Berlin, Leiden, Oxford, London, Madrid, Princeton and Cairo, my attention was particularly drawn to his *taqwīm* tables, as they seemed to have been very popular in the late fifteenth century, after the death of Ibn al-Majdī himself.<sup>14</sup> This particular collection of manuscripts on the one hand seemed to confirm my hypothesis that these tables were used for prognostication. On the other hand, whereas these texts were written and copied in the fifteenth century, I could not prove that they actually already circulated together with the tables in this period. Often, the multitext manuscripts and *majmū'as* I had studied also contained Ottoman texts, that had been added in later periods. These fifteenth century texts could hence also have been circulating separately, only to be combined in later periods. As such, this vast amount of tables written in the fifteenth century that had at first seemed to confirm my hypothesis, did not allow me to draw any specific conclusion.

However, as I followed the traces of the manuscripts attributed to Ibn al-Majdī, I found, in one of the *majmū'as* or composite manuscripts, tables compiled by a certain Aḥmad Ibn Aḥmad Timurbāy (fl. late ninth/fifteenth century). In the category of texts

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<sup>11</sup> The list of manuscript references I made based on the catalogues is twenty four pages long. When I started visiting the first libraries I found out that my list was not even complete, because in *majmū'as* or multitext manuscripts often only the first table is listed in the catalogue.

<sup>12</sup> E.g. David A. King and Julio Samsó, "Astronomical Handbooks and Tables - An Interim Report," *Suhayl International Journal for the History of the Exact and Natural Sciences in Islamic Civilization*, no. 2 (2001): 9–105; E.S. Kennedy, "A Survey of Islamic Astronomical Tables," *Transactions of the American Philosophical Society* Vol. 46, no. No. 2 (1956): 123–77.

<sup>13</sup> This is for example illustrated in part II of this dissertation, where I discuss ms. Cairo (DAK) MM 85, which starts with tables from the *zīj* of al-Šūfi, but combines them with tables based on Ibn al-Majdī's method Aḥmad Ibn al-Majdī, "Kitāb Al-Durr al-Yaḥim Fī Tashīl Šinā'āt al-Taqwīm" (Cairo, 850/1447), Ms. Cairo (DAK) MM 85, Cairo.

<sup>14</sup> Another possible focus were the author's works on the use of instruments, as these texts also appeared to have been very popular, but mostly in the early fifteenth century.

on timekeeping (*mīqāt*) of the Dār al-Kutub in Egypt, there was one manuscript that had Timurbāy’s name on it that particularly drew my attention: ms. Cairo (DAK) MM 13, which is discussed in chapter five of this dissertation. This is a copy of a handbook on *‘ilm aḥkām al-nujūm* combined with reports on the location of the planets during several late fifteenth century battles at the Syrian frontier of the Sultanate. This text appeared to be a copy of a contemporary manuscript written in Syria by Yūsuf ibn Qurqumās al-Ḥamzāwī (d. 902/ca. 1497). It is not bound together with *taqwīm* tables compiled with the method of Ibn al-Majdī, but it circulated in the same period and –at least to some extent - in the same milieu<sup>15</sup>. Moreover, the horoscopes compiled in this work must have been based on these or other *taqwīm* tables as one needs tables on the position of the planets to compile a horoscope. A direct link between them cannot be proven, but it seems a promising hypothesis for further research. For now, however, I have treated al-Ḥamzāwī and Timurbāy’s work as a separate but related collection of texts on the science of the stars in this period.<sup>16</sup>

Where my search for manuscripts on timekeeping provided me with too much material of which the circulation could – at this stage of the research on this topic – not be situated in time, my search for al-Ḥamzāwī’s work initially provided me with very few results. The reason for this was not that there are no manuscripts, but rather that they were classified as *‘hurūf wa-awfāq’* (letter magic and magic squares) in Dār al-Kutub. Due to censorship issues, I could not consult these manuscripts, nor the microfilm scans made of them. I found a partial solution to this problem in the Institute of Arabic Manuscripts in Cairo. Following the trace that the Ibn al-Majdī corpus had laid out, I searched for Aḥmad ibn Aḥmad Timurbāy and Yūsuf ibn Qurqumās al-Ḥamzāwī in their database of microfilms, and found the fifteenth century letrist treatises that are discussed in the sixth chapter of this dissertation.<sup>17</sup>

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<sup>15</sup> As their names indicate, all three of the *muwaqqits* of my original source corpus identified as ṣūfī scholars, which is also the case for al-Ḥamzāwī and Timurbāy. As discussed shortly in the second part of this dissertation, Timurbāy also compiled tables for timekeeping. Other research also indicates that some scholars were involved in timekeeping as well as in the occult science (e.g. Noah Gardiner mentions the Syrian ascetic Musā‘id b. Sārī al-Ḥawārī (d. 819/1416–17), who was regarded as a specialist in both *‘ilm al-mīqāt* and *‘ilm al-hurūf*. Noah Gardiner, “The Occultist Encyclopedism of ‘Abd Al-Raḥmān al-Biṣṭāmī,” *Mamluk Studies Review* 20 (2017): 3–38.)

<sup>16</sup> Cf. *infra* Chapter 5 and 6

<sup>17</sup> I could consult these texts in the Institute of Arabic Manuscripts in Cairo only because I was – according to their own terminology – a ‘non-Arabic researcher’. Researchers from the ‘Arabic world’ are not allowed to access these texts there.

The fact that the circulation of and limited access to these manuscripts attests to their role and meaning up until today was perhaps most clearly visible in my research in Cairo. However, in a more subtle and perhaps a more structural way, the issue is also at stake in European and American libraries, where I usually had to search for sources in the category of scientific texts or that of magic or religious texts. As I will discuss in the first part of this dissertation, these categories impose a specific interpretation on the sources that often leads to self-fulfilling prophecies in research. To search for practices on the verge of these categories is complicated by the way they are classified: categories usually reflect a present day interpretation of the sources and neglect or downplay the actors' categories. Moreover, in spite of the important progress that has been made over the last decades, a lot of catalogues still lack information on the material aspects of the manuscripts.<sup>18</sup> This dissertation is the result of my engagement with these categories, these manuscripts and the institutions that control their circulation up until today. On the one hand it bears the marks of these library struggles. On the other hand I hope that it may also be a minor step towards other narratives and categories, as the act of boundary work<sup>19</sup> it consists in. It is my intention to shed light on what is at stake in the narratives we choose to highlight, rather than to provide a comprehensive synthesis or representation of historical events throughout the late fifteenth century Sultanate. In that way, this dissertation aims to show, through this material engagement with specific sources, that other narratives about the history of the science of the stars in the late fifteenth century Sultanate of Cairo are possible.

## **This Dissertation**

Research on the Islamicate middle and early modern period has gone through important changes over the last decades. The era of the Sultanate of Cairo used to be framed as a period of decline, especially with regard to its scholarly activity. However, a revisionist tradition of historiography has by now convincingly shown the opposite to be true. In line with this, the discipline of '*Mamluk Studies*' evolved from a purely philological field of study into a socio-historical one that draws on insights from

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<sup>18</sup> This problem has been raised in literature on manuscript studies, e.g. François Déroche, *Islamic Codicology: An Introduction to the Study of Manuscripts in Arabic Script*, ed. Muhammad Isa Waley, trans. Deke Dusinberre and David Radzinowicz (London: Al-Furqan Publications, 2005); Konrad Hirschler, *A Monument to Medieval Syrian Book Culture: The Library of Ibn ʿAbd al-Hādī* (Edinburgh: Edinburgh University Press, 2019), 119-22.

<sup>19</sup> I will discuss the topic of boundary work in detail in the second part of this dissertation.

cultural studies.<sup>20</sup> However, whereas the decline narrative has been done away with explicitly in most of the recent research, it still lingers on implicitly in several ways. These ways, I will show throughout this dissertation, coincide in research on astrology. The reason for this is that astrology has always been treated as a subject in between science and the occult: as a practice too ‘occult’ for science and too ‘scientific’ for occult studies. Precisely in this classification lies a persistent remnant of the decline narrative, namely the so-called science – religion – magic triad. This triad, which is based on nineteenth century ideological frameworks, prevented the study of a lot of source material in several ways.

In earlier research, astrology has long been considered to be absent in the Sultanate of Cairo. As the late medieval and early modern period in the Islamic world was presumed to be a period of scholarly decline, astrology was considered absent along with all other so-called ‘*rational sciences*’, because they were presumed to be irreconcilable with orthodox religion. When the decline narrative became increasingly questioned, the idea of the existence of one uniform orthodox version of Islam became criticised, along with the clear-cut dichotomy between religious and rational sciences.<sup>21</sup> However, the narrative of astrology being absent from the scholarly practices remained intact, now because of its link to the ‘*occult sciences*’ and their presumed otherness towards both science and religion.

Whereas history of science has come to terms with the role of the so-called rational sciences in the late medieval and early modern Islamic world, up until today it still has not come to terms with the neglect of an abundance of manuscripts which bear the marks of a flourishing occultist tradition in the period. The discipline, to use the words of Liana Saif and Matthew Melvin-Koushki, still suffers from

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<sup>20</sup> Thomas Bauer, “Mamluk Literature: Misunderstandings and New Approaches,” *Mamluk Studies Review* 2, no. IX (2005): 105–32; Shahab Ahmed, *What Is Islam? The Importance of Being Islamic* (Princeton & Oxford: Princeton University Press, 2016); Michael Chamberlain, *Knowledge and Social Practice in Medieval Damascus, 1190-1350*, Cambridge Studies in Islamic Civilisation (Cambridge: Cambridge University Press, 2002); Jonathan Berkey, *The Transmission of Knowledge in Medieval Cairo* (Princeton: Princeton University Press, 1992); Stephan Conermann, “Quo Vadis Mamlukology? (A German Perspective),” in *Ubi Sumus? Quo Vademus? Mamluk Studies State of the Art* Ed. Stephan Conermann (Goettingen: V&R Unipress - Bonn University Press, 2013), 7–22; Konrad Hirschler, “Studying Mamluk Historiography: From Source Criticism to the Cultural Turn,” in *Ubi Sumus, Quo Vademus? Mamluk Studies State of the Art*, Ed. Stephan Conermann (Bonn: V&R Unipress - Bonn University Press, 2013).

<sup>21</sup> A.I. Sabra, “The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam: A Preliminary Statement,” *History of Science*, no. 25 (1987): 223–43; Sonja Brentjes, “The Prison of Categories - ‘Decline’ and Its Company,” in *Islamic Philosophy, Science, Culture, and Religion: Studies in Honor of Dimitri Gutas*, ed. David Reisman and Felicitas Opwis (Leiden/Boston: Brill, 2011), 131–56.

'occultophobia'.<sup>22</sup> 'Occultophobia' in itself may sound problematic, but this research has shown me that it is generally considered harmless. 'Wretched subjects' may well be considered worth studying as a frivolous side note to history according to the Neugebauers of today<sup>23</sup>, it still remains a marginal research topic in a neoliberal university system that considers impact factors as an indicator for relevance.

I have chosen to focus on this subject because I argue that to neglect or downplay it, is not harmless. The main reason for this is that the decline narrative with its remaining occultophobia, never was an isolated story. It is only one fragment of a bigger narrative of 'the West' as being both modern and scientific and of its negation or necessary opposite, 'the East'. This narrative has long been – and to a great extent still is – central to both of the disciplines in which this research situates itself: the discipline of History of Science on the one hand and that of Oriental Studies on the other. In order to come to terms with this, I have over the last few years studied the historical sources from the late fifteenth century Sultanate of Cairo that have been associated with 'astrology' in present day research, only to arrive at the conclusion that there in fact was no such thing as 'astrology' in this period, but neither was there any 'astronomy' - at least not in the present day meaning of these words. Therefore, the final research question around which this dissertation is written is that of the role and place of *ʿilm al-nujūm*, the science of the stars, in the late fifteenth century Sultanate of Cairo, nonetheless bearing the aforementioned discussion of astrology in mind. More specifically, this dissertation asks how the historical actors themselves situated and understood the science of the stars. Rather than starting from a preconceived separation between astrology and astronomy, I will look at the way the actors made distinctions between several disciplines studying the stars and at the relevance and role that these distinctions had for them. I will answer this question through a material approach towards my sources. A further explanation of what this approach consists in will be given in the first part of this dissertation. Only when we treat occult knowledge

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<sup>22</sup> Matthew Melvin-Koushki, "(De)Colonizing Early Modern Occult Philosophy," *Magic, Ritual, and Witchcraft* Magic, Ritual, and Witchcraft, Volume 12, no. 1 (Spring 2017): 111; Liana Saif, *The Arabic Influences on Early Modern Occult Philosophy*, Palgrave Historical Studies in Witchcraft and Magic (Houndmills, Basingstoke: Palgrave Macmillan, 2015), 4–8.

<sup>23</sup> Otto Neugebauer was a historian of science who wrote a critique to George Sarton after the latter referred to astrology as a wretched subject that did not deserve a lot of attention. In his critique, Neugebauer advocated the study of so-called 'wretched subjects', arguing that these subjects provided an interesting but frivolous study object through which we can learn something about the history of ideas. Otto Neugebauer, "The Study of Wretched Subjects," *Isis* 2, no. 42 (1951): 111.

practices in the early modern Islamic world on the same grounds – through what Melvin-Koushki and Saif have called a ‘deorientalising’ of the research – as the practices that we have classified as ‘scientific’, we can truly come to terms with a decline narrative ‘that sees it as an intellectually/scientifically bereft period, coinciding with the rise of Europe and its intellectual reinvention’.<sup>24</sup>

The late fifteenth century is a particularly interesting period in this respect, because several intellectual movements that had previously been growing more or less independently, came together. As discussed in the research of Konrad Hirschler, during the thirteenth and fourteenth century Egyptian and Syrian societies had undergone a process of textualisation. This process influenced cultural and social practices drastically, thus allowing for a wider circulation of textual sources and a popularization of reading practices.<sup>25</sup> As such, the Sultanate of Cairo witnessed a growing amount of reading groups: scholars that actively grouped together to read certain texts. Noah Gardiner has shown that a significant amount of reading groups focused on the texts of the *ṣūfī* scholar Aḥmad al-Būnī (d. 622/1225 or 630/1232-3), whose works circulated widely in the Sultanate. This was accompanied accompanied by the growing influence of Akbarian thought, based on the legacy of Ibn ‘Arabī.<sup>26</sup> This happened first in secret elitist reading groups, which Gardiner labelled esotericist. Towards the fifteenth century, however, they became less and less secluded or esotericist. Instead, these groups evolved towards a ‘postesotericism’: they did not keep their practices and texts secret anymore, but they considered them as extremely valuable because they had formerly been kept secret.<sup>27</sup> Furthermore, during the fifteenth century, Jonathan Berkey argues, the distinction between intellectual institutions for *ṣūfīs* and those for other Islamic scholars faded: *madrasas* for the transmission of, especially, Sunni legal knowledge and mosques for Muslim ritual practice were often simultaneously *khānqahs* or *ṣūfī* lodges. This ‘gradual blending of educational and Sufi activities’ Berkey states, reflected the ‘social and intellectual assimilation of Sufism and Sufis into the mainstream of Muslim

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<sup>24</sup> Liana Saif, “What Is Islamic Esotericism?,” *Correspondences: Journal for the Study of Esotericism* 7, no. 1 Special Issue: Islamic Esotericism (2019): 12.

<sup>25</sup> Konrad Hirschler, *The Written Word in the Medieval Arabic Lands: A Social and Cultural History of Reading Practices* (Edinburgh: Edinburgh University Press, 2012), 5.

<sup>26</sup> Alexander Knysh, *Ibn ‘Arabi in the Later Islamic Tradition: The Making of a Polemical Image in Medieval Islam*, SUNY Series in Islam (State University of New York Press, 1998).

<sup>27</sup> Noah Gardiner, “Esotericism in a Manuscript Culture: Aḥmad al-Būnī and His Readers through the Mamlūk Period” (PhD dissertation, Michigan, University of Michigan, 2014), 54-5.



intellectual life'.<sup>28</sup> By the end of the fifteenth century, several *ṣūfī* orders had developed a significant hierarchical structure, organisational coherence and specific devotional specialisations.<sup>29</sup> This evolution has to be considered as part of a wider development within the Islamicate world. In the period just after the Mongol conquest of Asia, the Persian world witnessed an increasing popularity of the ideal of *walāya* or sacred kingship.<sup>30</sup> Leaders drew on several intellectual movements and elites to secure access to *walāya*: *ṣūfī* movements, occultist scholars and combinations of both.<sup>31</sup> Whereas the ideal of sacral leadership has not been thoroughly studied yet for the Sultanate of Cairo, we see a similar growth in the intellectual movements that carried it.<sup>32</sup>

A new 'cosmological imaginary'<sup>33</sup> arose in this period, an imaginary that was based on the assumption of the unity of all beings and hence of the connection of all beings in a chain that ultimately came from God. This intellectual climate, Gardiner argues, provided the ideal circumstances for the occult sciences to flourish.<sup>34</sup> Occult sciences had in the early Middle period been considered part of natural sciences, but in the fifteenth century they became increasingly mathematised, and eventually also 'sacralised'.<sup>35</sup> The latter tendency can be seen in the growing mutual interdependence and amalgamation of Sufism and occultism in this period. Contemporary philosophical movements, like the illuminationist (*ishrāqī*) philosophy, based on the teachings of the Persian scholar al-Suhrawardī (d. 587/1191), also gained importance.<sup>36</sup> These

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<sup>28</sup> Jonathan Berkey, *The Transmission of Knowledge in Medieval Cairo* (Princeton: Princeton University Press, 1992), 58–59.

<sup>29</sup> Devin DeWeese, "Organizational Patterns and Developments within Sufi Communities," in *The Wiley Blackwell History of Islam*, ed. Armando Salvatore (Oxford: John Wiley & Sons Ltd, 2018), 329–30.

<sup>30</sup> Moin, "The 'Ulama' as Ritual Specialists: Cosmic Knowledge and Political Rituals"; Melvin-Koushki, "Early Modern Islamicate Empire: New Forms of Religiopolitical Legitimacy."

<sup>31</sup> Melvin-Koushki, "Early Modern Islamicate Empire: New Forms of Religiopolitical Legitimacy."

<sup>32</sup> Interesting research has however been done on the topic of sufism in the Sultanate: Nathan Hofer, *The Popularisation of Sufism in Ayyubid and Mamluk Egypt, 1173-1325*, Edinburgh Studies in Classical Islamic History and Culture (Edinburgh: Edinburgh University Press, 2015); Alexander Knysh, *Sufism: A New History of Islamic Mysticism* (Princeton: Princeton University Press, 2017); Eric Geoffroy, *Le Soufisme En Égypte et En Syrie: Sous Les Derniers Mamelouks et Les Premiers Ottomans. Orientations Spirituelles et Enjeux Culturels* (Damascus: Presses de l'Ifpo, 1995).

<sup>33</sup> Gardiner, "Books on Occult Science," 735.

<sup>34</sup> Gardiner, "Books on Occult Science," 735–6.

<sup>35</sup> Matthew Melvin-Koushki, "Powers of One: The Mathematicalization of the Occult Sciences in the High Persianate Tradition," *Intellectual History of the Islamicate World* 5, no. 1–2 (2017): 127–99.

<sup>36</sup> John Walbridge, *The Wisdom of the Mystic East: Suhrawardī and Platonic Orientalism*, SUNY Series (Albany: State University of New York Press, 2001); Peter Adamson, "Let There Be Light: Suhrawardī," in *Philosophy in the Islamic World* (Oxford: Oxford University Press, 2016), 316–22; Peter Adamson, "Bright Ideas - Illuminationism," in *Philosophy in the Islamic World* (Oxford: Oxford University Press, 2016), 323–29.

simultaneous developments, in combination with the growing transregional mobility driven by the aftermath of the Mongol invasions of the Islamicate world, resulted in a very eclectic, almost syncretic intellectual environment in which Sufism, occult sciences, Neopythagoreanism and *shīcī* or Alid ideas of leadership were intertwined and synthesised. The Sultanate of Cairo appears to have been an interesting meeting point for diverse old and new intellectual traditions, connecting al-Andalus with Transoxania and joining the interests of speakers of Arabic, Persian and Turkish.<sup>37</sup> Because of this, the changing circulation of manuscripts on the science of the stars that appears to have taken place in this period, provides an interesting starting point to investigate the importance of the science of the stars in all this, and the links of its subdisciplines with these eclectic synthesising intellectual movements. This topic will be the focus of this dissertation, which is divided in three parts.

In the first part of this thesis, I will discuss how it aims to come to terms with the aforementioned debates and narratives that have dominated the disciplines of History of Science and of Oriental Studies over the last decades. I will treat the History of Science in the Islamicate world by discussing its place these two disciplines. In the first chapter, I will trace back the position of the history of science of the Islamicate world within the discipline of History of Science. Here I will argue that Islamicate societies had an important place within a universalist view on science and its linear history, as exemplified by George Sarton's new humanism. The Islamicate world, according to this narrative, played an important role in the History of Science up until the twelfth century, after which it entered a period of decline. However, an ever-growing tendency towards contextualisation and situatedness, and a shift away from linear views on history have changed the place of the Islamicate world in history of science. I will show how the revisions made within History of Science can be connected to the most well-known debate within Oriental Studies, namely the debate on '*Orientalism*'. This debate began with the publication of Edward Said's monograph bearing the same title.

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<sup>37</sup> Interesting works that shed light on this complex eclectic intellectual environment are: Christian Mauder, "In the Sultan's Salon: Learning, Religion and Rulership at the Mamluk Court of Qāniṣawh al-Ghawrī (r. 1501–1516)" (PhD, Göttingen, University of Göttingen, 2017), which will be published as a book in the near future. Another forthcoming work that exemplifies this is: Kristof D'hulster, *Browsing through the Sultan's Bookshelves. Towards a Reconstruction of the Library of the Mamluk Sultan Qāniṣawh al-Ghawrī (r. 906-922/1501-1516)* (Bonn: Bonn University Press, Forthcoming).

Regardless of the current state of research in Oriental Studies, this debate reminds us of how the discipline has its roots in a colonial system that provided ‘the West’ with a narrative about its opposite ‘*other*’ – and hence of itself – by which the latter could be dominated. I will discuss how the discipline came to terms with this debate. After this, I will bring both debates together in the third and last chapter of the first part of this dissertation. Here I argue that a contextualised History of Science in Islamic societies, if it wants to avoid the pitfalls that have been identified in the previously mentioned debates, should be material in outlook. Based on this, I will conclude the first part of this dissertation by explaining my approach towards the texts that I discuss in the next two parts of this thesis: an approach which considers these manuscripts as written artefacts of the practices of which they were part. These practices were *taqwīm* and *‘ilm aḥkām al-nujūm*, two different sides of the discipline referred to as *‘ilm al-nujūm* or the science of the stars in the late fifteenth century Cairo Sultanate that were linked by the fact that the latter subdiscipline drew on the tables of the former.

In the second and third part of this dissertation, I will shed light on how these two practices were pursued in late fifteenth century Egypt and Syria, and how this inspires a different narrative about the role, status and relationship between these two practices: that of *taqwīm* and that of *‘ilm aḥkām al-nujūm*. *Taqwīm* is the practice of compiling ephemerides for what is referred to in the texts as the ‘seven planets’: the Sun, the Moon, Mercury, Venus, Mars, Jupiter and Saturn. This practice was usually carried out by Islamic timekeepers or *muwaqqits*, and was considered to be part of the science of timekeeping or *‘ilm al-mīqāt*. In the second part of this dissertation I will focus on the collection of tables based on the work of the early fifteenth century *muwaqqit* Shihāb al-Dīn Abū al-‘Abbās Aḥmad ibn Rajab ibn Ṭaybughā ibn al-Majdī al-Shāfi‘ī (d. 850/1447). As the extant manuscript versions of these tables show us, this collection circulated widely in the later fifteenth century, just after the death of Ibn al-Majdī himself. As a practice that has always been considered to be part of a ‘science in service of religion’, *taqwīm* was in earlier research labelled as strictly ‘scientific’ and strictly ‘astronomical’. Because of this, it was assumed that it in no way pertained to ‘astrology’. As such, *taqwīm* tables have always been discussed as ‘scientific treatises’: they have been recalculated, converted into present day mathematical notation and valued for the innovation that they may or may not have brought to the linear progress

of science through history. However, I will argue in the fourth chapter of this dissertation that when we take a material approach to these tables and consider the multi-text and composite manuscripts which they were part of, a different side of the use of these tables shows itself. Contextualisation of these sources is however complicated by the fact that the historical actors mentioned in them are not mentioned in contemporary historiographical sources. While it can be considered as disappointing that none of the users, possessors or copyists of these texts were famous authors who are praised and remembered in the extensive scholarly biographical dictionaries of this period, this absence actually tells us something about the backgrounds of these scholars, who were not elite mathematicians working in institutions, as was suggested by earlier studies. *Taqwīm* tables are referred to by the historical actors themselves as pertaining to *ʿilm al-nujūm*, the science of the stars, and to *ʿilm al-mīqāt*, the science of timekeeping, or more specifically *ṣināʿat al-taqwīm*, the practice of compiling ephemerides. They were sometimes part of larger manuscripts that comprised texts in which explicit reference was made to future-telling, without, moreover, ever being referred to by the historical actors as *ʿilm aḥkām al-nujūm*, the term traditionally translated as ‘astrology’. Hence, a material approach to these sources shows how we should reconsider our terminology to talk about these works and how the used terminology has in the past often hidden important sides of our manuscripts from view.

In the third and last part of this dissertation, I discuss the work of two scholars who, in contrast to the *muwaqqits* in part two, used the terminology of *ʿilm aḥkām al-nujūm*. Al-Jamālī Yūsuf ibn Qurqumās al-Ḥamzāwī (d. 902/ca. 1497) and Aḥmad ibn Aḥmad Timurbāy (fl. late ninth/late fifteenth century) were both *amīrs* and scholars who held a Neopythagorean view on the universe and who shared this view with an interregional network of occult scholars who identified as *ikhwān al-ṣafāʾ* as well as *ṣūfī* groups active in the region in this period. This network of neo-*ikhwān al-ṣafāʾ* has been studied in detail and these texts attest to the fact that they also had members and adepts among the local scholars of the Sultanate of Cairo. In chapter five, I will first discuss manuscript ms. Cairo (DAK) MM 13, which consists of an abridged version of Ibn Abī l-Rijāl’s work “*Kitāb al-Bārīʿ fī Aḥkām al-Nujūm*” and fragmentary reports for the positions of the planets and stars at three moments in the late fifteenth century history of the Cairo Sultanate. Both the handwriting, the view and the explicit references in this manuscript show that its author and copyist were linked to the neo-

*ikhwān al-ṣafā'* and their Neoplatonist belief in the priority of an abstract world of ideas.

In chapter five, I will argue that al-Ḥamzāwī and Timurbāy saw the stars as the key signs for their primarily hermeneutical project to which they referred in Ms. Cairo (DAK) MM 13 as *ʿilm aḥkām al-nujūm*: as interpretation of the signs of the stars with the goal of getting a glimpse of the divine truth or God, by whom the stars were created as efficient causes for the world below. However, as only the most intelligent scholars were considered to be able to interpret these signs, al-Ḥamzāwī and Timurbāy state that a small elite of scholars should present their knowledge to a wider audience. They do this through the use of anecdotes, in Ms. Cairo (DAK) MM 13 particularly of three events in the military history of the Syrian frontier zone of the Sultanate: The first encounter of Ūzūn Ḥasan and Yashbak Min Mahdī in 877/1472, the battle between Azbak Min Ṭuṭūkh's army and the Ottomans in Adana in 890/1485 and the battle between Yashbak Min Mahdī and Shah Suwār in 874/1470. Because of their commitment to spreading their views through these anecdotes, I have called these scholars elitist but esotericist<sup>38</sup>, as they clearly did not intend to keep their works within their own, limited group of elite scholars. On the other hand, the view of these scholars on the stars as signs can be situated within a wider Neopythagorean framework. This is the subject of the sixth chapter of this dissertation where I discuss the treatise "*al-Durr al-Maṭlūb fī Sirr al-Ghālib wa-l-Maghlūb*" written by al-Ḥamzāwī and copied by Timurbāy. On the first level, this treatise is a letrist analysis of important conflicts and battles at the Syrian frontier zone of the Sultanate of Cairo. On a second level, it expresses the author's belief that every being has a numerical value specific to his or her ideal form (*ṣūra*). The science of letters and the science of mathematics, by al-Ḥamzāwī and Timurbāy simultaneously called *ʿilm al-ḥisāb*, offer the means to achieve the highest form of knowledge, that is: *ʿilm al-dīn* or the science of religion. The stars, it seems, were one of the instances through which the divine had an influence on the created world and hence one of the most clearly visible signs to be interpreted through the means of letters and numbers. Here again, the scholars explain their view by using anecdotes. These anecdotes, I argue, demonstrate these scholars' participation in an

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<sup>38</sup> I use the term "esotericist" here as it has been used by Noah Gardiner, that is: 'denoting attitudes and practices of elitism, exclusivity, and secrecy in the production and transmission of religious knowledge' Gardiner, "Esotericism in a Manuscript Culture: Aḥmad al-Būnī and His Readers through the Mamlūk Period."

occult intellectual network that stretched across cultural divides and incorporated important parts of the Persianate and Turkish scholarly elite, a network that, I will conclude, can be equally seen as a network of letters, of numbers and of stars.

# Part I

## A Material Approach to Texts

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On the Possibilities  
for History of Science  
of Islamicate Societies Today





كون او لا تكون، السؤال اذا حتكون معزوم

To be or not to be is only a question if you have options

-

DAM Palestine – *Mā bakhāf min al-Murtafa'āt*

There's a public equivalent to private depression,  
a sense that the nation or the society rather than the individual is stuck.

Things don't always change for the better, but they change,  
and we can play a role in that change if we act.

Which is where hope comes in, and memory, the collective memory we call history.

-

Rebecca Solnit – *Hope in the dark: Untold Stories, Wild possibilities* p. xxvii

This may appear astonishing and even somewhat backward-looking,  
but it is in the Moderns, in "Occidentals", yes even in "Europeans" that we are going to have  
to take an interest, *at last*, in this inquiry.

Not to worry: there is no narcissism here, no nostalgic search for identity. [...]  
The fact is that comparative anthropology remains hanging in the air as long as we do not  
have access to an alternative version of the point of comparison that always remains in the  
background: the "West".

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Bruno Latour – *An Inquiry Into Modes of Existence* p.13&15



## Introduction

In this first part of my dissertation I will situate my research within the wider research traditions of History of Science and Oriental Studies. In doing so, I will shed light on the decisions I have made in my approach to the manuscript sources and on the position I am thereby taking. In the first chapter, I will trace back the position of the history of science of the Islamicate world within the discipline of History of Science. I will argue that Islamicate societies had an important place within a universalist view on science and its linear history, as exemplified by George Sarton's new humanism. According to this narrative the Islamicate world played an important role in the history of science up until the twelfth century, after which it entered a period of decline. An ever growing tendency towards contextualisation and situatedness, and a shift away from linear views on history have however changed the place of the Islamicate world in history of science. In the second chapter of this dissertation I will turn to the discipline of Oriental Studies. More specifically, I will show how the revisions made within History of Science can be connected to the most well-known debate within Oriental Studies, namely the debate on 'Orientalism'. This debate began with the publication of Edward Said's monograph bearing the same title. Regardless of the current state of research in Oriental Studies, this debate reminds us of how the discipline has its roots in a colonial system that provided 'the West' with a narrative about its opposite 'other' – and hence of itself – by which the latter could be dominated. I will discuss how the discipline has come to terms with this debate. In the third and last chapter of this first part, I will bring both debates together. I argue that a contextualised History of Science in Islamicate societies if it wants to avoid the pitfalls that have been identified in the previously mentioned debates can no longer be humanist. If there is a future for History of Science in Islamicate societies, then it should be material in outlook. At the end of the third chapter, I will conclude how this provides me with the basis for my approach to the texts discussed in the second and third parts of this thesis.



## Chapter I: The History of ‘The History of Science’

In 1924 George Sarton<sup>39</sup> called for a history of science that takes into account the discoveries and realisations of all civilisations, especially insisting upon ‘the collaboration between East and West, because it is too often overlooked or misunderstood’.<sup>40</sup> This call for internationalism was part of the author’s ‘new humanist approach’ which emphasised the unity of knowledge on the one hand and that of humanity on the other. This unity, he argued, could be traced along the linear accumulative progress of science throughout history. Science is, according to Sarton, the indicator *par excellence* of human progress or success. So in order to be successful in the future, we have to study the way we made progress in the past, we have to study the history of science.<sup>41</sup>

Over the last decades however, both the unity of knowledge as well as its linear progress through history have been frequently questioned and criticised within the discipline of the history of science. Narratives of universalism and idealism have to a large extent been replaced by a tendency towards regionalisation and contextualisation, accompanied by an increased reflection on the methodology of historiography of science itself.<sup>42</sup> With this shift, Sarton’s call for internationalism died a quiet death. When it comes to the history of science in Islamicate societies<sup>43</sup> – on which this dissertation focuses – relatively few works have been published over the last decades. Moreover, the works that have been published are generally not written by

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<sup>39</sup> George Sarton (1884–1956) is one of the founding fathers of the history of science as an academic discipline. He studied at Ghent University and was the founder of the academic journal *Isis*, which remains one of the most important journals in this discipline today, see Bernard Cohen, “George Sarton,” *Isis* 48, no. 3 (September 1, 1957): 286–300.

<sup>40</sup> George Sarton, “The New Humanism,” *Isis* 6 (1924): 25.

<sup>41</sup> Sarton, “The New Humanism,” 28; Steven Shapin, *Never Pure: A History of Science as If It Was Produced by People with Bodies, Situated in Time, Space, Culture, and Society, and Struggling for Credibility and Authority* (Baltimore: The John Hopkins University Press, 2010), 10–14.

<sup>42</sup> Steven Shapin, *The Scientific Revolution* (Chicago: The University of Chicago Press, 1996).

<sup>43</sup> I use the terminology of ‘Islamicate societies’ in order to avoid the unilateral focus on Arabic texts that accompanies the terminology of ‘Arabic science’ as well as the unilateral focus on the Muslim population that accompanies the terminology of ‘Islamic science’. The scientific practices I am studying are practices that took place within societies that were to a large extent structured by Islam as this was their main and/or official religion. However, the texts used in/produced within these practices are not necessarily all written in Arabic nor are they all written by Muslim scholars.

academics with a background in History of Science but by philologists of oriental languages or by mathematicians interested in the history of their discipline.

### **1.1. Sarton's New Humanism**

In his article "*The New Humanism*" George Sarton called for a history of science that takes into account the whole of mankind. This call was based on his view on science as the axis of human progress throughout history. 'The acquisition and systematization of positive knowledge', Sarton stated, 'is the only human activity which is truly cumulative and progressive'.<sup>44</sup> Therefore, historiography of science is needed in order to understand how we have arrived at our present day stage in this development so we can use these insights for future progress. As this development is a universal one, Sarton called for historians of science to study other regions than Western Europe and to translate scientific texts from non-European languages into English. He expressed his hope that 'The subsequent volumes of *Isis* [i.e. the academic journal for the history of science that he founded] will contain – In shā Allāh – many translations of Arabic, Persian, Sanskrit, Chinese and Japanese texts'.<sup>45</sup>

The idea of the unity of knowledge, of science as a universalist project of mankind was an essential prerequisite for Sarton's call for internationalism. Sarton himself had a particular interest in science from Islamicate societies because, he argued, in the linear progress towards present day science, some of the most important Medieval texts were written in Arabic.<sup>46</sup>

'From the second half of the eight to the end of the eleventh century, Arabic was the scientific, the progressive language of mankind. During that period, anyone wishing to be well-informed, up-to-date, had to study Arabic, even as anyone who wants to follow the intellectual advance must begin by mastering one of the great Western languages.'<sup>47</sup>

Sarton devoted part of his career to this period in history. He studied Arabic and travelled to the Middle East to search for scientific manuscripts written in the

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<sup>44</sup> George Sarton, *Introduction to the History of Science Volume I: From Homer to Omar Khayyam*, (Washington: The Williams and Wilkins Company, 1927), on p. 4

<sup>45</sup> Sarton, "The New Humanism," 35.

<sup>46</sup> George Sarton, *Introduction to the History of Science*, vol. 1 (Washington: The Williams and Wilkins Company Baltimore, 1927), 17.

<sup>47</sup> Sarton, *Introduction to the History of Science*, 1:17.

language.<sup>48</sup>

## **1.2. Towards an Increased Reflexivity in Historiography of Science**

### *1.2.1. General Developments in History of Science*

In the second half of the twentieth century, however, the idea of a linear progress throughout history was increasingly questioned. As History of Science became a full-fledged academic discipline, its practitioners contested the idea that their research subject improved and accumulated linearly through time, dismissing this idea as ‘*Whig history*’. Narratives of long-term progress were increasingly redeemed for historical narratives in which temporal discontinuities were emphasised and the past was studied ‘*in its own terms*’ instead of in the light of later developments.<sup>49</sup> In the early 1960s Thomas S. Kuhn published the first edition of his famous work “*The Structure of Scientific Revolutions*” in which he argued that scientists always work within a certain ‘*paradigm*’. They solve the problems their paradigm entails with the tools it provides them with until, at a certain point, anomalies appear that bring the scientific community into a crisis which leads it to abandon its paradigm and adopt a new one.<sup>50</sup> Whereas we can think of progress within one paradigm as linear, this is not possible anymore for the entire history of science. This line of thought was radicalised by Barry Barnes and David Bloor, who advocated what came to be known as the ‘strong program’ of a sociology of science, based on the claim that science had to be studied like any other aspect of human culture: regardless of its truth or falsity. Although Barnes and Bloor’s methodological relativism led to heavy debates, their views gave way to the field of the sociology of scientific knowledge or SSK.<sup>51</sup> The idea that historians of science have to take into account the influence of the particular historical contexts in which

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<sup>48</sup> It has to be noted here that notwithstanding his general interest in the past scientific activities of Islamic societies, Sarton described them in a very uncritical and even racist way as the result of a ‘Semitic genius fertilized by the Iranian genius’ without taking into account the wide variety of the historical actors designated as Muslims. George Sarton, *The Incubation of Western Culture in the Middle East: A George C. Keiser Foundation Lecture Delivered in the Coolidge Auditorium of the Library of Congress, March 29, 1950* (Washington: Library of Congress, 1951), 29.

<sup>49</sup> Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science* (Cambridge University Press, 1998), 4.

<sup>50</sup> Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962).

<sup>51</sup> Barry Barnes and David Bloor, “Relativism, Rationalism and the Sociology of Knowledge,” in *Rationality and Relativism*, ed. Martin Hollis and Steven Lukes (Oxford: Blackwell Publishing Ltd, 1982), 21–47.

scientists work became more and more common in History of Science ever since.<sup>52</sup> This increased attention to the historical context of science was in several cases accompanied by an increased awareness of the importance of the position of the researcher herself. That is, if one argues that scientific practices are shaped by their contexts, historiography, as a science among others, cannot escape this situatedness. This reflexivity has been explicitly addressed in sociology of scientific knowledge and sociologically inspired history of science.<sup>53</sup> Researchers came to terms with the possible impact writing history had on their own contexts and vice versa.

### 1.2.2. *Absence of These Developments in Publications on Islamicate Societies*

Along with these shifts towards more contextualisation, however, the interest in ‘non-Western science’ decreased proportionally. Apart from this tendency, the works on the subject that have been published did not show the same preoccupation with discontinuities through history as other publications within the discipline. The cumulative bibliography of publications in the History of Science that has been published annually by *Isis* ever since the first edition illustrates this evolution clearly. If we search the bibliography for publications on a research subject such as Galileo Galilei’s work, we can make the following observations. In the first part of the cumulative bibliography, which lists the works published between 1913 and 1965, we mostly find internalist – that is, allegedly ‘content’ focused – works on the subject, for example: “*Galileo and Avempace. The dynamics of the leaning tower experiment*” by Ernest A. Moody<sup>54</sup> or “*Some observations of Leonardo, Galileo, Mariotte and others relative to size effect*” by E. Williams.<sup>55</sup> In the first article the author describes the relations between Galileo’s ‘Pisan dynamics’ and the theories of motion found in the medieval tradition. In the latter, Galileo’s writings are compared to the present-day principle of size effect without taking into account the different contexts in which these

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<sup>52</sup> Golinski, *Making Natural Knowledge: Constructivism and the History of Science*, 4–6.

<sup>53</sup> Jan Golinski, “The Theory of Practice and the Practice of Theory: Sociological Approaches in the History of Science,” *Isis* 81 (1990): 492–505; Pierre Bourdieu, *Science of Science and Reflexivity*, trans. Richard Nice (Cambridge: Polity Press, 2004); Steve Woolgar, ed., *Knowledge and Reflexivity: New Frontiers in the Sociology of Knowledge* (London: Sage, 1988); Malcolm Ashmore, *The Reflexive Thesis: Writing Sociology of Scientific Knowledge* (Chicago: University of Chicago Press, 1989).

<sup>54</sup> Ernest A. Moody, “Galileo and Avempace: The Dynamics of the Leaning Tower Experiment,” *Journal of the History of Ideas* Vol. 12, No. 2 (April 1951): 163–93.

<sup>55</sup> E. Williams, “Some Observations of Leonardo, Galileo, Mariotte and Others Relative to Size Effect,” *Annals of Science* 13 (1957): 23–9.



concepts were developed. Apart from that, a lot of publications clearly express the linear view on progress in which Galilei's work has been framed, such as J. Hevesi's work "A summary account of the origin of the function and the variable before Galileo".<sup>56</sup> If we compare these titles to those of publications from the nineteen seventies and eighties onwards, we clearly see that internalist views on science have made way for more externalist accounts. In the nineteen nineties books like "*Galileo Courtier: The Practice of Science in the Culture of Absolutism*"<sup>57</sup> by Mario Biagioli were published, in which Galilei's work is analyzed in view of his function at the court of the Medicis and his interactions with the Vatican.

If we now take a look at the publications listed in the section 'Islam' in the cumulative bibliography of Isis from 1913 until 1965, we find the same linear view on the progress of science. Works with titles like "*The Islamic Background of Modern Science*"<sup>58</sup> by Khwaja Abdul Waheeb or "*A survey of Muslim contribution to science and culture*"<sup>59</sup> by Muhammad Abdur Rahman clearly illustrate how science in the Islamicate world was seen as a phase in a process of global progress. This phase was situated in medieval times and was presumed to have come to an end around the fourteenth century. Subsequently, the terminology of 'decline' is ubiquitous when later periods are mentioned. Titles like "*Les Aspects de l'Assor et du Déclin Scientifique dans l'Islam*"<sup>60</sup> by William Hartner or "*Our Decline and its Causes*"<sup>61</sup> written from the Muslim perspective of Shakib Arsalan bear witness to this tendency. An even stronger indication for this is the fact that 'Islam' is a subdivision in the volumes that list publications about periods and civilisations up to the fourteenth century and not in the subsequent part listing publications on the fifteenth to the nineteenth century. Almost no research is done on science in Islamicate societies after the fourteenth century, because it was deemed to have been in decline, not relevant, or even non-existent. Science in Islamicate societies was considered to be science transmitted from the

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<sup>56</sup> J. Hevesi, "A Summary Account of the Origin of the Function and the Variable before Galileo," in *Acts of the 7th Congress in International History of Science in Jerusalem 1953* (Paris: Hermann, 1954).

<sup>57</sup> Mario Biagioli, *Galileo Courtier: The Practice of Science in the Culture of Absolutism* (Chicago & London: The University of Chicago Press, 1993).

<sup>58</sup> Abd al-Wahed Khwaja, *The Islamic Background of Modern Science* (Lahore: Majlis-I Markaziyya-I Isha'at-I Qur'an-I Hakim, 1945).

<sup>59</sup> Muhammad Abdur Rahman Khan, "A Survey of Muslim Contribution to Science and Culture," *Islamic Culture* 16 (1942): 2–20; 136–52.

<sup>60</sup> William Hartner, "Les Aspects de l'Essor et Du Déclin Scientifique Dans l'Islam," in *Act. VIIIe Congr. Int. Hist. Sci. (Florence, 1956)* (Paris: Hermann, 1958), 1188–95.

<sup>61</sup> Shakib Arsalan, *Our Decline: Its Causes and Remedies* (Lahore: Islamic book trust, 1944).

Greeks and – in some accounts – from other ancient civilisations to Latin Europe. Titles like “*Remarques sur la transmission de la pensée grecque aux Arabes*” by Joseph Schacht<sup>62</sup> and “*The Greek sources of Islamic scientific illustrations*” by Kurt Weitzmann<sup>63</sup> bear witness to this tendency. Other works do not explicitly go into this narrative of decline, but their focus on particular texts without any reference to where, when and by whom they were written shows an internalist focus linked to the universalist view of science expressed in the narrative of linear progress.<sup>64</sup>

If we take a look at publications on history of science in Islamicate societies after 1965, an evolution similar to the one of the publications on Galilei’s works is virtually absent. Between 1966 and 1975, we do not find any clear changes in the methodological framework in which the studies were done. Publications with titles like “*The Arabic translations of a Greek manual of mechanics*” by D.E.P. Jackson<sup>65</sup>, “*La science arabe et son rôle dans l’évolution scientifique mondiale*” by Aldo Mieli<sup>66</sup> and “*Testimonianze medievali e pensiero moderno: Carme sull’anatomia, epistola sull’astronomia inediti di Ibn Sina*”<sup>67</sup> by Giorigio Scrimieri among others illustrate how science in Islamicate societies was still seen as a phase in history that could be situated in medieval times in between the Greek tradition and modern Europe. The terms of ‘legacy’ and ‘heritage’ were used several times.<sup>68</sup> In this decennium too, a lot of internalist studies were published, as well as translations of texts, without any reference to their context. What does seem to change is the amount of studies about science in the Islamicate world in the fourteenth century or even later. Researchers like Edward E.S. Kennedy and Roshdi Rashed argued in their internalist studies of astronomy and mathematics in the

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<sup>62</sup> Joseph Schacht, “Remarques Sur La Transmission de La Pensée Grecque Aux Arabes,” *Hist. Méd.* 5, no. 2 (1952): 11–19.

<sup>63</sup> Kurt Weitzmann, “The Greek Sources of Islamic Scientific Illustrations,” in *Archaeologica Orientalia in Memoriam Ernst Herzfeld* (New York: Augustine, 1952), 244–66.

<sup>64</sup> E.g. E.S. Kennedy and Imad Ghanem eds, *The Life and Work of Ibn Al-Shatir* (Aleppo: University of Aleppo, 1976); Roshdi Rashed, “The End Matters,” *Islam and Science* 1, no. 1 (2003): 153–60; Roshdi Rashed, “Preface,” in *Encyclopedia of the History of Arabic Science*, ed. Roshdi Rashed (London & New York: Routledge, 1996), vii–xii; Ehsan Masood, *Science and Islam: A History* (London: Icon Books, 2009).

<sup>65</sup> D.E.P. Jackson, “The Arabic Translations of a Greek Manual of Mechanics,” *Islamic Quarterly* 16 (1972): 96–103.

<sup>66</sup> Aldo Mieli, *La Science Arabe et Son Rôle Dans l’évolution Scientifique Mondiale. Reimpression Anastatique Augmenté d’une Bibliographie* (Leiden: Brill, 1966).

<sup>67</sup> Giorgio Scrimieri, *Testimonianze Medievali e Pensiero Moderno: Carme Sull’anatomia, Epistola Sull’astronomia Inediti Di Ibn Sina* (Bari: Levante, 1970).

<sup>68</sup> Magda Withrow, ed., *Isis Cumulative Bibliography. Vol. 4 (1913-1965): Civilizations and periods - Prehistory to Middle Ages* (London: Mansell Publishing Limited in conjunction with the History of Science Society, 1982), 289–98.

late medieval period that science in the fourteenth century Islamic world did not yet witness a decline, but flourished in the fields of mathematics and astronomy.<sup>69</sup> This was however not a radical change of view, but rather an extension of the existing linear view to encompass later periods.

This picture only changes a little if we look at the works published after 1975. Some of the most important studies on Islamic science after 1975 were the works of David King on late medieval astronomy. Examples are found in his major two volume work *"In Synchrony with the Heavens"*,<sup>70</sup> that collects most of his research on the subject. Here the author mentions the notion of context, but considers it as a factor independent of the scientific value of the texts under study. This is also the case for publications by Edward S. Kennedy of which the titles *"A Survey of Islamic Astronomical Tables"*<sup>71</sup> or *"Commentary upon Bīrūnī's Kitāb taḥdīd al-amākin"*<sup>72</sup> are but a few examples of his internalist, text-centered approach. This list can be extended with publications of George A. Saliba like *"The role of Maragha in the development of Islamic astronomy: A scientific revolution before the Renaissance"*<sup>73</sup> or Paul Kunitzsch' *"Observations on the Arabic reception of the astrolabe"*<sup>74</sup> and many others. In general, we can safely say that the tendency towards questioning linear progress and the historical contextualisation of scientific practices was not as strong in the history of science in Islamic societies as it was in the history of science in Europe. Even in the section on Arabic science in a reader's guide to the history of science, which was published in 2000, we still find this same linear view expressed.<sup>75</sup>

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<sup>69</sup> Rashed, "The End Matters," vii–xii; E.S. Kennedy, "Late Medieval Planetary Theory," *Isis* 57, no. 3 (1966): 365–78; Kennedy and Ghanem, "The Life and Work of Ibn Al-Shāṭir: An Arab Astronomer of the Fourteenth Century."

<sup>70</sup> David A. King, *In Synchrony with the Heavens: Studies in Astronomical Timekeeping and Instrumentation in Medieval Islamic Societies* (Leiden: Brill, 2004).

<sup>71</sup> E.S. Kennedy, "A Survey of Islamic Astronomical Tables," *Transactions of the American Philosophical Society* 46, No. 2 (1956): 123–77.

<sup>72</sup> E.S. Kennedy, *Commentary upon Bīrūnī's Kitāb Taḥdīd al-Amākin* (Beirut: American University of Beirut Press, 1973).

<sup>73</sup> George Saliba, "The Role of Maragha in the Development of Arabic Astronomy: A Scientific Revolution before the Renaissance," *Revue de Synthèse* 3–4, no. 185 (1987): 361–73.

<sup>74</sup> Paul Kunitzsch, "Observations on the Arabic Reception of the Astrolabe," *Archives Internationales d'Histoire Des Sciences* 31 (1981): 243–52.

<sup>75</sup> Toby Huff, "Arabic Science," in *Reader's Guide to the History of Science*, ed. Arne Hessenbruch (London & New York: Routledge Taylor and Francis, 2000), 35–36 The writer of this chapter also wrote a monograph on the question of why modern science only arose in the west and not in the Islamic world or in China: Toby Huff, *The Rise of Early Modern Science: Islam, China and the West* (Cambridge: Cambridge University Press, 2003).

Of course there are some important exceptions to this general tendency. It would be unfair to neglect important publications like Abdelhamid Sabra's which, from the eighties on, questioned the narrative of linear progress, as illustrated by his article "*The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam: A Preliminary Statement*".<sup>76</sup> In this article Sabra questions what he calls the 'kinematic account' of the transmission of science, according to which knowledge can be transmitted from one society or culture to another without being affected by this transmission. Without contextualisation, Sabra argues, this account of knowledge transmission leads to reductionism and precursorism. With regard to history of science in Islamicate societies, he states that

[...] reductionism is the view that the achievements of Islamic scientists were merely a reflection [...] of earlier (mostly Greek) examples. Precursorism [...] reads the future into the past, with a sense of elation.<sup>77</sup>

In contrast with a 'classicist approach' to Islamicate science which focuses on the Greek predecessors and a Latin medievalist approach which focuses on the influence of Islamicate science on the Latin West, Sabra suggests an 'Islamicist approach'

[...] which looks at science in Islam as a phenomenon of Islamic civilization – a phenomenon which must be understood and explained in terms peculiar to that civilization.<sup>78</sup>

In the article Sabra advocates such a view, although he does not argue that the 'kinematic account' of knowledge transmission is problematic but rather that it is only one part of the picture. Situated on the spectrum of developments in the sociology of science in "Western" history of science, Sabra would not be considered a strong programme externalist. He explicitly states this in a second important article, where he writes:

[C]ontextualism is but an obvious consequence of the simple, undeniable fact of the local character of all events, including historical events. Since a historical event is where and when and how it is, inseparably tied to all the circumstances that combine to define it for us as historians, then, to be genuinely historical, all history of science must be contextual, because all historical events are local.

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<sup>76</sup> Sabra, "The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam: A Preliminary Statement."

<sup>77</sup> Sabra, "The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam: A Preliminary Statement", 223–24.

<sup>78</sup> Sabra, "The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam: A Preliminary Statement", 224.

I said "weak version" because I do not wish to subscribe to a stronger, reductionist version that seems to me to misinterpret the local character of cognitive expression and behavior by appearing to deprive them of objective import.<sup>79</sup>

Notwithstanding this, the contextualisation Sabra advocates in his publications was ground-breaking within the history of science in Islamicate societies. Some later works inspired and influenced by Sabra's innovatory writings are Kaveh Niazi's "*Qutb Al-Din Shirazi and the Configuration of the Heavens*"<sup>80</sup> in which the author situates the work of astronomer Qutb al-Dīn al-Shirāzī in the Persian tradition of astrology in service of the Ilkhanid leader. Another example is Nahyan Fancy's book "*Science and Religion in Mamluk Egypt: Ibn Al-Nafis, Pulmonary Transit and Bodily Resurrection*"<sup>81</sup> in which the author situates his work in the tradition of Sabra in the first chapter of the work which bears the title "Towards a Contextualist Approach".<sup>82</sup>

However important these publications are, they are quite limited in number. The majority of the publications on history of science in Islamicate societies still bear witness to a linear vision on progress through history that considers science to be a universal project that should – or at least can – be studied independently of its historical context. As mentioned above, works like Toby Huff's "*Arabic Science*" published in 2000, Jonathan Lyon's "*House of Wisdom*" published in 2009 or al-Khalili's "*Pathfinders*" written in 2010 among others still bear witness to the same tendencies.<sup>83</sup> Sonja Brentjes states that one of the reasons for this is that most research on the subject was carried out by academics with a background in philology or mathematics who had a supplementary interest or education in oriental studies. They felt, she states,

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<sup>79</sup> A.I. Sabra, "Situating Arabic Science: Locality versus Essence," *Isis* 87, no. 4 (December 1996): 655.

<sup>80</sup> Kaveh Niazi, *Qutb Al-Din Shirazi and the Configuration of the Heavens*, Archimedes Studies in the History and Philosophy of Science and Technology 35 (Berkeley: Springer, 2014).

<sup>81</sup> Nahyan Fancy, *Science and Religion in Mamluk Egypt: Ibn al-Nafis, Pulmonary Transit and Bodily Resurrection* (New York: Routledge University Press, 2013).

<sup>82</sup> Fancy, *Science and Religion in Mamluk Egypt*, 1–15.

<sup>83</sup> Huff, "Arabic Science"; Jonathan Lyons, *The House of Wisdom: How the Arabs Transformed Western Civilization* (London: Bloomsbury, 2009); Jim Al-Khalili, *Pathfinders: The Golden Age of Arabic Science* (London: Penguin Books, 2010).

‘deeply attached to the style of Otto Neugebauer which concentrated on identifying the scientific contents while ignoring most of its context.’<sup>84</sup>

Neugebauer was a historian of science who wrote a critique to Sarton in which he advocated the study of so-called ‘wretched subjects’. Wretched subjects were subjects that are considered to be irrational today, but were taken seriously by the historical actors writing about them. However, while Sarton and Neugebauer disagreed about the need to study these subjects, they still agreed on the idea that these subjects bear witness to the linear progress of science through history, regardless of its context.<sup>85</sup> I will elaborate on this subject further on in this dissertation. For now, we can conclude that the tendency towards contextualisation was not even nearly as central to History of Science in Islamicate societies in the decades in which it was the most important discussion in the discipline of History of Science in general.

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<sup>84</sup> Sonja Brentjes, “Between Doubts and Certainties: On the Place of History of Science in Islamic Societies within the Field of History of Science,” *NTM International Journal of History & Ethics of Natural Sciences, Technology & Medicine* 11 (2003): 65–79.

<sup>85</sup> Neugebauer, “The Study of Wretched Subjects.”

## Chapter II: The History of Oriental Studies

The discipline of Oriental Studies went through its own debate in the same decades during which History of Science was confronted with what I have previously called its contextualisation debate. The debate in Oriental Studies is generally known through Edward Said's famous work "*Orientalism*". In this work Said argued that the discourse used in Oriental Studies in Western universities was 'a Western style for dominating, restructuring, and having authority over the Orient'.<sup>86</sup> This discourse was not only institutionalised in Anglo-American academia, Said argued, but shaped the discipline and its institutionalisation in general. Just like Sarton, Said issued a call for humanism, explaining that the purpose of his work lay in

'attempting to dissolve Blake's mind-forg'd manacles so as to be able to use one's mind historically and rationally for the purposes of reflective understanding and genuine disclosure.'<sup>87</sup>

Whereas his work had an important impact, eventually leading to several methodological debates within the discipline, the discussions resulting from this in the first place focused on the shaping of discontinuities on a spatial level, lacking the same reflection on a temporal, historical scale. In this chapter I will show that the historical background of the institutional context in which I am working, was no exception to this.

### 2.1. Said's Humanism

#### 2.1.1. *Developments in Oriental Studies*

Less than two years after Sarton's death, an Institute for Oriental, Eastern European and African studies was established at his alma mater, the University of Ghent. In the inauguration speeches in 1958, two motives for the foundation of the Institute stand out. The first motive is a political one. This is expressed in both the speeches of the rector, Pieter Lambrechts, and of the head of the newly founded institute, Adriaan Scharpé. Lambrechts states that the Institute would enable the

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<sup>86</sup> Edward W. Said, *Orientalism* (London: Penguin Books, 2003), 3.

<sup>87</sup> Said, *Orientalism*, xvii.

university of Ghent '[...]to play a role in Congo!'.<sup>88</sup> The study of Arabic was important in the sense that it could for example be used to tackle '[...] the problem of the penetration of Islam in Belgian Congo'.<sup>89</sup> This concern for political relevance was echoed in the speech of Scharpé who expressed the role of '[...] the East and Africa as powerful actors in the current world order'.<sup>90</sup> Scharpé does however focus on other motives for the foundation of the Institute which he calls the 'general human motives'.<sup>91</sup> He states that:

‘The manifold cultures of the ancient people of Asia and Africa are of interest to us as they are products of the human mind as such. [...] We search for the image of these people in their civilizations and we mirror ourselves to this, to enrich our own personality.’<sup>92</sup>

In his speech as head of the Institute, Scharpé echoes the humanism of Sarton. Both allude to the study of the other in order to acquire knowledge of oneself.<sup>93</sup> Where Sarton expresses this humanism in a primarily temporal sense<sup>94</sup>, that is as the progress of humanity through history, Scharpé focuses on the differences between cultures on a spatial level considering them all products of the universal human mind.<sup>95</sup>

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<sup>88</sup> Pieter Lambrechts, “Toespraak van Rektor P. Lambrechts,” ed. W. Delva et al., *De Brug*, Special issue for the foundation of the Institute for Oriental, East European and African studies (July 1958): 5 (My translation - Original: “om een rol te spelen in Kongo!”).

<sup>89</sup> Lambrechts, “Toespraak van Rektor P. Lambrechts,” 8 (My translation - Original: “het probleem van de penetratie van de Islam in Belgisch Kongo.”).

<sup>90</sup> Adriaan Scharpé, “Toespraak van de Voorzitter van Het Instituut, Prof. Dr. A. Scharpé,” ed. W. Delva et al., *De Brug*, no. Special issue for the foundation of the Institute for Oriental, East European and African studies (July 1958): 13 (My translation - Original: “Het Oosten en Afrika [...] als machtsfactoren in het huidige wereldbestel.”).

<sup>91</sup> Scharpé, “Toespraak van de Voorzitter van Het Instituut, Prof. Dr. A. Scharpé”, 11 (My translation - Original: algemeen-menselijke motieven).

<sup>92</sup> Scharpé, “Toespraak van de Voorzitter van Het Instituut, Prof. Dr. A. Scharpé”, 11 (My Translation - Original: “De menigvuldige kultuuruitingen der oude volkeren van Azië en Afrika interesseren ons immers als voortbrengselen van de menselijke geest als zodanig”).

<sup>93</sup> Scharpé, “Toespraak van de Voorzitter van Het Instituut, Prof. Dr. A. Scharpé”, 13 Scharpé refers to the inauguration speech of similar institutes, like the School of Oriental Studies in London (1917) and the ‘Ostasiatischen Seminar’ at the Kolonialinstitut of Hamburg where the same humanistic discourse is present.

<sup>94</sup> Sarton, “The New Humanism” Of course Sarton’s humanism results in his call for universalism and is also spatial in that sense. However, the temporal aspect is paramount, as Sarton treats all cultures depending on the period in which, according to his linear view on progress, science flourished in them. For Islamicate societies this means the period between the eighth and thirteenth century.

<sup>95</sup> Scharpé, “Toespraak van de Voorzitter van Het Instituut, Prof. Dr. A. Scharpé.”



As we have seen, the tradition of Oriental Studies was criticised severely by Edward Said in the late nineteen seventies.<sup>96</sup> Not because of its humanistic character, as Said was a confirmed humanist himself, but because of the other motive mentioned by Scharpé and Lambrechts: the relation of Oriental Studies to colonial politics and imperialism. According to Said the discourse of orientalism was one of “*the West*” dominating “*the East*”. Said used Foucauldian discourse analysis to show how the characterisation of “*the East*” was at the same time a characterisation of “*the West*” as its opposite and hence righteous dominator through dichotomies of irrational versus rational, chaos versus order and the like. In his work, Said discusses important literary and historiographical sources which have contributed to this discourse of hegemony that eventually also reinforced European imperialism in the Middle East.<sup>97</sup> The discourse on how to talk about and understand the Middle East, in other words, was made in the West by people who took an interest in dominating the East.

### *2.1.2. Similarities and Differences With Debates in History of Science*

The debate that became famous with Said’s work is similar to the aforementioned discussions in History of Science as in both debates the use of one’s own categories in order to describe and judge ‘the other’ is considered a form of oppression. In History of Science this was acknowledged primarily in a temporal sense, under the terminologies of presentism and Whig history – i.e. history as it is (re)written by the winners of a conflict in a way that their victory seems to be the natural telos of the story. In Oriental Studies, this was acknowledged primarily in a spatial sense and labelled orientalism. What the ‘Orientalist’ is to Said, the ‘Whig historian’ is to contemporary History of Science. The biggest difference between the debates, however, is that the discussion in History of Science was primarily linked to a nonlinear view on history, which clearly differs from the humanism Said still adhered to. As a humanist, Said concludes his work with the following words:

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<sup>96</sup> Edmund Burke III and David Prochaska, eds., *Genealogies of Orientalism. History, Theory, Politics* (Lincoln and London: University of Nebraska Press, 2008) Edmund Burke III and David Prochaska remark that “Orientalism did not emerge from nothing, but rather was linked to a deep history of anti-imperialist thought and activism in the metropole as well as in the colonies.” For the sake of brevity these tendencies prior to the publication of Said’s work will not be discussed in this article. The authors’ work is however very interesting because they draw attention to the long neglected historical context and history of orientalism itself. In this sense they make a reflexivity debate possible that is similar to the one that has been held in sociologically inspired History of Science.

<sup>97</sup> Said, *Orientalism*, 31–110.

‘Positively, I do think [...] that enough is being done today in the human sciences to provide the contemporary scholar with insights, methods and ideas that could dispense with racial, ideological, and imperialist stereotypes of the sort provided during its historical ascendancy by Orientalism. I consider Orientalism’s failure to have been a human as much as an intellectual one; for having to take up a position of irreducible opposition to a region of the world it considered alien to its own, Orientalism failed to identify with human experience, failed also to see it as human experience. The worldwide hegemony of Orientalism and all it stands for can now be challenged, if we can benefit properly from the general twentieth-century rise to political and historical awareness of so many of the Earth’s peoples. If this book has any future use, it will be as a modest contribution to that challenge, and as a warning: that systems of thought like Orientalism, discourses of power, ideological fictions – mind forg’d manacles – are all too easily made, applied and guarded. [...] If the knowledge of Orientalism has any meaning, it is in being a reminder of the seductive degradation of knowledge, of any knowledge, at any time.’<sup>98</sup>

Here Said expresses the humanist presumption that all of humanity is on one and the same right path towards an ever increasing knowledge about the world. Orientalism, as a discourse, was an aberration from this path, a temporary degradation in the linear progress of knowledge through history.

## **2.2. Towards an Increased Reflexivity in Oriental Studies**

A lot of scholars have adhered to, deepened, and criticised Said’s work since its publication.<sup>99</sup> A substantial part of the publications written in reaction to Said have precisely questioned his view on progress and have argued for a historicisation of the critique of orientalism. Edmund Burke III and David Prochaska have written on these developments in academic research summarizing that:

‘[t]he critique of orientalism launched by Said’s book has thus far proven most fruitful to scholars based in literary theory, as a result of which, history has been de-emphasized. These scholars have primarily focused their critique at

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<sup>98</sup> Said, *Orientalism*, 328.

<sup>99</sup> A list of all the works written in reactions to Said’s book can for example be found in Claire Callaghan, “Selected Bibliography of Work about and of Edward Said’s Texts,” *CLCWeb: Comparative Literature and Culture* 5, no. 4 (2005), <https://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1203&context=clcweb>.

the level of epistemology and metacommentary on the discourse of orientalism where they have indeed made a vital contribution. However, despite important achievements in theorizing orientalism as a discourse and some notable work that explores specific instances of how it shaped and was shaped by colonialism, the critique of colonial representations appears increasingly abstract and disengaged with both its own history as well as the specific colonial histories that it seeks to explain. [...] As historians with a stake in the complex issues raised by the critique of colonial forms of knowledge, we contend that while colonial representations have been theorized, they have yet to be adequately historicized.’<sup>100</sup>

Thus, Burke and Prochaska call for a reflexivity debate similar to the one that has been held in sociologically inspired history of science. They call for the tradition of criticism of orientalism to become aware of the influence of their own claims in their specific contexts. In this way, they accept Said’s views but renounce his contention of the linear progress of knowledge through history. At the same time, they acknowledge that Said himself performed a political service by labelling this discourse ‘*Orientalism*’ so that it became available to all who wanted to react to the imperialism in the literary and historical canon.<sup>101</sup> They were not the first ones to do this, as Said himself already alluded to the ‘sophisticated postmodern critics’<sup>102</sup> of his work in the introduction to the 2003 edition of “*Orientalism*”. Their central criticism is that Said, by discussing orientalism ‘as the discourse of power by which imperialism rationalized itself to itself, justifying its domination while distorting the image of the colonized’<sup>103</sup>, actually reinforces the very dichotomies between the powerful and active Western imperialists and the passive people that were being colonised, dichotomies that he otherwise sought to counter.<sup>104</sup> As Burke and Prochaska argue, orientalism after all runs the risk of becoming a theoretical framework for text study disconnected from any engagement with history.<sup>105</sup>

In the edited volume “*Genealogies of Orientalism*” published in 2008, several authors propose an alternative approach to Said’s critique which takes into account the

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<sup>100</sup> Edmund Burke III and David Prochaska, “Rethinking the Historical Genealogy of Orientalism,” *History and Anthropology* 2, no. 18 (2007): 2, <https://doi.org/10.1080/02757200701218262>.

<sup>101</sup> Burke III and Prochaska, “Rethinking the Historical Genealogy of Orientalism”, 1.

<sup>102</sup> Said, *Orientalism*, xvii.

<sup>103</sup> Burke III and Prochaska, “Rethinking the Historical Genealogy of Orientalism,” 2.

<sup>104</sup> Burke III and Prochaska eds., *Genealogies of Orientalism. History, Theory, Politics*, 3.

<sup>105</sup> Burke III and Prochaska, “Rethinking the Historical Genealogy of Orientalism”, 147.

historical situatedness of the critique itself. The authors in this volume are working within the disciplines of anthropology, sociology and political studies among others. However, none of them focuses on history of science. Present studies in the History of Science of Islamicate societies, as I have shown in the first chapter, are generally still written with the assumption of a linear progress of knowledge through history. In the next chapter, I will suggest how, by bringing the debates held in Oriental Studies and in History of Science together, History of Science in Islamicate societies can regain its relevance in present-day debates. As such, I will come to the issue of my own position in this research and my approach to the manuscripts I have studied – to my “*methodology*”.

## Chapter III: Merging the Debates

Whereas both History of Science and Oriental Studies have had their own important debates over the past decades, History of Science in Islamicate societies seems to have missed both boats. This is at least part of the reason for the marginalisation of the (sub)discipline over the last few decades. In 2003 Sonja Brentjes published an article in which she discussed her observation of the marginalisation of History of Science in Islamicate societies within:

‘the general history of science community as well as in the academic world of Islamic studies, Near Eastern language and civilization programs, Middle Eastern history, or the investigation of the modern Muslim world.’<sup>106</sup>

When it comes to institutions, she remarked that:

‘all over the globe there are only a very few scholars with positions for teaching and research in the history of science in Islamic societies. Most history of science departments or institutes do not count among their faculty a specialist for Islamic societies and do not offer courses for these regions. Equally, most departments for Arabic, Persian, and Ottoman Turkish, Islamic studies, Middle Eastern history or the modern Muslim world do not include a single historian teaching the history of the sciences in these regions. The number of advertised positions for this field during the last decade was zero.’<sup>107</sup>

If we take a look at the fourth volume of the *Isis* cumulative bibliography<sup>108</sup>, which lists the publications between 1913 and 1965 – and roughly compare the occurrence of the terms ‘Islam’ and ‘Islamic’ in the listed titles, we find 361 publications compared to 139 in the seventh volume – which lists the publications between 1966 and 1975<sup>109</sup>. Whereas that is an increase in absolute numbers (6,9 publications a year to 13,9 publications a year), it is a serious decrease when considered relatively. The fourth and fifth volume, in which the publications between 1913 and 1965 are listed,

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<sup>106</sup> Brentjes, “Between Doubts and Certainties: On the Place of History of Science in Islamic Societies within the Field of History of Science,” 65.

<sup>107</sup> Brentjes, “Between Doubts and Certainties”, 65.

<sup>108</sup> Withrow, *Isis Cumulative Bibliography. Vol. 4 (1913-1965): Civilizations and Periods - Prehistory to Middle Ages*.

<sup>109</sup> John Neu, ed., *Isis Cumulative Bibliography, Vol. 7 (1966-1975): Subjects, Periods and Civilizations* (London: Mansell Publishing Limited in conjunction with the History of Science Society, 1985).

contain 1010 pages together, in which 361 publications contain the term 'Islam': that is 0,35 per page. The seventh volume contains 712 pages, in which 139 publications contain the term 'Islam': that is only 0,19 a page. So the share of publications focusing on Islamicate societies diminished substantially already in the early seventies.<sup>110</sup> Whereas these numbers do not tell us anything in themselves, they point in the same direction as the results of Brentjes' qualitative research on the marginalization of the History of Science in the Islamicate world within history of science.

### **3.1. On the Problem of a Humanist Approach**

If we however try to change the discipline according to these discussions, we encounter several problems that call for a serious reorientation. In the first part of this chapter I will shed light on the problems the humanist approaches of Sarton and Said entail for History of Science in Islamicate societies today. I will historicise these problems and suggest answers to them which I will further discuss in the second part of this chapter, where I will elaborate on my choice for a material approach of texts throughout this research instead.

#### *3.1.1. What can it Mean to Write a History of Science in Islamicate Societies Today?*

As discussed in the first chapter, over the last couple of decades History of Science had a debate on the role of and need for contextualisation. With the recent tendency of reflexivity, that is, of being aware of one's own role and situatedness in writing a history of science, there has been a shift in the possibilities and limits the discipline offers us. First of all, we have to ask ourselves what we are doing when we are writing history of science within the European university. To write the history of something called 'science' is to write the history of a very specific epistemological tradition that evolved in Europe since the seventeenth century's 'scientific revolution'<sup>111</sup>. Regardless of the discussions about the actual meaning and gravity of

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<sup>110</sup> Stephen P. Weldon, "Isis CB Explore," research tool, Isis CB Explore, 2018, <https://data.isiscb.org/> The cumulative bibliography listing publications between 1975 and the present has been published in the form of an online databank, so I could not make the same comparison for this period, but a rough search for 'islam' in the databank brings up 3285 records as a result, whereas the databank contains 1,9 million records in total.

<sup>111</sup> There is a lot of discussion about whether the Scientific Revolution was actually a revolution and whether we should really adhere as much attention to it as we do nowadays, but I will not elaborate on this here. See: Mario Biagoli, "The Scientific Revolution Is Undead,"

the Scientific Revolution, one cannot but admit that the period and the subsequent era of the Enlightenment have become a very central narrative in the way we self-identify as a ‘Western’ society today.<sup>112</sup> In this way, the dichotomy of East and West is strongly interrelated with the dichotomy between science and other knowledge practices. In the introduction to Georges Canguilhem’s “*History of the Pathological*”, Michel Foucault describes the discipline of the History of Science as a continuation of the philosophical project that started in the Enlightenment, a project in which ‘rational thought was put in question’.<sup>113</sup> According to Foucault, the philosophers of the Enlightenment ‘opened philosophy up to a whole historico-critical dimension’.<sup>114</sup> This historico-critical work has two objectives which are intrinsically intertwined:

‘on the one hand, to look for the moment [...] when the West first asserted the autonomy and sovereignty of its own rationality [...] [on the other hand] to analyze the “present” moment and [...] to look for that relation which must be established with this founding act.’<sup>115</sup>

This formulation of the project of the Enlightenment and by implication the History of Science, implies that for Foucault, doing History of Science means writing the history of Western rationality. Whereas Foucault makes this point explicit, the overwhelmingly Western focus of present day History of Science – mentioned in the first and second chapter of this dissertation – does in fact reveal a similar preoccupation. An illustration of this tendency can for example be found in Steven Shapin and Simon Schaffer’s well known work “*The Leviathan and the Air-Pump*”<sup>116</sup>, which is generally considered to be ‘one of the most influential books in the history of science’.<sup>117</sup> At the end of this work, Shapin and Schaffer discuss the future for research in history of science, referring to the project as one of trying to understand ‘our

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*Configurations* 6, no. 2 (1998): 141–48; Andrew Cunningham and Perry Williams, “De-Centring the ‘Big Picture’: The Origins of Modern Science and the Modern Origins of Science,” *The British Journal for the History of Science* 26, no. 4 (1993): 407–32.

<sup>112</sup> E.g. Jonathan I. Israel, *Radical Enlightenment: Philosophy and the Making of Modernity 1650-1750* (New York: Oxford University Press, 2001); Jonathan I. Israel, *Enlightenment Contested: Philosophy, Modernity, and the Emancipation of Man 1670-1752* (New York: Oxford University Press, 2006); Steven Pinker, *Enlightenment Now: The Case for Reason, Science, Humanism, and Progress* (New York: Penguin Books, 2018).

<sup>113</sup> Michel Foucault, Georges Canguilhem, and Carolyn R. Fawcett, “Introduction,” in *The Normal and the Pathological* (New York: Zone Books, 1978), 9.

<sup>114</sup> Foucault, Canguilhem, and Fawcett, *The Normal and the Pathological*, 9.

<sup>115</sup> Foucault, Canguilhem, and Fawcett, *The Normal and the Pathological*, 9.

<sup>116</sup> Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle and the Experimental Life*, 2nd ed. (Princeton: Princeton University Press, 2011).

<sup>117</sup> Azadeh Achbari, “The Reviews of Leviathan and the Air-Pump: A Survey,” *Isis* 1, no. 108 (March 2017): 108–16.

science'<sup>118</sup> or science as 'our knowledge, our society'<sup>119</sup>, thus implicitly defining and delineating their own tradition as that of "*the West*". Shapin and Shaffer's work was an influential exemplar for a whole tradition of historians of science who implicitly share this preoccupation with "*the West*" as a basis for their self-image. The same is true for a similar survey work on history of science written by H. Floris Cohen. In his book "*The Scientific Revolution: A Historiographical Inquiry*" he even devotes a whole chapter to the question of the 'The Nonemergence of Early Modern Science Outside Western Europe'<sup>120</sup>, which clearly illustrates Said's point of the construction of one's own identity through the depiction of 'the other'.

If the History of Science consists in the rethinking *of the West by the West*, the history of science in Islamicate societies however seems to be an irrelevant and even redundant project to undertake. If we nevertheless choose to pursue this project, then –taking into consideration what Foucault explicitly mentioned and what a whole tradition of researchers implicitly assumes – it seems that we are pursuing the kind of project that Said has labelled 'a Western style for dominating, restructuring, and having authority over the Orient'<sup>121</sup>, that is: orientalism. That means that we are using a Western project to restructure the history of a –by definition – non-Western other. In other words, we are *restructuring* history on the basis of a linear view on history with Western science as the logical terminus, presenting our current situation as the *dominant* norm, as the *authority* which can pass judgement on both science in the past as well as science in other cultures. However well intended a historian of science working on Islamicate societies might be, from this point of view she is contributing to the hegemonic discourse of orientalism by having internalised the idea that modern Western science is the measure. An example of such well-intended studies can be found in the myriad of publications on the contribution of Islamic Science to the European Renaissance or scientific revolution.<sup>122</sup> Related to this view are the studies in which the question is

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<sup>118</sup> Shapin and Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle and the Experimental Life*, 343.

<sup>119</sup> Shapin and Schaffer, *Leviathan and the Air-Pump*, 343.

<sup>120</sup> H. Floris Cohen, *The Scientific Revolution: A Historiographical Inquiry* (Chicago: University of Chicago Press, 1994).

<sup>121</sup> Said, *Orientalism*, 3.

<sup>122</sup> E.g. David C. Lindberg, *The Beginnings of Western Science: The European Scientific Tradition in Philosophical, Religious, and Institutional Context, Prehistory to A.D. 1450* (Chicago & London: University of Chicago Press, 1995); F. Jamil Ragep, "Copernicus and His Islamic Predecessors," *History of Science* xlv (2007): 65–81; Saliba, "The Role of Maragha in the Development of Arabic Astronomy: A Scientific Revolution before the Renaissance"; George Saliba, *Islamic Science and the Making of the European Renaissance* (Cambridge, Massachusetts: MIT Press, 2011); Nidhal Guessoum, "Copernicus and Ibn Al-Shatir: Does the



raised as to why modern science did eventually arise in the West, as exemplified in the famous Needham-question.<sup>123</sup> An even more radical example of this tendency are the publications in which it is claimed that modern science was actually already present in Islamicate societies in earlier periods. This is the case for the “1001 inventions” project which argues that present day science has its roots in the work of Medieval Islamic scholars.<sup>124</sup> 1001 inventions is a project ran by the “*Foundation of Science, Technology and Civilization*” which is based in Manchester and has an offspring project in “*Sultans of Science*”.<sup>125</sup> Another similar narrative can be found on the website of the Saudi-Arabian Museum of Science and Technology in Islam established by the King Abdullah University of Science and Technology.<sup>126</sup> Whereas these projects are intended to promote science in Islamicate societies, they in fact copy the mentioned orientalist discourse.

### 3.1.2. What are the Repercussions of This?

Rather than doing away with the dichotomies of East and West and of science versus non-science, I argue that we need to historicise them in order to get a better understanding of the role they have played in the disciplines we are working in. Historian of science Roger Hart did something similar for history of science in China, which has – because of the Western orientation endemic to the discipline of history of science – a lot of similarities with the topic of the research presented in this

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Copernican Revolution Have Islamic Roots?,” *The Observatory* 128 (2008): 231–39; Lyons, *The House of Wisdom: How the Arabs Transformed Western Civilization*; John Freely, *Light from the East: How the Science of Medieval Islam Helped to Shape the Western World* (London & New York: I.B. Tauris Publishers, 2008).

<sup>123</sup> Huff, *The Rise of Early Modern Science: Islam, China and the West*. For the original formulation of the “Needham question” see Joseph T. Needham, *Science and Civilisation in China*. (Cambridge: Cambridge University Press, 1954); An interesting critique of this argument specifically focused on Islamicate societies can be found in: Mohd. Hazim Shah, “Rethinking the Needham Question: Why Should Islamic Civilization Give Rise to the Scientific Revolution?,” in *The Bright Dark Ages*, ed. Arun Bala and Prasenjit Duara. (Leiden/New York: Brill, 2016), 217-235.

<sup>124</sup> The main publication of the project is Salim T.S. al-Hassani, *1001 Inventions: The Enduring Legacy of Muslim Societies* (Manchester: Foundation for Science, Technology and Civilization, 2006) The project organised exhibitions all over the world about which there is an interactive website: <http://www.1001inventions.com/> (An interesting side note is that this project is funded, among other organisations, by Unesco and National Geographic.) Apart from my criticism here, this project has been widely criticised in academic research because of the historical inaccuracies in the book and exhibition. For more information see: Sonja Brentjes, Taner Edis, and Lutz Richter-Bernburg, eds. *1001 Distortions: How (Not) to Narrate History of Science, Medicine and Technology in Non-Western Cultures*. (Würzburg: Ergon Verlag, 2016).

<sup>125</sup> King Abdullah University for Science and Technology, “Sultans of Science,” <http://www.sultans-of-science.com/>.

<sup>126</sup> <http://museum.kaust.edu.sa/about.html> KAUST is a mixed-gender university in Saudi-Arabia where students are taught in English. The institution explicitly intends to strengthen international relations in science and technology research.

dissertation. Rather than writing about events in the history of mathematics in China in terms of East and West, Hart questions the meaning and use of this dichotomy itself. In his analysis he concludes that East and West are not mere spatial denotations but terms used to construct the idea of there being ‘ “cultures or "traditions" that have remained somehow continuous over several millennia’.<sup>127</sup> Attempts to clearly define these terms, he states, have failed. Definitions tend to result in the creation of new dichotomies which in turn seem even harder to define. One of the dichotomies with which researchers have tried to explain the supposed contrast between “*the West*” and “*the East*” is that of modern versus ancient or pre-modern.<sup>128</sup> Just like the dichotomy of East and West, the dichotomy of modern and ancient is hard to define. Usually the explanation of these temporal categories, Hart states, result in lists of other purported oppositions, including:

‘positive science versus religion and metaphysics (Comte)[...] prelogical primitive mentality versus science (Lévy-Bruhl) [and] complex versus simple societies (Spencer)[...]to name just a few’<sup>129</sup>.

The dichotomy between Eastern and Western Civilization is thus explained by a reference to modernity versus ancient times, in which modernity is in its turn linked to science or a scientific world view and ancient or pre-modern times to its opposite. In elucidating the links between these dichotomies, Hart brings together the reflexive attitude with regard to spatiality which we have seen in the Orientalism debate and the reflexive attitude with regard to temporality which we have seen in the debate within the history of science. He writes that:

‘Simplistic teleologies of science provided universal benchmarks by which to measure the progress of civilizations toward modernity; the purported radical break between the ancient and the modern in the West was transposed onto a fictive Great Divide between the primitive non-West and the modern West. Ignorance of the sciences of non-Western civilizations was mistaken for ignorance of science in those civilizations.’<sup>130</sup>

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<sup>127</sup> Roger Hart, *Imagined Civilisations: China, the West and Their First Encounter* (Baltimore: The John Hopkins University Press, 2013), 3.

<sup>128</sup> Hart, *Imagined Civilisations*, 4.

<sup>129</sup> Hart, *Imagined Civilisations*, 5.

<sup>130</sup> Hart, *Imagined Civilisations*, 33.

After having discussed the links between these dichotomies as well as their continued vagueness, Hart does not do away with them immediately. Instead, he historicises them by treating them as the actors' categories of past scholars: as categories that need to be studied in their historical contexts, categories that bear the marks of these contexts and that had an effect on them as well. The same historicising needs to be done for history of science in Islamicate societies. This is what I will do in the next section of this chapter. More concretely I will discuss two things. First, I will focus on the significance of the terminology used in the history of “*astrology*” and “*astronomy*” in Islamicate societies, as this is the topic of the second and third part of this dissertation. Second, I will argue for an approach of manuscript sources in, what I will call, their materiality. The latter, I will argue, is the only way to come to terms with the debates discussed above: it is the only way to pursue a history of science in Islamicate societies that is not redundant nor oppressive.

### **3.2. On the Possibilities of a Material Approach**

#### *3.2.1. East and West in the History of Astrology/Astronomy in Islamicate Societies*

More than any other subject, the history of astrology in Islamicate societies bears the marks of the aforementioned discussions, as it can be situated on the crossroads of discussions of linear progress versus localisation, East versus West and modern versus ‘unmodern’. In historiography of occult sciences – of which “*astrology*” is considered to be a part – researchers have for decades been supposed to choose either a scientific or a religionist outlook on the subject.<sup>131</sup> As the occult sciences (*al-ʿulūm al-gharība*) are based on exactly the entanglement of both the immaterial and the material, Matthew Melvin-Koushki states, they are often considered to be an anomaly to be left out of the study or treated as a form of religious mysticism. Occult sciences disappear in the gap between the modern dichotomy between ‘reason and

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<sup>131</sup> Matthew Melvin-Koushki, “Introduction: De-Orienting the Study of Islamicate Occultism,” *Arabica* 64, no. 3-4 (2017): 1-7. I will elaborate on this topic in the third part of this dissertation. ; For now, I already want to clarify that I agree with Melvin-Koushki’s description of occult sciences as “that subset of the Hellenic (and Egyptian, Persian and Indic) natural and mathematical sciences designed to marry spirits to bodies and bodies to spirits, which is to say, to extrapolate from visible data (zāhir) to nonvisible (bāṭin), from matter to mind, human or otherwise” Matthew Melvin-Koushki, “Is (Islamic) Occult Science Science?,” *Theology and Science* 18, no. 2 (2020): 1–22.

revelation, between matter and mind', in short: between science and religion.<sup>132</sup> The dichotomy between the latter two, leaving occult sciences or magic either to be an illicit aberration of the first one or a byproduct of the latter, is a product of the late nineteenth century. It is based on the nineteenth century European idea that science and religion are separate, independent categories, commonly known as the 'conflict thesis'.<sup>133</sup> Nineteenth century polemics against religion did not only focus on the presumed conflict between the latter and Christianity, but instead claimed a universality of the conflict thesis: science as the opposite of any religion. This evolution led to the institutionalisation of religious sciences in the university: a historical, scientific study of religion. In the same period, there was a growing interest and institutionalisation of oriental philology in the university too. The combination of religious sciences and oriental philology gave way to a tradition of philological research on religious texts. In contrast to religious research, this was claimed to be a scientific research of these texts. Under the influence of the growing popularity of the racial theory of Johan Gottfried Herder, German nationalism and the linguistic theory of language families of Franz Bopp, the idea of a 'Semitic monotheism' took shape. This idea was based on the conviction that language families were essentially linked to cultures, and eventually to 'races' of people. Where the so-called Indo-European race was considered to be polytheistic, democratic and scientific, the so-called Semitic race was its opposite: monotheistic, despotic and irrational.<sup>134</sup> European culture was explained as the combination of Indo-European influences, like democracy and science, with Semitic influences, like monotheism. Of the three religions of the book, Islam was seen as the purest: where Christianity and Judaism had a history of being closely related to and used in the Roman empire, this was not the case for Islam. As such, it was assumed, the first two clouded their 'true nature'. Islam, as a religion of the Arabs, was deemed to have remained a pure and essential monotheism. As such, the conflict thesis entailed not only a dichotomy between science and religion, but in the first place one between

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<sup>132</sup> Matthew Melvin-Koushki, "Is (Islamic) Occult Science Science?," *Theology and Science* 18, no. 2 (2020): 4.

<sup>133</sup> Margaret J. Osler, "Religion and the Changing Historiography of the Scientific Revolution," in *Science and Religion: New Historical Perspectives*, ed. Thomas Dixon, Geoffrey Cantor, and Stephen Pumfrey (Cambridge: Cambridge University Press, 2010), 71–86; Peter Harrison, "'Science' and 'Religion': Constructing the Boundaries," in *Science and Religion: New Historical Perspectives*, ed. Thomas Dixon, Geoffrey Cantor, and Stephen Pumfrey (Cambridge: Cambridge University Press, 2010), 23–49.

<sup>134</sup> B. Harun Küçük, "Islam, Christianity and the Conflict Thesis," in *Science and Religion: New Historical Perspectives*, ed. Thomas Dixon, Geoffrey Cantor, and Stephen Pumfrey (Cambridge: Cambridge University Press, 2010), 117.

science and Islam – as the prototype of a monotheist and ‘Semitic’ religion and therefore, by definition, the opposite of everything scientific. Küçük summarises in his research on this topic that:

‘It was at this juncture that Islam became the explicit articulation of Europe’s implicit problems with Christian religion. Islam, having remained alien to Indo-European peoples, stood in stark opposition to all the cultural products of Indo-Europeans and was also a summary of everything religious that stood opposed to science.’<sup>135</sup>

Whereas this orientalist, colonialist and strongly racist view has today been criticised by and large, the classification to which it gave way still defines an entire field of study, and the institutions linked to it. In the research tradition of which this dissertation is part and to which it responds this is the case in the following ways.

First and foremost, the notion of science has often been ‘mapped’ upon the Arabic term of *‘ilm*, which is generally translated as such. The terminology of *‘ilm*, however, has a long history of changes and adaptations, of which the general tendency is that it was used for practices that were more or less theoretical and in one way or another related to texts. In the late fifteenth century, the terminology of *‘ilm* therefore had nothing to do with the present-day notion of science – and to claim this would be both anachronistic and orientalist. The clearest example of this is that religion itself is considered to be *‘ilm* (the terminology of *‘ilm al-dīn* is used in the texts discussed in the third part of this dissertation, next to that of *‘ilm al-ḥisāb*, the ‘science’ of mathematics).

A second way in which this nineteenth century classification has its effects on the research tradition is through the so-called decline narrative, that was already mentioned in the first chapter in section 1.2.2. The decline narrative presumes that science in the Islamic world entered a period of decline from the 12<sup>th</sup> century on. Philosophy and science were deemed to have disappeared from the scene in this period. Al-Ghazālī’s “*Tahāfut al-Falāsifa*” was taken as pivotal for the start of the period of decline in which religious orthodoxy thrived, or so the general narrative goes.<sup>136</sup> Within the framework of this paradigm, it was often presumed that religious

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<sup>135</sup> Küçük, “Islam, Christianity and the Conflict Thesis”, 117.

<sup>136</sup> Gerhard Endress, “Begriff Und Stellung Der Wissenschaften Im Islam,” in *Grundriss Der Arabischen Philologie*, ed. W. Fischer and H. Gätje, vol. II (Wiesbaden: Reichert, 1987), 400–401; Majid

sciences (*‘ulūm naqliyya*) dominated the period, while rational sciences (*‘ulūm ‘aqliyya*) lost their influence. While the first denoted sciences that were deemed to be of Islamic origin, the latter denoted sciences that were deemed to be of non-islamic origin. Abdelhamid Sabra however did not accept this narrative, but instead turned to the manuscripts to give a voice to the historical actors’ categories, just like Hart did for the Chinese sources. On the basis of this, he remarked that this clear-cut dichotomy between traditional and rational sciences became increasingly flexible to the historical actors of the Middle Period Islamicate world. In this period, he argued, a large scale process of appropriation of practices from rational sciences into religious sciences manifested itself.<sup>137</sup> Brentjes similarly remarks that this dichotomy primarily had a prescriptive rather than a descriptive function in the texts of the authors who used them. They were used as a way of constructing boundaries for one’s own work and to argue for the legitimacy of the disciplines one was practising.<sup>138</sup> I would go further than Sabra and argue that no conclusions about the state of ‘*science*’ in this period can be drawn from this research, as the actors’ categories of rational sciences and traditional sciences were totally different from what we today depict as science or as non-scientific. Considering this terminology as synonyms for science and religion would be imposing our current presumptions on these texts and hence silencing the historical actors. This does however not mean that we should merely accept the categories of historical actors as a description of the situation. The texts too should be read in relation to the contexts in which they were produced and reproduced, and in which they aimed at certain effects. The disciplinary boundaries that were drawn within them, were instruments with which the authors tried to shape rather than merely to describe their disciplines.<sup>139</sup> I will elaborate on this topic in the second part of this dissertation, in which I will discuss the disciplinary boundaries of a specific part of the science of the stars in later fifteenth century Egypt and Syria.

A third and related effect of this classification, as analysed by Melvin-Koushki, is that researchers studying the occult sciences in Islamicate societies, have either

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Fakhry, *A History of Islamic Philosophy* (New York: Columbia University Press, 2004), 323–24.

<sup>137</sup> Sabra, “The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam: A Preliminary Statement,” 223–24.

<sup>138</sup> Sonja Brentjes, “‘Orthodoxy’: Ancient Sciences, Power and the Madrasa (‘college’) in Ayyubid and Early Mamluk Damascus,” *Preprint*, 1997, 5–6; Brentjes, “The Prison of Categories - ‘Decline’ and Its Company,” 131–33; Fancy, *Science and Religion in Mamluk Egypt: Ibn al-Nafis, Pulmonary Transit and Bodily Resurrection*, 4–5.

<sup>139</sup> Steven Shapin, “Discipline and Bounding: The History and Sociology of Science as Seen through the Externalism-Internalism Debate,” *History of Science* 30, no. 4 (December 1992): 333–69.

opted for the scientific strategy of neglecting occult sciences altogether, or for the religionist strategy of classifying it as a form of ‘mysticism’. Whereas these strategies have often been used to safeguard Islamic intellectual history, what they in fact have done is:

‘to defend, in high modernist and antimodernist fashion respectively, the honor of Islamic True Science or Islamic True Religion— and never the twain shall meet.’<sup>140</sup>

Instead of critically evaluating the dichotomy on which their research was based, both strategies – the ‘scientific’ and the religious – take the opposition of science and religion as a given.

The late medieval and – especially – the early modern period in Islamicate history have in recent decades been proven to be periods in which the occult sciences were very commonly practised.<sup>141</sup> The period witnessed a rising popularity of a Neopythagorean view on the sciences in which the science of lettrism was the backbone to the system of occult sciences. The latter posited language –through which every science is practised– as the key to unravelling the logic of the entire universe. The divine origins of the Qur’ān and its Arabic language were considered to provide the most direct access to the divine.<sup>142</sup> This most important evolution in the intellectual history of the Islamicate world has been overshadowed and even neglected because of the dichotomy discussed above. Where the ‘decline narrative’ has increasingly being questioned and rejected by the most recent voices in History of Science in Islamicate societies:

‘an exception continues to be made precisely for occult science. [...] While they often disagree sharply in all other respects, the overwhelming majority of contemporary Muslim scholars and scholars of Islam are united in their

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<sup>140</sup> Melvin-Koushki, “Is (Islamic) Occult Science Science?,” 6.

<sup>141</sup> Melvin-Koushki, “Introduction: De-Orienting the Study of Islamicate Occultism”; Noah Gardiner, “Esotericism in a Manuscript Culture: Aḥmad al-Būnī and His Readers through the Mamlūk Period” (PhD, Michigan, University of Michigan, 2014); Noah Gardiner, “The Occultist Encyclopedism of ‘Abd Al-Raḥmān al-Biṣṭāmī,” *Mamluk Studies Review* 20 (2017): 3–38; Melvin-Koushki, “Afterword: Conjuncting Astrology and Lettrism, Islam and Judaism,” *Magic, Ritual, and Witchcraft* 12, no. 1 (2017): 89–97; Matthew Melvin-Koushki, “Powers of One: The Mathematicalization of the Occult Sciences in the High Persianate Tradition,” 127–99.

<sup>142</sup> Matthew Melvin-Koushki, “The Quest for a Universal Science: The Occult Philosophy of Ṣā’ in al-Dīn Turka Iṣfahānī (1369-1432) and Intellectual Millenarianism in Early Timurid Iran” (PhD, Yale, Yale University, 2012).

quiet elision—or strident disavowal—of this major component of Islamicate intellectual and cultural history. And their motives for doing so are at base the same, and indeed usually honorable: to defend Islamicate rationality against the declinists’ polemic, which triumphantly parades the ubiquity of occultism in Islam as proof of the latter’s essential unmodernity.’<sup>143</sup>

As such, a nineteenth century dichotomy that originated in Europe is used to exclude an entire field from our view, a field that, on the basis of research on classifications of the sciences in this period, provided nearly half of the texts circulating in this period.<sup>144</sup>

The situation becomes even more pressing, when we take into account the fact that in recent decades, the tendency to neglect or downplay occult sciences has been actively discussed and questioned in research in European history of science, resulting in a flourishing field in research on occultist scholars

‘including the great heroes of the Renaissance and the so-called Scientific Revolution [...] from Pico and Bruno to Bacon and Newton—as rational actors.’<sup>145</sup>

As Liana Saif has shown in her recent monograph, these European scholars were greatly influenced by the early modern occultist traditions that have up until today been largely excluded from our view.<sup>146</sup> The fact that we are willing to see this occultism as a part of our ‘Western’ legacy, but, that ‘the *Islam* in Islamicate occultism remains a treacherous stumbling block—or rather a deadfall’ I agree with Melvin-Koushki, shows that:

‘The qualifier immediately excludes the qualified from Westernness, from rationality itself, and vice versa: a disappearing act within a disappearing act. Islam as the Occult West; occultism as oriental science.’

In response to this, Melvin-Koushki proposes the broadest possible definition of the West, that is:

‘the half of Afro-Eurasia west of South India, incorporating the Arabic, Persian and Latin cosmopolises, that vast realm where the Hellenic-Abrahamic synthesis reigned supreme, and philosophy was pursued in simultaneously mathematical-linguistic terms.’<sup>147</sup>

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<sup>143</sup> Melvin-Koushki, “Is (Islamic) Occult Science Science?,” 5.

<sup>144</sup> Melvin-Koushki, “Is (Islamic) Occult Science Science?,” 5.

<sup>145</sup> Melvin-Koushki, “Is (Islamic) Occult Science Science?,” 4.

<sup>146</sup> Liana Saif, *The Arabic Influences on Early Modern Occult Philosophy*, Palgrave Historical Studies in Witchcraft and Magic (Houndmills, Basingstoke: Palgrave Macmillan, 2015).

<sup>147</sup> Melvin-Koushki, “Is (Islamic) Occult Science Science?,” 5.



I argue that, given the current history and corresponding impact of the terminology of ‘*Eastern*’ and ‘*Western*’, we should go further than this and instead strive towards a historiography in which this dichotomy loses its significance. I argue that we should work towards a historiography that does not refer to the terminology of ‘*East*’ and ‘*West*’ as a significant qualifier anymore. We can however not do away with the terminology immediately, as in the present day situation, the status quo or the common sense is still very much – and often silently so - determined by the idea of ‘*the West*’ as the ‘neutral’ term in the equation. When we say we study history, we mean ‘Western’ history, when we say we study ‘philosophy’, we mean Western philosophy. As long as this is the case, there is a place, and even a need for a critical tradition of ‘oriental’ studies – albeit in the margin. Only if the discipline has shifted from the margin to the core of historiography, to the core of the narratives with which we identify, we can start to think about arriving at this goal.

### *3.2.2. A Material Approach to Texts*

Instead of categorising the occult sciences as either pseudo-science or as religious mysticism, and instead of considering them either eastern or western, I argue that we have to let go of what Melvin-Koushki has called the ‘science – religion – magic triad’ when researching the multitude of manuscripts that remain unstudied and often even unclassified in our libraries and archives today. However, in contrast to what Melvin-Koushki suggests and in line with what I have mentioned above on the terminology of “*East*” and “*West*”, I do not think we should ignore this triad and investigate our sources ‘with evenhanded empiricism’<sup>148</sup>. Instead, I think we should actively engage with and react to them in order not to forget or underestimate the far-reaching influence the triad still has on the way we conceive the world, and hence our text sources.

The solution to this deadlock, I argue, lies in a material approach to texts. To explain what I mean when I use this term, I want to compare it with a humanist return to the texts. In his work on the reception of Arabic sources by European Renaissance humanists, Dag Nikolaus Hasse discusses how these scholars were preoccupied with a

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<sup>148</sup> Matthew Melvin-Koushki, “Afterword: Conjuncting Astrology and Lettrism, Islam and Judaism,” *Magic, Ritual, and Witchcraft*, Spring 2017, 89.

search for the most original, authentic manuscript of a text.<sup>149</sup> In this way, the philological tradition they instigated, focused on the content of texts rather than on their material appearance: it was important what the ‘original content’ of a text was, rather than where, by whom or why a text was produced, reproduced or used. As such, this humanist notion of texts corresponds to the internalist approach to science mentioned in the first chapter of this dissertation. Both views assume the immateriality of scientific knowledge and consider texts to be nothing more than the material container of an immaterial, ideal content. Ideas are considered to be written down on material carriers by people in social contexts, but their epistemological content is clearly distinct from their material and social use by their writers and material carriers. In short, texts are the dead material that contains ideal content or information.<sup>150</sup> This textual idealism – as I will call this approach – silences all the voices involved in the production, reproduction and circulation of a text.

The alternative, is a material approach to texts. Such an approach, I argue with Karine Chemla, abandons the dichotomy between material and content and instead considers texts as discursive artefacts: written sources that bear the marks of their contexts. Chemla argues that only in such concrete, practical contexts, texts are provided with meaning. The meaning of a text, she states, always depends on its particular use and is not contained in an invariable ideal content. Furthermore, texts are always written in the process of carrying out intellectual activities: writing is a constitutive part of these activities and an essential condition for the research done.<sup>151</sup> As such, texts are documented statements that come from somewhere and have certain agendas. Thus Chemla’s view on texts corresponds to a tradition of scholars who reject the view of (scientific) knowledge as an immaterial collection of theories that represent the natural world, and instead argue that it is always embodied. Knowledge is not something that can be possessed by a human being or a material bearer, but it is rather the process through which human beings interact with material reality.<sup>152</sup> A text is a

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<sup>149</sup> Dag Nikolaus Hasse, *Success and Suppression : Arabic Sciences and Philosophy in the Renaissance* (Cambridge Massachusetts: Harvard University Press, 2016); Michele Zanobini, “Renaissance Philology,” in *Encyclopedia of Renaissance Philosophy*, ed. Marco Sgarbi (Springer, 2018).

<sup>150</sup> Bernd Frohmann, *Deflating Information: From Science Studies to Documentation* (Toronto: University of Toronto Press, 2004), 16.

<sup>151</sup> Karine Chemla, ed., *History of Science, History of Text*, Boston Studies in the Philosophy of Science 238 (Dordrecht: Springer, 2004), viii–ix.

<sup>152</sup> David N. Livingstone, *Putting Science in Its Place* (Chicago: The University of Chicago Press, 2003), 17–20; Frohmann, *Deflating Information: From Science Studies to Documentation*, 11.

material tool rather than a container of immaterial ideas. By abstracting the ‘content’ of the text from its material circumstances one imposes an interpretation by presenting it as objective: one silences all other possible readings a manuscript provides us with. As a material tool, then, the text offers us a means with which we can de-silence unheard voices. As such, a material approach offers a way in which we can come to terms with the dichotomies imposed on our research.<sup>153</sup> In the next section, I will explain what this means concretely for the research of which this dissertation is part.

### 3.2.3. *A Material Approach in History of the Science of the Stars in the Sultanate of Cairo*

In the next two parts of this dissertation, a discipline will be discussed that was referred to by the historical actors themselves as *‘ilm al-nujūm*, a term which literally translates into ‘the science of the stars’. In part two, I will discuss the practice of *taqwīm* or the compilation of ephemerides. In part three I will discuss *‘ilm aḥkām al-nujūm*, about which I will argue that it was an occult practice popular among a certain group of scholars in the Sultanate. As such, the second chapter of this dissertation could be considered to deal with history of science, while the third deals with ‘mysticism’ or a form of religion. However, both practices were considered to be *‘ilm al-nujūm* by the historical actors and it is very likely that the works compiled in the first practice were used by the scholars practicing the latter. Still, we are inclined to classify both of them into different disciplines, to use different methods to study them and to never let the research results of both disciplines meet. I argue that it is exactly this tendency that can be considered as a last, but very stubborn remnant of ‘orientalism’.

However simple this decision may sound, it is not an easy one to consistently apply when studying manuscripts in Middle Eastern, European or American institutions. Because the religion-science-magic triad has always had a significant influence on the way we look at texts, the classifications that are made in the libraries - the catalogues that have been compiled, the labels used and the preferences given – all reinforce the triad, and hence a humanist view on texts. This is the reason that I have argued before that we cannot simply ignore this triad and

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<sup>153</sup> A similar approach has recently been suggested by Matthew Melvin-Koushki as ‘empirical philology’ and by Konrad Hirschler as “Material Philology”: Melvin-Koushki, “Is (Islamic) Occult Science Science?”; Konrad Hirschler, *A Monument to Medieval Syrian Book Culture: The Library of Ibn ‘Abd al-Hādī*.

change it for an ‘even-handed empiricism’. We cannot simply start to do things differently, as the entire research field of Oriental Studies is, in some way or another, based on the dichotomies discussed above. When we take a look at the *taqwīm*-corpus of texts, of which most of them are located in the National Library of Cairo or *Dār al-Kutub wa-l-wathā’iq al-qawmiyya al-miṣriyya*, the influence of this view already shows. All the *taqwīm*-sources in Egypt’s national library are labelled ‘*mīqāt*’ or timekeeping. This is deemed a religious science preoccupied with the calculation of the exact moments for the Islamic prayer at a certain place as well as the exact direction in which one should pray. Because of this, it was relatively easy to consult the manuscripts on this topic, notwithstanding the fact that they are often combined with notes and fragments we would nowadays consider as astrological. On the other hand, one of the manuscripts discussed in the third part of this dissertation was, probably by accident, also classified as ‘*mīqāt*’, whereas it is a handbook and report of the influence of the position of the planets on battles at the Syrian frontier zone. The text is a copy of another text, which is classified as occult (more specifically in the category of lettrism) and hence absolutely forbidden for consultation. Even if the latter problem would not be an issue, as is the case in European and American libraries, then we still have to search for our sources among categories that impose an orientalist view on the material. In spite of the important progress that has been made over the last decades, in a lot of cases we still lack catalogues. If there are catalogues they lack information on the material aspects of the manuscripts.<sup>154</sup>

The research I have done in preparation of this dissertation was based on the discovery of a chapter on birth horoscopes in a *zīj* manuscript that I studied for my master’s thesis. The terminology used in the text, the notes of readers and users and the colophon written by the author led the way to other sources, other cross-references and other authors. By following these traces, I studied manuscripts in the libraries of Cairo, Leiden, Berlin, Paris, Oxford, and Princeton which in turn provided me with further marks of the practice of the late fifteenth century practice of *‘ilm al-nujūm* that is the subject of this dissertation. Being the discursive artefact that resulted from this, this dissertation on the one hand bears the marks of these library struggles, on the other hand I hope that it may also be a minor step towards

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<sup>154</sup> Déroche, *Islamic Codicology*; Hirschler, *A Monument to Medieval Syrian Book Culture*.

other narratives. Narratives that are not driven by an '*East*' versus '*West*' and '*religion*' versus '*science*' paradigm, but rather by the need for a common (hi)story.



## Conclusion

In this first part of my dissertation I situated my research within the wider research traditions of History of Science and Oriental Studies, in order to eventually arrive at my argumentation for the approach towards texts that I have maintained throughout this research. In the first chapter I discussed how the discipline of the History of Science evolved from a discipline with universalist aspirations towards an ever greater contextualisation of texts, resulting in a reduced interest in the history of science in Islamicate societies. In the second chapter I have discussed the developments within the history of Oriental Studies, focusing on how the discipline came to terms with 'orientalism'. In the third chapter, I have brought these two debates together, arguing that a humanistic approach towards texts is no longer possible for research in the history of science in Islamicate societies. Such an approach, which eventually relies on a strict distinction between the material bearer and the ideal content of a text, between the dichotomy of science and religion and of an East and a West, necessarily results in a history of science that is either irrelevant or orientalist in outlook. However, to write a history of science in Islamicate societies today, I have argued in the second part of the third chapter of this first part, we have to take a material approach to our texts: to the multitude of manuscripts that remain unstudied and sometimes even unclassified in our libraries and archives. In order to do this, we cannot simply ignore the dichotomies that have shaped this research tradition, but we have to engage with them actively. We have to actively question them to shed light on all the histories that have not been told because of them. As the dichotomies between East and West and between science and religion are strongly interrelated and have roots in a tradition that was constructed exactly to prove the superiority of a self and therefore the inferiority of its mirror image and other, I have chosen not to use them in my research. The next two parts of this dissertation discuss the results of my study of texts identifying as *ʿilm al-nujūm* or the 'science' of the stars in late fifteenth century Egypt and Syria. If this has anything to do with either the East or the West, science or religion, then this is in showing how irrelevant these concepts are to understand the practices of the historical agents, to whom by this approach I hope to give back some of the agency that has long been lost.





# **Part II**

# **Taqwīm**

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ʿIlm al-Mīqāt

as a Practical Science of the Stars



What makes the marvellous is its peculiar way of being ordinary;  
what makes the ordinary is its peculiar way of being marvellous.

Orhan Pamuk – *The Black Book* p. 375

What we have started to do, and what this book is very much about, is thus to, in

Paul Love's words, 'listen to the manuscript's story'.

Konrad Hirschler – *A Monument to Medieval Syrian Book Culture* p. 13



## Introduction

In this part of my dissertation, I discuss the practice of *taqwīm* or the compilation of ephemerides in the late fifteenth century Sultanate of Cairo. *Taqwīm* was considered as one practice among many pertaining to *‘ilm al-mīqāt* or the science of timekeeping. This practice was mostly carried out by *muwaqqits* or so-called ‘Islamic timekeepers’. My research focuses on the tradition of *taqwīm*-treatises initiated by the *muwaqqit – mudarris* or timekeeper – teacher Ibn al-Majdī (d. 850/1447). These treatises prove to have been well-known and widely circulating in the later fifteenth century, just after the death of the author himself.

In this chapter I will discuss these sources in light of the ‘*boundary work*’ of the author, copyists and users that played a role in their circulation. I use the term ‘*boundary work*’ for the act of presenting one’s work as pertaining to a certain discipline, both through language and through the material ordering of texts. Whereas *taqwīm*, as a part of *mīqāt* or Islamic timekeeping, was traditionally seen as pertaining to a ‘science in the service of religion’<sup>155</sup> in secondary literature, I will show that this classification does not correspond to the disciplinary boundaries expressed in *taqwīm* treatises in the late fifteenth century. In the first part of this chapter, I discuss the function of the Islamic timekeeper within the Sultanate of Cairo as it was presented in earlier research. In the second part, I will discuss the way in which *taqwīm* and *‘ilm al-mīqāt*, the science of timekeeping, were presented in the sources themselves. I will first, in section 4.2.1., discuss the issue of authorship of this collection of *taqwīm* treatises. After that, I will, in section 4.2.2, discuss the terminology that was used by the authors, copyists and users in order to situate the texts within the wider disciplinary context. Finally, in section 4.2.3., I will shed light on the way these texts were ordered, through the material binding into multiple-text manuscripts and composite

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<sup>155</sup> David A. King, “The Astronomy of the Mamluks,” *Isis* 74, no. 4 (1983): 531–55; George Saliba, *A History of Islamic Astronomy: Planetary Theories during the Golden Age of Islam* (New York: New York University Press, 1994).

manuscripts. I use these terms as defined in Konrad Hirschler's work, which will be discussed in this chapter.<sup>156</sup> Furthermore, the term "manuscript" is used here for the material unit or "book" of quires in the same binding, whereas the term "text" is used for a unit within a manuscript that has been indicated as such by its author, copyist or user. A manuscript can hence consist of multiple texts or just one text.

Through this analysis, I aim to open up new avenues for the study of timekeeping in the late Islamic middle period and early modern period, avenues that are not dominated by the science - religion and content - materiality dichotomies that have dominated research on the topic up until today<sup>157</sup>, but instead start from the manuscripts themselves as primary units – as indicated by the approach I advocated in the first part of this dissertation.

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<sup>156</sup> Hirschler, *A Monument to Medieval Syrian Book Culture: The Library of Ibn ʿAbd al-Hādī*.

<sup>157</sup> Cf. supra Chapter 3 for a discussion of the repercussions of this dichotomy on the wider field.

## Chapter IV: Ibn al-Majdī's Taqwīm Corpus

The term *taqwīm*, as used in the late fifteenth century Sultanate of Cairo, refers to *taqwīm al-kawākib* or (the compilation of) tables for the true longitudes of the planets (i.e. the Sun, the Moon, Mercury, Venus, Jupiter, Saturn, and Mars).<sup>158</sup> *Taqwīm* was a practice (*ṣināʿa*) pertaining to *ʿilm al-mīqāt* or the science of timekeeping. As such, it was mostly practised by *muwaqqits* or Islamic timekeepers. In the first section of this chapter, I will situate the office of the *muwaqqit* within the scholarly context of the Sultanate of Cairo. After this, I will introduce Ibn al-Majdī, whose *taqwīm* tables, or rather the tradition of *taqwīm* he started, will be discussed in the second half of this chapter.

### 4.1. ʿIlm al-Mīqāt and the Office of the Muwaqqit in the Sultanate of Cairo

#### 4.1.1. The Office of the Muwaqqit

A development particular to the period of the Sultanate of Cairo (ca. 1249-1517), is the institution of the office (*manṣab*) of the *muwaqqit* or Islamic timekeeper as an expert of *ʿilm al-mīqāt*, the science of timekeeping and hence of the practice of *taqwīm*. *Muwaqqits* were – in contrast to other scholarly functions – always linked to one or more religious institutions.<sup>159</sup> Scholars who held offices at religiously endowed institutions like *madrasas* (schools for higher education), mosques, *dār al-hadīths* (institutions for the education of *hadīth*) or *khānqas* (institutions for *ṣūfī* rituals and education) were paid by these institutions. In this way, Michael Chamberlain states, religious institutions could function as political instruments through which military

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<sup>158</sup> Benno Van Dalen, “An Introduction to the Mathematics of Islamic Astronomy and Astrology,” Unpublished paper, 1–32. I am very grateful to Benno Van Dalen for sharing this yet unpublished paper with me.

<sup>159</sup> Sonja Brentjes, “Shams Al-Din al-Sakhawi on Muwaqqits, Mu’adhdhins, and the Teachers of Various Astronomical Disciplines in Mamluk Cities in the Fifteenth Century,” in *A Shared Legacy: Islamic Science East and West*, ed. J.M. Millàs Vallicrosa (Barcelona: Publicacions i Edicions Universitat de Barcelona, 2008), 129–50; Fien De Block, “Al-Zīj al-Jadīd as an Instrument for Fifteenth Century Timekeeping in Cairo: The Materiality of Ms. Oxford (Bodleian Library) Arch. Seld. A30,” *Mamluk Studies Review*, 2021.

households got involved in the cultural life of the scholarly elite.<sup>160</sup> Through a *waqf* or religious endowment, these households gave up part of their property to a community of people benefitting from it. The income generated by the property then went to this predefined group of people. Apart from this group of people, part of the income was saved for the people working in the institution itself, among them the *muwaqqit* or Islamic timekeeper.<sup>161</sup>

However important these institutions were, Jonathan Berkey has shown in his study on education in the Sultanate that the scholarly elite was not dependent on them. He shows how knowledge transmission in the Sultanate was first and foremost based on personal relations between teachers and students. Students got their education by studying a specific text with a certain teacher after which they received an *ijāza* or certificate for it. This *ijāza* mentions a subject or title of the text and a teacher, but the institution where the education took place is often omitted. The importance conferred to a scholar's teachers and students in biographical dictionaries of this period confirms the preoccupation with '*personae*' rather than '*loci*' or physical institutions.<sup>162</sup> Moreover, institutions did not have clear cut curricula for students, but merely provided teachers and students with a space to teach or study and, in some cases with a place to stay and a stipend. If an institution is mentioned in biographical dictionaries, Chamberlain remarks, it is mostly with regard to such a stipend. Scholarly titles like *shaykh* (sheikh, learned scholar) and *ʿālim* (scholar) were not related to or dependent on offices held at an institution but were based on social status obtained through one-on-one teaching relations.<sup>163</sup> Chamberlain even notes that holding an office in a religious institution was frowned upon by some scholars. He states that there was a double standard towards institutional offices among the scholarly elite: on the one hand an office in a *madrasa* provided scholars with an income, which led to a strong competition for these offices among colleagues. On the other hand, these offices were rarely mentioned in biographical dictionaries of this period and the content of the

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<sup>160</sup> Chamberlain, *Knowledge and Social Practice in Medieval Damascus, 1190-1350*, 98–108.

<sup>161</sup> J.O. Hunwick, "Wakf," in *Encyclopaedia of Islam Second Edition*, ed. Th. Bianquis et al. (Brill Online, 2012), [http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/wakf-COM\\_1333](http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/wakf-COM_1333);

<sup>162</sup> Berkey, *The Transmission of Knowledge in Medieval Cairo*, 23.

<sup>163</sup> Berkey, *The Transmission of Knowledge in Medieval Cairo*, 3–8; Chamberlain, *Knowledge and Social Practice in Medieval Damascus, 1190-1350*, 77.



latter even suggests that dependence on a salary from an institution was seen as a source of corruption of good scholarship. In conclusion, Chamberlain writes that:

‘There is little evidence that holding a manṣab in a madrasa was critical to a shaykh’s prestige. On the contrary, it appears that they expended some of their hard-won prestige to gain manṣabs. There is abundant evidence that shaykhs who refused manṣabs were all the more highly regarded, and that benefiting from the waqf of madrasas was seen as possibly polluting or corrupting.’<sup>164</sup>

In contrast to teachers, preachers and other scholarly functions, *muwaqqits* or Islamic timekeepers were always linked to a religious institution. Because of this, the *muwaqqit* has been presented in earlier studies as a mathematical scholar who ‘practiced science in service of Islam’.<sup>165</sup> The Islamic timekeeper, David King states, was ‘a mosque official responsible for regulating the time at which the muezzin should perform’.<sup>166</sup> King distinguishes between the *muwaqqit*, to whom he refers as a scientist, and the muezzin, to whom he refers as a religious scholar, arguing that the latter had no knowledge of mathematics.<sup>167</sup> However, this view is based on two assumptions I have opposed earlier in this dissertation. On the one hand it assumes that the dichotomy between rational sciences (*al-culūm al-‘aqliyya*) and religious sciences (*al-culum al-naqliyya*) can be equated with that between science and religion. As I have discussed in the third chapter of the first part of this dissertation, this equation is misleading. The distinction between the first two was based primarily on the presumed cultural origins of a practice and the people who transmitted it (as indicated in the term *naqliyya*, which literally means transmitted). Furthermore, as Sabra has convincingly shown, the categories of *al-culūm al-‘aqliyya* and *al-culum al-naqliyya*, underwent important changes in the period of the Cairo Sultanate. More and more practices that had been previously called *culūm ‘aqliyya* got appropriated into the category of *al-culum al-naqliyya* and were taught under that name.<sup>168</sup> This evolution is

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<sup>164</sup> Chamberlain, *Knowledge and Social Practice in Medieval Damascus, 1190-1350*, 77.

<sup>165</sup> David A. King, “On the Role of the Muezzin and the Muwaqqit in Medieval Islamic Society,” in *Tradition, Transmission, Transformation - Proceedings of Two Conferences on Pre-Modern Science Held at the University of Oklahoma*, ed. F. Jamil Ragep and Sally P. Ragep (Leiden/New York: E.J. Brill, 1996).

<sup>166</sup> King, “On the Role of the Muezzin and the Muwaqqit in Medieval Islamic Society”, 286.

<sup>167</sup> King, *In Synchrony with the Heavens: Studies in Astronomical Timekeeping and Instrumentation in Medieval Islamic Societies*, 623–78.

<sup>168</sup> Sabra, “The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam: A Preliminary Statement.”

understandable if you take into account the significance of transmission (*naql*) for the latter category: practices that were once new, eventually became transmitted by generations of Islamic scholars until they got appropriated as a part of their own traditions. A second problematic aspect of this view is that it is based on the presumption that scholars derived their social status and legitimacy from the institutions in which they worked. As the studies of Berkey and Chamberlain have shown, this was not the case. Institutions provided a place, infrastructure and – sometimes – a salary for scholars working there, but they were not at all unanimously appreciated by the scholarly elite.<sup>169</sup> The image of the *muwaqqit* as an elite mathematical scholar with a prestigious office in a religious institution does not correspond to the narrative provided in the sources. More recent studies on the function of the *muwaqqit* that take into account historiographical sources written in the period, like the work of Sonja Brentjes, show in fact that *muwaqqits* never only worked as a *muwaqqit*, but were teachers, preachers or muezzins too. *Waqfiyyas* or endowment deeds of religious institutions show that scholars holding the *manṣab* of *muwaqqit* only received a relatively small salary.<sup>170</sup> These studies are based on historiographical sources, but in this chapter, I will argue that the texts produced by *muwaqqits* themselves confirm this view, if we take their materiality into account. Before I will discuss these texts, however, in the next three subsections I will first introduce the scholar Ibn al-Majdī and the tradition of *taqwīm* treatises he started.

#### 4.1.2. Ibn al-Majdī's Function as a Muwaqqit

In the research that has been done on the individual scholar of Ibn al-Majdī, he is presented as exceptional among the *muwaqqits*. The reason for this, is summarised by François Charette as follows:

‘As a rule, astronomers during the Mamluk period in Egypt and Syria (1250-1517) did not engage in astrology because of their associations with religious institutions – either as *muwaqqits* in mosques or as teachers in madrasas or Sufi convents. Ibn al-Majdī was something of an exception: A noted religious

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<sup>169</sup> Chamberlain, *Knowledge and Social Practice in Medieval Damascus, 1190-1350*.

<sup>170</sup> Brentjes, “Shams Al-Din al-Sakhawi on Muwaqqits, Mu’adhdhins, and the Teachers of Various Astronomical Disciplines in Mamluk Cities in the Fifteenth Century.”

scholar, he nevertheless treated the topic of astrology in his *al-Jāmi' al-Mufīd*.<sup>171</sup>

According to George Saliba and Charette, *muwaqqits* were, because of their affiliation with religious institutions, not allowed to practise astrology.<sup>172</sup> Saliba distinguishes between astronomy and astrology, which he equates with the Arabic terminology of *‘ilm al-falak* or *‘ilm al-hay’a* and *‘ilm aḥkām al-nujūm* or *‘ilm al-tanjīm*. Where the first terms can be literally translated as ‘the science of the celestial sphere’ and ‘the science of the constellation’, the latter can be translated as ‘the science of the regulations of the stars’ and ‘the science of what the stars cause’. King also distinguishes between astrology and astronomy in his research on this period, but he refines this dichotomy by stating that the sciences of the stars in the period of the Cairo Sultanate consisted of five major disciplines. The first is theoretical planetary astronomy, which he equates with the Arabic terminology of *‘ilm al-hay’a*. The second is mathematical astronomy which he equates with *‘ilm al-zījāt* (literally: the science of *zījes* or manuals for timekeeping). The third discipline is spherical astronomy of which the most famous subdiscipline is timekeeping or *‘ilm al-mīqāt*. The fourth discipline is the science of instrumentation or *‘ilm al-ālāt* and the fifth is astrology: *‘ilm aḥkām al-nujūm* or *‘ilm al-tanjīm*.<sup>173</sup> Whereas the *muwaqqit* practised *‘ilm al-mīqāt*, he was not considered to have practised *‘ilm aḥkām al-nujūm*. As mentioned, Ibn al-Majdī is called an exceptional *muwaqqit* in the work of Charette because he was considered to have practiced the latter discipline. However, I will argue in the second part of this chapter, that whereas one could argue that Ibn al-Majdī practiced what we would nowadays call ‘astrology’, the scholar never identified nor was he referred to by his colleagues as a scholar of *‘ilm aḥkām al-nujūm*.

Overall, Ibn al-Majdī appears to have been a prominent scholar in the Sultanate of Cairo. He was appointed by the sultan, al-Ashraf Barsbāy (r. 825/1422 –841/1438), as a *muwaqqit* of the al-Azhar mosque and as head of the teachers at the *Jānibakiyya*

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<sup>171</sup> François Charette, “Ibn Al-Majdī”, 562.

<sup>172</sup> Saliba, *A History of Islamic Astronomy: Planetary Theories during the Golden Age of Islam*, 98. François Charette, “Ibn Al-Majdī”, 562.

<sup>173</sup> King, “The Astronomy of the Mamluks”; David A. King, “The Astronomy of the Mamluks: A Brief Overview,” *Muqarnas* 2 (1984): 73–84.

*madrasa* in Cairo.<sup>174</sup> He stood in high regard of his peers, as the biographical dictionaries of his contemporary colleagues Ibn Taghrī Birdī, al-Sakhāwī and al-Suyūṭī show.<sup>175</sup> Al-Sakhāwī for example presents Ibn al-Majdī as follows:

(أحمد) بن رجب بن طيبغا المجدي أحد مقدمى الالوف الشهاب بن الزين القاهري الشافعي ويعرف  
 بابن المجدي نسبة لجدّه. [...] وبرع في فنون وتقدم بذكائه المفرط الذى قل أن يوازي فيه وأشير اليه  
 بالتقدم قديما و صار رأس الناس في انواع الحساب والهندسة والهئية والفرائض وعلم الوقت بلا  
 منازع، واشتهر باجادة اقراء الحاوى، وانتدب للاقراء وانتفع به الفضلاء وأخذ عنه الأعيان من كل  
 مذهب طبقة بعد أخرى .

‘(Ahmad) ibn Rajab, son of Taybughā al-Majdī, one of the commanders of thousands, al-Shihāb ibn al-Zayn from Cairo, the *shāfi‘ī* who was known as Ibn al-Majdī, the *nisba* of his grandfather. [...] He excelled in the arts and was prominent because of his unequaled brightness, which was rarely rivaled. He was known for teaching and led the best among the people through the subjects of arithmetic, geometry, planetary theory, inheritance law and the science of time like no other. He got famous for his excellent reading/teaching of “*al-Ḥāwī*”, as he was very skilled in this. The most prominent people from the elite came to study with him. He taught the elites of every *madhhab*, one generation after the other.’<sup>176</sup>

After Barsbāy’s reign, al-Sakhāwī writes, Ibn al-Majdī lived a secluded life in his house close to the citadel of Cairo. The historian summarises the later part of Ibn al-Majdī’s life in the following anecdote:

<sup>174</sup> Brentjes, “Shams Al-Din al-Sakhawi on Muwaqqits, Mu’adhdhins, and the Teachers of Various Astronomical Disciplines in Mamluk Cities in the Fifteenth Century.”, 131-2.

<sup>175</sup> Muḥammad ibn ‘Abd al-Raḥmān al-Sakhāwī, “Ibn Al-Majdī,” in *Al-Ḍaw’ al-Lāmi‘ li-Aḥl al-Qarn al-Tāsi’*, vol. I (Beirut: Dār Maktabat al-Hayāh, 1966), 300–302; Jalāl al-Dīn al-Suyūṭī, “Ibn al-Majdī Al-Falakī, Shihāb Al-Dīn Aḥmad bin Rajab,” in *Nazm Al-‘iqyān Fī A‘yān al-A‘yān* (al-Maṭba‘ah al-Sūrīyah al-Amrīkiyah, 1927), 42; Ibn Taghrī Birdī, “156 - Ibn al-Majdī,” in *Al-Manhal al-Ṣāfi wa-l-Mustawfi Ba‘da al-Wāfi*, vol. 1 (Cairo: al-Hay’ah al-Miṣrīyah al-‘Āmmah lil-Kitāb, 1984), 158–59 I use bibliographical dictionaries as indications of what Ibn al-Majdī’s contemporary scholars considered to be important, what they considered worthwhile to write about: what Michael Chamberlain refers to as their ‘usefull past, a past that was intended to secure their futures’ rather than as a ‘correct’ description of historical events. ; Chamberlain, *Knowledge and Social Practice in Medieval Damascus, 1190-1350*, 19.

<sup>176</sup> al-Sakhāwī, “Ibn Al-Majdī,” 300.

وايراد النكتة والنادرة والطرف والاجماع عن الناس بمنزله المجاور للأزهر والاستغناء عنهم باقطاع بيده بل كان يبر الطلبة والفقراء ايضا وبلغنى أنه كان يقول إذا استغرقت في غوامض الميقات أحس باظلام في قلبي واني كالمقوت.

‘And one referred to the anecdote and funny story that he lived secluded from the people in his house in the neighbourhood of the Azhar, where he got rich from the income of an *iqṭāʿ* [i.e. an administrative grant that gave the owner the fiscal rights to a piece of land] that was at his disposal, but he stayed dedicated to the education of students as well as *ṣūfī* scholars<sup>177</sup>, as it was said that he used to say: “If I get too immersed in the mysteries of timekeeping, I [start to] feel a darkness in my heart as if I become [an] obnoxious [person].”<sup>178</sup>

Ibn al-Majdī apparently kept on combining his study of timekeeping with teaching throughout his life, but his *taqwīm* texts only found a wider audience after his death in 850/1447.

#### 4.1.3. *Taqwīm*

The term *taqwīm*, as used in this period, refers to *taqwīm al-kawākib* or (the practice of compiling) tables for the true longitudes of the planets: the Sun (*al-Shams*), the Moon (*al-Qamr*), Mercury (*ʿUṭārid*), Venus (*al-Zuhara*), Jupiter (*al-Mushtarī*), Saturn (*Zuhal*), and Mars (*al-Mirrīkh*).<sup>179</sup> The calculation of the true longitude of a

<sup>177</sup> I have translated *fuqarāʾ* as ‘*ṣūfī* scholars’ here, because several of Ibn al-Majdī’s colleagues were explicitly *ṣūfī* and taught *ṣūfī* scholars (e.g. Abī al-Faṭḥ al-Ṣūfī and ʿAbd al-ʿAzīz al-Wafāʾī). Moreover, as most of the religious institutions in Cairo were in the fifteenth century also *ṣūfī* institutions, I consider this translation here more probable than the more general alternative translation of ‘the poor’. Cf. Berkey, *The Transmission of Knowledge in Medieval Cairo*, 56-9.

<sup>178</sup> al-Sakhāwī, “Ibn Al-Majdī”, 301.

<sup>179</sup> The regular tables of the planets Saturn, Jupiter, Mars and Venus and the slightly different ones of the Sun, the Moon and Mercury, see Van Dalen, “An Introduction to the Mathematics of Islamic Astronomy and Astrology”; Ahmet Tunç Şen, “Astrology in the Service of the Empire: Knowledge, Prognostication and Politics at the Ottoman Court, 1450s-1550s” (PhD diss. Chicago, University of Chicago, 2016). The use of the word ‘*taqwīm*’ here differs from the later Turkish genre of *taqwīm* in which these calculations are explicitly linked to specific prognostications. The practice of *taqwīm* can, in present day terms, be situated on the verge of astrology and astronomy: it is the mathematical, astronomical practice of calculating the real longitudes of planets, which provides the necessary conditions for astrological prognostications.

planet was done in several steps. These steps required knowledge of Ptolemaic planetary theory.<sup>180</sup> The calculations an Islamic timekeeper or *muwaqqit* had to make in order to arrive at the real longitude of a planet were the following. In the drawing below, E stands for the Earth (*al-ard*). The Earth is at a distance *e* (the eccentricity) from the centrum A of a circle called the deferent (*falak awjī*), around which a planet is moving counter-clockwise with a uniform angular velocity. This second circle is called the epicycle (*falak al-tadwīr/al-tadwīr*). The centrum B of the epicycle moves with a uniform angular velocity around point F, the equant point (*mu<sup>c</sup>addil al-masīr*). The distance between the Earth and the centre of the deferent is the same as the distance between the centre and the equant point. On the deferent, C is the apogee (*al-awj*) or the point the furthest removed from the Earth. D is the perigee (*al-ḥaḍīd*) or point that is the closest to the Earth. In order to calculate the true longitude of a planet, a scholar first had to find the mean centre (*al-markaz*), which corresponds to the angle  $\angle$  CFB in this drawing. This could be found in the mean motion tables available in any *zīj* or manual for timekeeping. The most popular *zīj*es circulating in the fifteenth century Sultanate were the new *zīj* of Ibn al-Shāṭir for Syria and, in Egypt, the al-Ḥākīmī *zīj* and the fifteenth century Arabic recension of the Persian *Sulṭānī zīj* by Ibn Abī al-Faṭḥ al-Ṣūfī (fl. late fifteenth century).<sup>181</sup>

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<sup>180</sup> ‘Alī ibn Ibrāhīm Ibn al-Shāṭir, “Kitāb al-Zīj al-Jadīd” (Oxford, Early 15th C), Bodleian Library; E.S. Kennedy and Victor Roberts, “The Planetary Theory of Ibn Al-Shatir,” *Isis* 50, no. 3 (1959): 227–35; De Block, “Al-Zīj al-Jadīd as an Instrument for Fifteenth Century Timekeeping in Cairo: The Materiality of Ms. Oxford (Bodleian Library) Arch. Seld. A30”; Fien De Block, “De Muwaqqit in 14de Eeuws Syrië En Egypte. Tussen Religieus Geleerde En Wetenschapper?,” *De Handeligen*, LXIX (2016): 203–16.

<sup>181</sup> David A. King and Julio Samsó, “Astronomical Handbooks and Tables - An Interim Rapport,” *Suhayl International Journal for the History of the Exact and Natural Sciences in Islamic Civilization*, 2 (2001): 9–105; Kennedy, “A Survey of Islamic Astronomical Tables”; İhsan Fazlıoğlu, “Ibn Abī al-Faṭḥ al-Ṣūfī: Shams al-Dīn Abū ‘Abd Allāh Muḥammad Ibn Abī Al-Faṭḥ Al-Ṣūfī,” in *The Biographical Encyclopedia of Astronomers*, ed. Thomas Hockey (New York: Springer, 2007), 547.

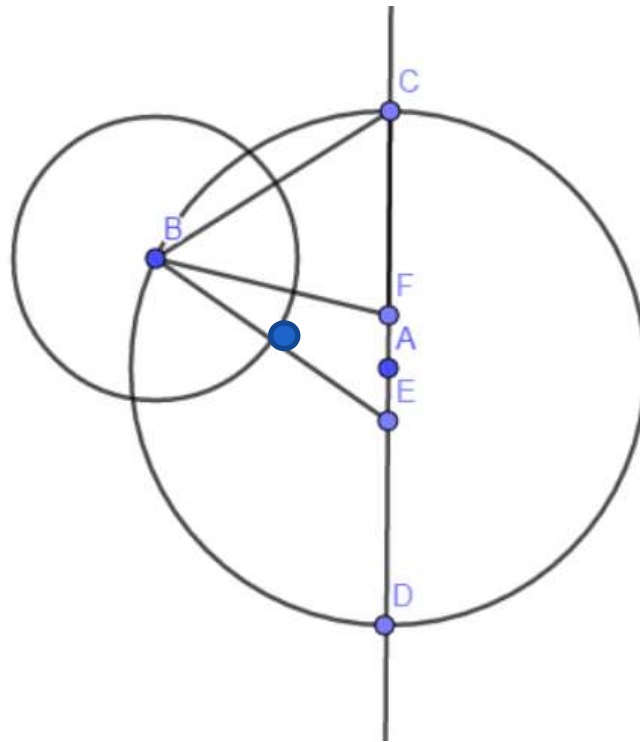


Figure 1 Ptolemy's Planetary Model (1/4)<sup>182</sup>

The mean centre is calculated from the equant point F. To derive the true centre  $\angle$  CEB, which is seen from the Earth rather than from the equant point, one had to subtract or add the angle of “the (first) equation” (*al-taʿdīl / al-taʿdīl al-awwal*) to the mean centre  $\angle$  CFB. The first equation equals  $\angle$  CBF on the figure above, the angle between the apogee C, the centre of the epicycle B and the equant point F. The equation of centre must be subtracted when the epicycle centre is located in between the apogee and the perigee of the deferent and added otherwise. If a scholar had calculated the true centrum  $\angle$  CEB, he could go on calculating the motion of the planet he is studying on the epicycle (see figure 2 below). On the epicycle, H is the mean apogee or the point the furthest removed from the equant point F. This is the point on the epicycle relative to which the planet moves with a uniform angular velocity. The true apogee, the point the furthest removed from the Earth rather than from the equant point is I. The mean anomaly (*al-khāṣa*) for planet J is  $\angle$  HBJ or  $\alpha$ . The true anomaly, which is again relative to the Earth instead of the equant point, can now be calculated by adding or subtracting

<sup>182</sup> This drawing, as well as the following three, is my own. It is based on the description of this procedure in the works al-Jāmiʿ al-Mufid, Ghunyat al-Fahīm and al-Durr al-Yatīm, as well as on Benno Van Dalen’s description of the Ptolemaic method to compile a *taqwīm* table. Aḥmad Ibn al-Majdī, “Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Hall al-Taqwīm” (Cairo, 870/1466), Ms. Cairo (DAK) DM 44,2 – DM 405 – DM 141,1; Aḥmad Ibn al-Majdī, “Al-Jāmiʿ al-Mufid fī Bayān ‘Usūl al-Taqwīm wa-l-Mawālīd” (Cairo, 880/1476), Ms. Leiden (University Library) Acad. 48.; Van Dalen, “An Introduction to the Mathematics of Islamic Astronomy and Astrology.”

the angle  $\angle IBH$  or  $\beta$  to  $\alpha$ . This angle can easily be deduced because it equals the angle of the equation of centre or  $\angle EBF$ , which was discussed above.

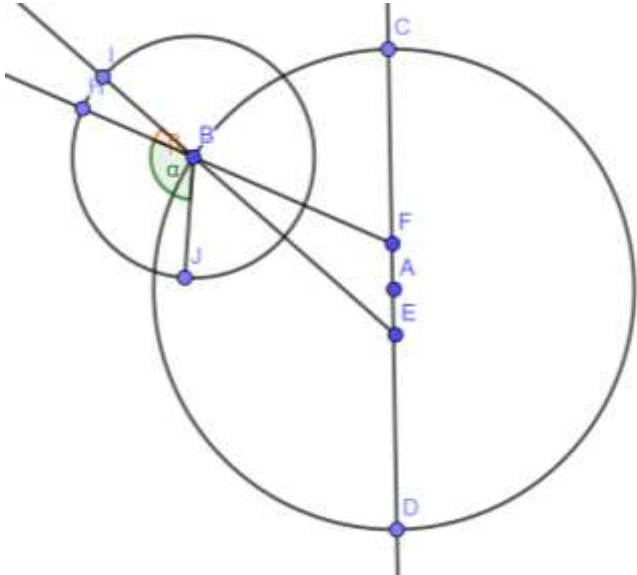


Figure 2 Ptolemy's Planetary Model (2/4)

The next step for a scholar would then be to calculate the corrected centrum,  $\angle CEJ$  or  $\gamma$  (see figure 3 below). This could be done by adding or subtracting the equation of anomaly (*ta'dil al-mu'addil*)  $\angle BEJ$  or  $\delta$  to or from the true centrum  $\angle CEB$ .

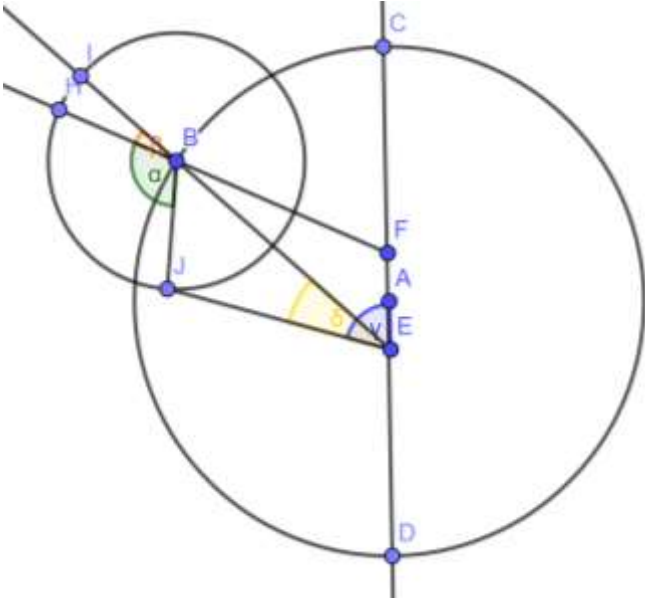


Figure 3 Ptolemy's Planetary Model (3/4)



This then brought the scholar to the last step of his calculations: the calculation of the true longitude or *taqwīm*. This value equals  $\angle XEJ$  or  $\varepsilon$ . Here the planet is seen from the Earth but measured from the vernal equinoctial point X. This angle could be found by adding the longitude of the apogee  $\angle XEC$  or  $\zeta$  to the corrected centrum  $\angle CEJ$  or  $\eta$  (see figure 4 below). The sum of  $\zeta$  and  $\eta$  equals  $\varepsilon$  or the true longitude of the planet.

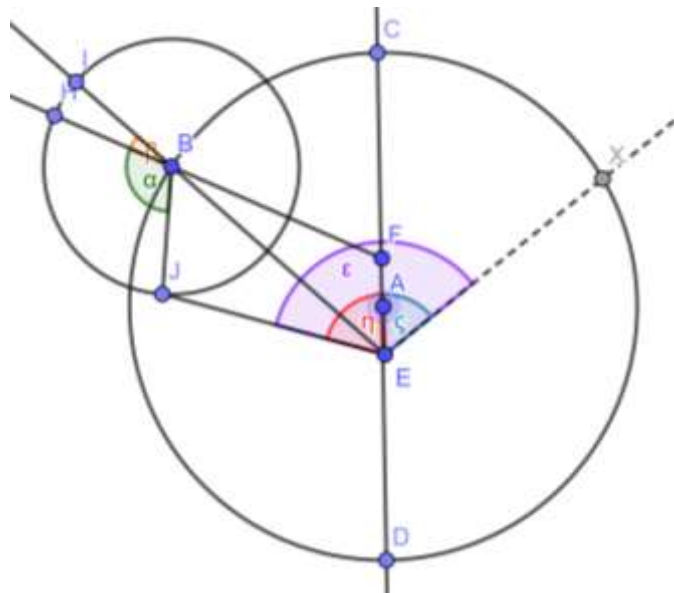


Figure 4 Ptolemy's Planetary Model (4/4)

#### 4.1.4. Ibn al-Majdī's Auxiliary Tables for *Taqwīm*

As mentioned above, *muwaqqits* did not start from scratch every time they had to calculate the true longitude of a planet. Mathematical tables for mean motion and the equations of each planet were generally available in *zīj*es or manuals for timekeeping.<sup>183</sup> However, the calculations that had to be made on the basis of these tables still required quite some work. Ibn al-Majdī simplified the procedure outlined above by compiling auxiliary tables for *taqwīm* that were based on the following principles.<sup>184</sup> Each planet has a certain period of time that measures an integer number of the planet's anomalistic periods or the period of time in which a planet moves from its apogee to its perigee. The scholar had to choose a day for which the anomaly was

<sup>183</sup> Van Dalen, "An Introduction to the Mathematics of Islamic Astronomy and Astrology," 4–9.

<sup>184</sup> David A. King and E.S. Kennedy, "Ibn al-Majdī's Tables for Calculating Ephemerides," *Journal for the History of Arabic Science* 4 (1980): 48–68 There are no autographs of Ibn al-Majdī's works on his auxiliary method. However, as all his colleagues refer to him when this method is mentioned, this is probably correct - it is not within the aims of this dissertation to evaluate whether the story of Ibn al-Majdī as the "inventor" of this method is actually correct, but rather to look at the tradition and circulation of *taqwīm*-texts that was started in his name.

small: a day when the planet is close to its apogee. Then he had to look at the number of days separated from this chosen date and express them in terms of integer multiples of the mentioned anomalistic period. He had to divide the period into smaller intervals marked by sets of noons, and on the basis of this he had to compile three sets of tables.

The first one was a “days table” which allowed one to convert a given date in the *hijra* calendar into a sexagesimally expressed number that represented the days elapsed since the *hijra*. This table was made up of a subsection for summed (*majmūʿa*) years and a subsection for extended (*mabsūṭa*) years. The first subsection listed the number of days from the *hijra* until the beginning of the year of the argument entry, while the second one listed the number of days in years since the *hijra*, and in the successive months of the year. The scholar using the table had to look for the value opposite the largest argument that was equal to or smaller than the given date in the summed section. After this, he had to look for the value opposite the excess of the given year for the entry he had just chosen. Finally, he had to look for the entry opposite the month named in the given date and to add this value to the former two in order to arrive at the total number of days elapsed since the *hijra*.

The second table was a mean motion table consisting of two parts. In the first part the value for a certain period was tabulated next to their corresponding values of mean longitude, anomaly and centre. In the second part the difference in these values between subsequent periods was listed. As usual, there were two sections for each planet: the extended one and the summed one. Next to each entry in the first section, the noon positions of mean anomaly and centre were listed. The entries in the second section are listed opposite the changes in mean anomaly and centre in between the noons in the anomalistic period.<sup>185</sup> To use this table, one had to start from the value obtained from the days table.

In the extended table, a scholar then had to look for the value that was equal to or smaller than that in the days table. In this way, one located the big period in which

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<sup>185</sup> King and Kennedy, “Ibn Al-Majdī’s Tables for Calculating Ephemerides”, 53; Aḥmad Ibn al-Majdī, “Kitāb Al-Durr al-Yatīm fi Tashīl Ṣinā’āt al-Taqwīm” (Cairo, 850/1447), Ms. Cairo (DAK), DM 44,2; Aḥmad Ibn al-Majdī, “Kitāb al-Durr al-Yatīm Fi Tashīl Ṣinā’āt al-Taqwīm” (Cairo, 850/1447), Ms. Cairo (DAK) MM 85,1; Aḥmad Ibn al-Majdī, “Kitāb Al-Durr al-Yatīm fi Tashīl Ṣinā’at al-Taqwīm” (Cairo, 900/1495), Ms. Cairo (DAK) DM 141,1; Aḥmad Ibn al-Majdī, “Al-Jāmiʿ al-Mufīd fi Bayān ‘Uṣūl al-Taqwīm wa-l-Mawālīd” (Cairo, 880/1476), Ms. Leiden (University Library) Acad. 48; Aḥmad Ibn al-Majdī, “Ghunyat al-Fahīm wa-l-Ṭarīq ilā Hall al-Taqwīm” (Cairo, 1466/870), Ms. Cairo (DAK) ṬM 82; Aḥmad Ibn al-Majdī, “Ghunyat al-Fahīm wa-l-Ṭarīq ilā Hall al-Taqwīm” (Paris, 900/1495), Ms. Paris (BnF) 2531/3, <http://gallica.bnf.fr/ark:/12148/bpt6k209461j/f370.item.zoom>.

the chosen moment was situated, as well as the mean longitude, anomaly and centre at that time. After this, a scholar had to look at the summed table and derive the value equal to or smaller than the value from the days table again, in order to know the initial point of the anomalistic period in which the chosen moment was situated. Opposite this value, the scholar found the amount of change in the three variables of mean, centre and anomaly. On the basis of this, one could deduce the number of days that the chosen moment was into the anomalistic period. This value was needed for the third type of table.<sup>186</sup>

*Example of the first and second type of tables*

*Ms. Cairo (DAK) DM 141 fol. 4V,*

*(Courtesy of the National Library of Egypt)*

A third table that had to be compiled, was what King and Kennedy have labelled a ‘*planetary increment table*’. The entries calculated here were the algebraic sum of the mean motion expressed relative to the value at the beginning of the anomalistic period and the equation for the initially chosen moment. The sum of the mean longitude from the second table and the increase in longitude equalled the real longitude for a planet at the chosen moment of time.<sup>187</sup>

<sup>186</sup> King and Kennedy, “Ibn Al-Majdi’s Tables for Calculating Ephemerides,” 53–55.

<sup>187</sup> King and Kennedy, “Ibn Al- Majdi’s Tables for Calculating Ephemerides”, 54–55.

Example of the third type of tables

Fragment from Ms. Cairo (DAK) DM 141, fol. 5R

(Courtesy of the National Library of Egypt)

As King and Kennedy have shown, these auxiliary tables made the most difficult computations shift from the work of the *taqwīm*-scholar to the scholar compiling the auxiliary tables:

‘Once having determined a set of mean positions [...] the user need only add a set of tabular entries to the mean longitude to produce a run of true longitudes for equally spaced intervals.’<sup>188</sup>

As such, Ibn al-Majdī’s work provided a shortcut alternative for the calculation of the true position of the seven planets that allowed a much larger audience to practice *taqwīm*.<sup>189</sup> As the circulation of texts referring to him or his work attest to, Ibn al-Majdī’s method became very popular from the end of the fifteenth century onwards

<sup>188</sup> King and Kennedy, “Ibn Al-Majdī’s Tables for Calculating Ephemerides,” 52; Aḥmad Ibn al-Majdī, “Ghunyat al-Fahīm wa-l-Ṭarīq ilā Ḥall al-Taqwīm” (Cairo, 870/1466) Ms. Cairo (DAK) ṬM 82; Ibn al-Majdī, “Kitāb Al-Jāmi‘ al-Mufid Fī Bayān Uṣūl al-Taqwīm wa-l-Mawālīd” (Cairo, 880/1476), Ms. Leiden (University Library) Acad. 48; Aḥmad Ibn al-Majdī, “Kitāb Al-Durr al-Yatīm Fī Tashīl Ṣinā‘at al-Taqwīm” (Cairo, 850/1447) Ms. Cairo (DAK) DM 44,2 Aḥmad Ibn al-Majdī, “Kitāb Al-Durr al-Yatīm Fī Tashīl Ṣinā‘at al-Taqwīm” (Cairo, 850/1447), Ms. Cairo (DAK) DM 405; Aḥmad Ibn al-Majdī, “Kitāb Al-Durr Al-Yatīm Fī Tashīl Ṣinā‘at Al-Taqwīm,” (Cairo, 1447/850) Ms. Cairo (DAK) 405.

<sup>189</sup> King and Kennedy, “Ibn Al-Majdī’s Tables for Calculating Ephemerides,” 49.

and continued to be used by certain groups of scholars in Egypt until the nineteenth century.<sup>190</sup>

#### 4.2. Shihāb al-Dīn Ibn al-Majdī's Taqwīm-Texts: Boundary Work

In the second part of this fourth chapter, I will discuss the collection of *taqwīm* texts that was initiated by Ibn al-Majdī. As a teacher-timekeeper, Ibn al-Majdī wrote several didactical treatises on timekeeping, of which a substantial part focuses on the practice of *taqwīm*. In what follows, I will discuss both his didactical treatises on *taqwīm* and the actual tables that circulated in the fifteenth century Sultanate of Cairo. In line with the approach outlined in the first part of this dissertation, the manuscripts that have been written or copied later than the fifteenth century are not taken into account because they are not considered to tell us anything about the context that is relevant here. The titles of the didactical works that Ibn al-Majdī wrote are “*Al-Jāmi‘ al-Mufīd fī Bayān Uṣūl al-Taqwīm wa-l-Mawālīd*”, “*Ghunyat al-Fahīm wa-l-Ṭarīq ilā Ḥall al-Taqwīm*” and “*Kitāb al-Durr al-Yatīm fī Tashīl Ṣinā‘at al-Taqwīm*”.<sup>191</sup> Apart from these, we find a lot of manuscripts with tables that bear the title of the latter didactical treatise, but that are in fact the results of the application of Ibn al-Majdī's technique of auxiliary tables. Among these manuscripts we find works consisting of tables for the Sun and the Moon, works with solar tables solely, works with lunar tables solely and works consisting of tables for specific planets other than the Sun and the Moon. Ibn al-Majdī only discussed solar and lunar *taqwīm* tables in his didactical works, but he laid down the numerical bases for the compilation of tables for the planets. The scholars who compiled these tables all explicitly refer to their tables as based on Ibn al-Majdī's work. In King's catalogue, their manuscripts are all listed under the name of Ibn al-Majdī, because of the author- and content centered view that is common in catalogues for manuscripts from this period, rather than the manuscript centered view advocated in this research.<sup>192</sup> This complicates a material approach towards texts, as texts are not listed together with the text with which they were bound together and circulated, but rather in thematic categories having their origin in the

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<sup>190</sup> King and Kennedy, “Ibn Al-Majdī's Tables for Calculating Ephemerides.”

<sup>191</sup> From now on abbreviated as “*Al-Jāmi‘ al-Mufīd*”, “*Ghunyat al-Fahīm*” and “*Al-Durr al-Yatīm*” respectively

<sup>192</sup> David A. King, *A Survey of the Scientific Manuscripts Available in the Egyptian National Library* (Cairo: American Research Center in Egypt, 1986).

period of the compiler of the catalogue or according to the presumed original author.

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An overview of the manuscripts that will be discussed is listed here:

<b>Shelf Mark</b>	<b>Title [or subject if none]</b>	<b>Date</b>	<b>Facsimile Cf. appendix infra</b>
Ms. Leiden (University Library) Acad. 48	“ <i>Al-Jāmiʿ al-Mufīd fī Bayān Uṣūl al- Taqwīm wa-l-Mawālīd</i> ”	880 / 1475	pp. 238- 43
Ms. Cairo (DAK) ṬM 82,1	“ <i>Ghunyat al-Fahīm wa-l-Ṭarīq ilā Ḥall al- Taqwīm</i> ”	870 / 1466	pp. 244-7
Ms. Paris (BnF) Ar. 2531/3	“ <i>Ghunyat al-Fahīm wa-l-Ṭarīq ilā Ḥall al- Taqwīm</i> ”	900 /1495	pp. 248-50
Ms. Cairo (DAK) DM 141, 1	“ <i>Kitāb al-Durr al Yatīm fī Tashīl Ṣināʿat al-Taqwīm</i> ”	900 /1495	pp. 251-3
Ms. Cairo (DAK) DM 448,2	“ <i>Kitāb al-Durr al Yatīm fī Tashīl Ṣināʿat al-Taqwīm</i> ”	900 /1495	pp. 254-6
Ms. Cairo (DAK) DM 405	[Solar and lunar tables from “ <i>Al-Durr al Yatīm</i> ”]	850 /1447	pp.257-60
Ms. Cairo (DAK)	[Solar and lunar tables from “ <i>Al-Durr al Yatīm</i> ”]	850 /1447	/

<sup>193</sup> This issue has been addressed by Konrad Hirschler in his latest book, where he mentions the few exceptions to this rule: "There are laudable exceptions that broke away from this practice and preserved the manuscripts' material integrity, such as the excellent three catalogues on majmūʿs for the National al-Asad Library in Damascus by Yāsīn al-Sawwās, Otto Loth's catalogue of the Arabic manuscripts in the India Office or Efraim Wust's catalogue of the Yahuda collection in Jerusalem." Hirschler, *A Monument to Medieval Syrian Book Culture: The Library of Ibn ʿAbd al-Hādī*, 119–20.

MM 44,2			
Ms. Cairo (DAK) MM 85, 1	[Solar tables from “ <i>Al-Durr al Yatīm</i> ” – here referred to as “ <i>Al-Durr al-Naḍhīm</i> ”]	850 /1447	pp.261-5
Ms. Cairo (DAK) MM 25	[Lunar Tables from “ <i>Al-Durr al Yatīm</i> ”]	825 /1422	pp. 266-8
Ms. Cairo (DAK) MM 26	[Lunar tables from “ <i>Al-Durr al Yatīm</i> ”]	850 /1447	/
Ms. Cairo (DAK) MM 24	[Planetary tables for Saturn based on “ <i>Al-Durr al Yatīm</i> ”]	850 / 1447	/
Ms. Cairo (DAK) DM 43	[Planetary tables for Saturn based on “ <i>Al-Durr al Yatīm</i> ”]	900 / 1495	/
Ms. Cairo (DAK) MM 238	[Planetary tables for Saturn based on “ <i>Al-Durr al Yatīm</i> ”]	900 /1495	/
Ms. Cairo (DAK) K 4022	[Equation tables for Venus based on “ <i>Al-Durr al Yatīm</i> ”]	Ca. 900 /1495	/

In the remainder of this chapter, I will discuss these sources in the light of the way they are presented by their authors, copyists and users as pertaining to a certain discipline. I refer to the latter as ‘*boundary work*’, a term that was first used in science studies with regard to the problem of demarcation between science and other intellectual activities. The term was coined by the sociologist Thomas Gieryn and used to draw attention to the ways in which scientists attempted to ‘create a public image for science by contrasting it favourably to non-scientific intellectual or technical

activities.<sup>194</sup> Whereas Gieryn used the notion of boundary work to discuss an ideological way of writing and identifying oneself, I will use it in a slightly different way. In light of what I have termed a '*material approach*' to texts, I consider boundary work not merely to be a prescriptive delineation of a discipline, but always one that is confined by the material reality of the practice of which it is a part. In other words: boundary work is only prescriptive within the material constraints and possibilities of the practice of which it is part. The historian of science Steven Shapin uses the terminology of '*boundary speech*' to refer to the explicit linguistic references to the boundaries of practices. I used the term of '*boundary work*' here, because speech is not the only way in which scholars claimed Ibn al-Majdī's tables as pertaining to a certain discipline. In section 4.2.1. I will first discuss the authorship of these texts, to make clear that this collection is anything but the project of one individual. In section 4.2.2., I will discuss how Ibn al-Majdī's work is explicitly delineated by means of references to disciplines. Finally, in section 4.2.3., I will argue that the compilation of composite and multi-text manuscripts also worked as a practice of boundary work for these texts, albeit non-linguistically.

#### 4.2.1. Authorship and Use

Before I discuss the issue of boundary work, I want to elaborate on the authorship of these texts first. Most of these texts are written after the death of Ibn al Majdī and none of them is actually written down in the hand of the scholar. Some of them are annotated copies of his work, others are tables compiled on the basis of the technique he laid out. Most of them refer to Ibn al-Majdī as their author or to his work "*Al-Durr al-Yatīm*" as the main source. It is therefore not my intention to discuss this collection of manuscripts in order to tell something about the life and work of the individual scholar Ibn al-Majdī. The reason that I have focused on these texts is that the scholars who compiled *taqwīm* in the later fifteenth century Cairo Sultanate all refer to this author and his work as a source of inspiration. If we look at the individuals involved in the copying and use of these texts, we find the following references.

Ms. Cairo (DAK) MM 25, a collection of lunar tables based on the technique of "*Al-Durr al-Yatīm*", is the only treatise that has been written down during the lifetime

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<sup>194</sup> Thomas F. Gieryn, "Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists," *American Sociological Review* 48, no. 6 (1983): 781.



of Ibn al-Majdī. However, ms. Cairo (DAK) MM 25 contains a note that shows that this manuscript too, is not an autograph. It says:

هذه تعاديل القمر باصول بن يونس حسب بن المجدى وهي بخط العلامة عبد العزيز الوفائي  
تغمدهم الله بنعمته واسكنهم فسيح جنته آمين.

‘These are the equations for the Moon based on the (parameters of) Ibn Yūnus following [the method of] Ibn al-Majdī. They were written down by ‘Abd al-Azīz al-Wafāī, may God protect them with His grace and accommodate them in his spacious paradise. Amen.<sup>195</sup>

These tables thus appear to have been written down by al-Wafāī, a contemporary and pupil of Ibn al-Majdī who worked in the Mu’ayyad mosque of Cairo as a *muwaqqit* or timekeeper. Al-Wafāī died twenty years after Ibn al-Majdī.<sup>196</sup> In the small colophon at the end of this text, we find a reference to the latter as ‘*al-muṣannif*’ or the compiler. The colophon says:

تمت الدرر في الشمس والقمر بخط الاستاذ العلامة عبد العزيز الوفائي  
وهو ناقل من خط المصنف برحمة الله تعالى

‘ “*Al-Durar*” with regard to the Sun and the Moon ends here, in the hand of the very learned ‘Abd al-Azīz al-Wafāī – and this was copied from the autograph, with the mercy of God, who is exalted.’<sup>197</sup>

Just like this work, the peritexts of the other *taqwīm* tables do not suggest that they were copies from tables that were necessarily originally written by Ibn al-Majdī, but rather refer to him as the source of inspiration for the method used.

<sup>195</sup> Aḥmad Ibn al-Majdī, “Lunar Equation Tables Based on Al-Durr al-Yatim” (Cairo, 825/1422), Ms. Cairo (DAK) MM 25.

<sup>196</sup> Muḥammad ibn ‘Abd al-Raḥmān al-Sakhāwī, “539 - ‘Abd al-Azīz ibn Muḥammad ibn Muḥammad al-Wafāī al-‘Izz Abū Al-Faḍl Wa Abū Al-Fawā’id,” in *Al-Daw’ al-Lāmi’ Li-Ahl al-Qarn al-Tāsi’*, vol. II (Beirut: Dār al-kutub al-‘ilmiyya, 2004), 348.

<sup>197</sup> Aḥmad Ibn al-Majdī, “Lunar Equation Tables Based on Al-Durr al-Yatim” (Cairo, 825/1422) Ms. Cairo (DAK) MM 25.

In the other collection of lunar tables, ms. Cairo (DAK) MM 26, Ibn al-Majdī's name is not mentioned, but the headings of the tables refer to “*Al-Durr al-Yatīm*” and a possessor's name is added in the margin of folio 1V. The tables were in the possession of a certain Hājī Ibrāhīm al-[Sarsarī], about whom I did not find any further information.<sup>198</sup>

Ms. Cairo (DAK) MM 24, a collection of tables for Saturn based on the method of “*Al-Durr al-Yatīm*” does refer to Ibn al-Majdī, but adds in its table headings ‘*calā ṭarīq al-Durr al-Yatīm*’ or ‘following the method of “*Al-Durr al-Yatīm*”’.<sup>199</sup> The same is true for ms. Cairo (DAK) MM 238, another collection of tables for Saturn and for ms. Cairo (DAK) K 4022, a collection of equation tables for Venus.<sup>200</sup> In ms. Cairo (DAK) DM 43, the third manuscript with tables for Saturn, Ibn al Majdī is mentioned along with the title of his work. Before the first table, a note in the top margin says:

هذه جداول تعاديل زحل من الدر للشيخ الامام العمدة ابن المجدي رحمه الله تعالى امين'

“These are tables for the equations of Saturn, from “al-Durr” of the Shaykh, the leading example Ibn al-Majdī, may God the Exalted have mercy on him. Amen.”<sup>201</sup>

Ms. Cairo (DAK) MM 85,1, a collection of solar tables, refers to “*Al-Durr al-Yatīm*” indirectly with a similar but slightly distinct title: “*Kitāb al-durr al-nadhīm fī ḥall al-taqwīm*”. Nevertheless the work – like all the other ones mentioned here - has been catalogued by King and the Dār al-Kutub itself as a copy of “*Al-Durr al-Yatīm*” written by Ibn al-Majdī himself.<sup>202</sup> This work again consists of a collection of tables compiled by another scholar who used Ibn al-Majdī's technique of auxiliary tables. Apart from the reference to Ibn al-Majdī's method, the title page of the text also refers to the *zīj* or manual for timekeeping that was written for the Timurid sultan Ulugh Beg, of which a recension was made for Cairo in this period by a colleague of Ibn al-Majdī, Shams al-Dīn al-Ṣūfī (d. ca. 899/1494). No explicit reference to Ibn al-Majdī is made anywhere

<sup>198</sup> Aḥmad Ibn al-Majdī, “Lunar Tables Based on Kitāb Al-Durr Al-Yatīm” (Cairo, 850/1447), Ms. Cairo (DAK) MM 26.

<sup>199</sup> “[Tables for Saturn Based on al-Durr al-Yatīm]” (Cairo, 900/1495), Ms. Cairo (DAK) MM 24.

<sup>200</sup> “[Tables for Saturn Based on al-Durr al-Yatīm]” (Cairo, ca. 900/1495), Ms. Cairo (DAK) MM 238.; “[Tables for Venus Based on al Durr al-Yatīm ]” (Cairo, ca. 900/1495) Ms. Cairo (DAK), K 4022.

<sup>201</sup> “[Tables for Saturn Based on al-Durr al-Yatīm]” (Cairo, ca. 900/1495), Ms. Cairo (DAK) DM 43, fol. 1R..

<sup>202</sup> King, *A Survey of the Scientific Manuscripts Available in the Egyptian National Library*, 72–73.

in the manuscript. In ms. Cairo (DAK) MM 44, another collection of solar tables, Ibn al-Majdī is mentioned by name, but not in the part of the manuscript which contains a fragment of “*Al-Durr al Yatīm*”: Ms. Cairo, (DAK) MM 44,2 f. 22v-27. The text is bound together with some tables for the planet Mars (*al-Mirrīkh*) based on Ibn al-Majdī’s method. These tables are of a later date, and are hence not taken into account here, but they do refer to Ibn al-Majdī by name.<sup>203</sup> In Ms. Cairo (DAK) DM 405, a third collection of solar tables based on “*Al-Durr al-Yatīm*”, no explicit mention of Ibn al-Majdī is made, but the copyist refers to the title of his work “*Al-Durr al-Yatīm*” as a source. The manuscript does not have a title page or colophon but contains a lot of notes around the tables. Here too, an unknown possessor or transmitter of the manuscript is mentioned:

ملك هذا الكتاب الفقير الى الله تعالى احمد العال عفى عنه

‘This book was in possession of al-Faqīr ilā Allāh ta’ālā Aḥmad [al-‘āl], may he be forgiven.<sup>204</sup>

Ms. Cairo (DAK) ṬM 82,1, one of the didactical texts titled “*Ghunyat al-Fahīm*”, does explicitly refer to Ibn al-Majdī as its author. As this was written down after his death, it must have been written down by a copyist too. Whereas the name of a copyists is absent, the text contains some possessor’s notes. In general, however, they concern scholars who are not mentioned in any contemporary biographical dictionaries or chronicles. We also find a *waqf* or bequest note. This note is not dated, but the handwriting is the same as the handwriting of a lot of the notes in the manuscript in which the writer comments on calculations for the year 870/1466.<sup>205</sup>

من كتب العبد الفقير لله محمد بن محمد الصدق الليثي عفى الله وقفاله بجميع المسلمين

وولده كمال الدين<sup>206</sup>

<sup>203</sup> Ibn al-Majdī, “Kitāb Al-Durr al-Yatīm Fī Tashīl Ṣinā’āt al-Taqwīm” (Cairo, 850/1447), Ms. Cairo (DAK), MM 44,2.

<sup>204</sup> Ibn al-Majdī, “Kitāb Al-Durr Al-Yatīm Fī Tashīl Ṣinā’āt Al-Taqwīm” (Cairo, 850/1447), Ms. Cairo (DAK) DM 405.

<sup>205</sup> Ibn al-Majdī, “Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm”, (Cairo, 870/1446), Ms. Cairo (DAK) ṬM 82,1.

<sup>206</sup> Ibn al-Majdī, “Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm”, (Cairo, 870/1446), Ms. Cairo (DAK) ṬM 82,1.

‘From the books of ‘Abd al-Faqīr li-l-Lāh Muḥammad bin Muḥammad al-Ṣadaq al-Laythī: al-Laythī, may God forgive [him], as a waqf from him to all the Muslims and his son Kamāl al-Dīn.’

The other manuscript which bears the title of “*Ghunyat al-Fahīm*”, ms. Paris (BnF) Ar. 2531/3, is similar, but does not mention the name of a copyist.<sup>207</sup>

Ms. Leiden (UL) Acad. 48, “*Al-Jāmi‘ al-Mufīd*”, is no autograph either. The colophon informs us that the manuscript was written down on the day of Dhū al-Qa‘da 11 in the year 880 of the *hijra* calendar (ca. March 6 in the year 1476 CE) by a scholar named Abū al-Ṭāhir Muḥammad bin Muḥammad al-Shafi‘ī. Apart from the fact that Abū al-Ṭāhir was a *shāfi‘ī* scholar and *muwaqqit* who was well versed in arithmetic (*al-ḥisābī*), and that he lived in Cairo (*al-Qāhirī*), the text does not give any additional information about him.<sup>208</sup>

The fragmentary copy titled “*Al-Durr al-Yatīm*”, DM 141,1, refers to “*Al-Durr al-Yatīm*” as if written from the view of Ibn al-Majdī himself:

هذه رسالة وضعتها في العمل بكتابي المسمى بالدر اليتيم في تسهيل صناعة التقويم رتبته على

الطريق الصناعي

This is a treatise on the work that I have discussed in my book titled “*Al-Durr al-Yatīm*” on the simplification of the practice of Taqwīm. I have ordered it in a practical manner.<sup>209</sup>

The name of the copyist is not mentioned. In contrast, the other manuscript that bears this title, Ms. Cairo (Dār al-Kutub) DM 448,2, which is a fragmentary copy of “*Al-Durr al-Yatīm*” which focuses on the compilation of *taqwīm* for the Moon, mentions Ibn al-Majdī as well as the names of scholars who used the text: a certain Ibn ‘Abd al-Ghaffār and a certain Badr al-Dīn al-Mubārak.<sup>210</sup>

<sup>207</sup> Ibn al-Majdī, “*Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm*” (Cairo, 900/1495), Ms. Paris (BnF) Ar. 2531/3.

<sup>208</sup> Ibn al-Majdī, “*Al-Jāmi‘ al-Mufīd fī al-Kashf ‘an Uṣūl Masā’il al-Taqwīm Wa-l-Mawālīd*” (Cairo, 880/1476), Ms. Leiden (University Library) Acad. 48, 1r, 107v, Acad. 48.

<sup>209</sup> Ibn al-Majdī, “*Kitāb Al-Durr al-Yatīm Fī Tashīl Ṣinā‘at al-Taqwīm*”, Cairo (850/1447), Ms. Cairo (DAK), fol. 1V.

<sup>210</sup> Ibn al-Majdī, “*Kitāb Al-Durr al-Yatīm Fī Tashīl Ṣinā‘at al-Taqwīm*”, (Cairo, 850/1447), Ms. Cairo (DAK) DM 448,2. fols. 1R & 4V.

The contextualisation of the scholars mentioned here might have been done by the use of sources from other genres from this period. Historiographical works such as biographical dictionaries and chronicles especially provide us with an interesting insight in the scholarly world.<sup>211</sup> However, this contextualisation is complicated by the fact that the historical actors mentioned here are not mentioned in these sources. While it can be considered very disappointing that none of the users, possessors or copyists of these texts were famous authors who are praised and remembered in the extensive scholarly biographical dictionaries of this period, this absence actually tells us something too. The tradition of *taqwīm* treatises started by Ibn al-Majdī was practised and appropriated by scholars from all sorts of backgrounds – not just by an elite of mathematicians working in institutions, as earlier studies suggest. The manuscripts show this: most of these fragmentary copies are full of marginal notes, scribbles and annotations that indicate whether the calculations in the tables are correct (e.g. *ṣahḥ*, *ṣahḥa*, *ṣahīh*) or incorrect (e.g. *ghalat*). Some of them also make reference to a correction (*ṣawāba*). A couple of times, the copyist or user mentions the opinion of his *shaykh* in the margins. All the manuscripts are quarto sized or smaller, so they could be carried around easily. The manuscripts are written down in *naskhī* script with regular black ink and contain some red ink for emphasis or indication of a new element in the text structure, but none of them has any decorations like the single-text manuscripts produced in court contexts in this period.<sup>212</sup> Some of them are even written on different kinds and sizes of paper.<sup>213</sup> In short: these manuscripts bear the marks of intensive use by a large group of unknown scholars. In the remainder of this chapter, I will elaborate on the practices in which this group of scholars did –and did not – situate their work.

#### 4.2.2. *Boundary Speech: The Science of the Stars & Timekeeping*

In this section, I will discuss how the mentioned texts relate to the wider disciplinary context in which they explicitly situate themselves. This explicit discussion of the discipline to which one’s work pertains and – at the same time – to what discipline one’s work does not pertain to, can be referred to as boundary speech. First,

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<sup>211</sup> Michael Chamberlain, *Knowledge and Social Practice*, 11–21; Carl F. Petry, *The Civilian Elite of Cairo in the Later Middle Ages* (Princeton: Princeton University Press, 1981).

<sup>212</sup> Hirschler, *A Monument to Medieval Syrian Book Culture: The Library of Ibn ʿAbd al-Hādī*, 122.

<sup>213</sup> E.g. Ibn al-Majdī, “Kitāb Al-Durr al-Yatīm Fī Tashīl Šināʿāt al-Taqwīm,” (Cairo 850/1447), Ms. Cairo (DAK), DM 141, 1.

I will discuss this for the didactical treatises, “*Al-Jāmi‘ al-Mufīd*” and “*Ghunyat al-Fahīm*”. These treatises are most explicitly situated as pertaining to a discipline. After this, I will discuss the fragments of “*Al-Durr al-Yatīm*” as well as the tabular manuscripts that are based on them. The latter are not as straightforwardly classified, but introductory lines, table headings, marginal notes and colophons still provide substantial information on the disciplinary context in which they were used.

“*Al-Jāmi‘ al-Mufīd fī Bayān Uṣūl al-Taqwīm wa-l-Mawālīd*”

The main manuscript that bears the title of “*al-Jāmi‘ al-Mufīd*”, listed as Academia 48 in the University Library of Leiden, is the longest manuscript that bears the title of “*Al-Jāmi‘ al-Mufīd*” and the only one written in the fifteenth century. However, the text does not contain all the chapters that its introduction promises it to consist of. Instead, only the first three out of ten *maqālāt* survive, followed by a colophon. The work is presented as a treatise on important topics related to the tables of *zījēs* or manuals for timekeeping (in the text: *masā’il al-waqt*). The author explains to his readers that his text does not include the mathematical calculations on which the tables are based, but rather deals with topics related to their use. He writes that he had been looking for a recent treatise on these topics but did not find any. Therefore, he decided to compile such a work himself:

‘لم ارى احداً (...) فاجبت ان اضع كتابا مستوفيا لذلك جميعه و ما كان منها مما يتعلق بمسائل الوقت كالميل وانصاف قسبي النهار وتعاديلها والداير وفضله ونحو ذلك فاني لم اتعرض لذكره اصلا فانه قد تقدم القول عليه في كتابي اليواقيت<sup>214</sup> وشرح المجيب فيعلم من هناك وقصدت بذلك عدم الحشو والتكرار وقد جرت العادة في غالب الازياج ان يذكر بعد تقويم الكواكب الطرق الحسابية المتعلقة بالمواليد كالتساير ومطرح الاشعه ونحوهما فالحقت ذلك ايضا بهذا الكتاب وسميته بالجامع المفيد

في بيان اصول التقويم والمواليد<sup>215</sup>

<sup>214</sup> There is to the best of my knowledge, however, no work of Ibn al-Majdī with this title is still extant today.

<sup>215</sup> Ibn al-Majdī, “*Al-Jāmi‘ al-Mufīd fī Bayān Uṣūl al-Taqwīm wa-l-Mawālīd*” (Cairo, 880/1476), Ms. Leiden (University Library), Acad. 48.

‘I did not find any (...) so I considered it my duty to compile an exhaustive treatise devoted to all of this, that is, to everything that concerns the matters of time such as the declination and the centre of the two parts of the day and their equation, the cycle, less important topics as well as all that concerns them. And I did not provide the foundations for what I say because I have already discussed this in my book “*al-Yawāqīt*” [The matters concerning timekeeping] and in the commentary on the sine quadrant so this is [already] known at this point and I did not intend any superfluity or repetition here. It used to be a habit in most of the *zīj*es, to discuss, after the ephemerides of the planets, the arithmetical methods concerning the birth horoscopes, like the progressions<sup>216</sup> and the projection of rays<sup>217</sup> and what is related to these two topics. Therefore, I covered these too in this treatise which I have named “*Al-Jāmi‘ al-Mufīd*” (“*The Useful Compendium*”) on the explanation of the basic principles of *taqwīm* and birth horoscopes’.<sup>218</sup>

In writing this work, the author thus decided to add something to the existing literature. In this way, the introduction presents the texts as a concrete reaction on the situation in which the writer – be it the copyist or Ibn al-Majdī himself – conducted his intellectual activities. The writer explicitly uses the term *‘āda* or habit, which shows that there was a format or a set of implicit rules for compiling these sorts of texts.<sup>219</sup> At the moment when the text was written, these implicit rules seem to have been changing and the author’s work is a reaction upon this change. However, a study of the manuscript reveals that the copyist stopped his work after the first of three *maqālāt* or parts. The hundred and seven folios, ending with a colophon in the same hand, consist of the introduction and nine of ten chapters of the first *maqāla* or part of the work. The introduction deals with very practical general topics such as sexagesimal multiplication

<sup>216</sup> *Tasyīr* refers to the “movement of a particular point on the Ecliptic associated with the native across the heavens as in position at the moment of Nativity L.P. Elwell-Sutton, “Annotated Glossary of Technical Terms,” in *The Horoscope of Asudallah Mirza*, ed. M.S.H.G Heerma van Voss et al., Religious Texts Translation Series, Volume Six (Leiden: E.J. Brill, 1977), 91.

<sup>217</sup> *Maṭrah al-shu‘a* refers to the doctrine according to which ‘the Sun, Moon and planets cast seven rays of astrological significance to particular points of the ecliptic, the ‘aspects’ (*nazar*, pl. *anzār*)’.

Van Dalen, “An Introduction to the Mathematics of Islamic Astronomy and Astrology.”

<sup>218</sup> Ibn al-Majdī, “*Al-Jāmi‘ al-Mufīd fī Bayān ‘Uṣūl al-Taqwīm wa-l-Mawālīd*” (Cairo 880/1476) Ms. Leiden (University Library) Acad. 48.

<sup>219</sup> In Ibn al-Shāṭir’s fourteenth century *zīj*, *taqwīm* was an important topic to which several chapters were devoted. Ibn al-Shāṭir, “*Kitāb Al-Zīj al Jadīd*,” (Cairo, early fifteenth century) Oxford (Bodl.), Arch. Seld. A 30 fol. 2R.

tables, the use of the dust board for calculations, the *abjad* numeral system and the first equation.<sup>220</sup> After the introduction, the first *maqāla* deals with the different calendars and the conversion of dates from one calendar to another. The rest of the manuscript discusses Ibn al-Majdī's technique for compiling taqwīm tables on the basis of auxiliary tables. On folio 63 recto and verso, a table on “*ikhtiyārāt*” or ‘elections’ is added, showing the most prosperous moments of the year. After this table concerning “*ikhtiyārāt*”, the last part of this first *maqāla* deals with the beginning of the years in the different calendars, as well as their different religious holidays.<sup>221</sup> At the beginning of the ninth chapter of the first *maqāla* these events are introduced. In Ottoman *taqwīm* treatises, *taqwīm* tables were often extended with a list of memorable events, referred to as *tawqī'āt*<sup>222</sup>. These memorable events were linked to the constellation of the planets under which they happened. At the beginning of this last part of the manuscript, the writer also promises to discuss another kind of *tawqī'āt* which concerns specific moments of sowing, harvest, full Moon, planting and the like.<sup>223</sup> Here, the writer seems to refer to the tradition of compiling agricultural almanacs, a scientific and literary genre in which information about the weather, agricultural seasons and astronomical events is discussed.<sup>224</sup> However, after the discussion of the first kind of *tawqī'āt*, the manuscript ends with a colophon in which the date and name of the writer are mentioned, as discussed above. The colophon is written less neatly than the rest of the text, but the handwriting is the same as the handwriting of the first sections. It looks as if the writer did not have time to finish the entire manuscript.

<sup>220</sup> Ibn al-Majdī, “Al-Jāmi' al-Mufīd Fi Bayān Uṣūl al-Taqwīm wa-l-Mawālīd” (Cairo 880/1476) Ms. Leiden (UL) Acad. 48 fol. 1R-33V. The first equation refers to the conversion of the mean centrum of a planet into the true or adjusted centrum in order to calculate the longitude of a planet.

<sup>221</sup> Ibn al-Majdī, “Al-Jāmi' al-Mufīd Fi Bayān Uṣūl al-Taqwīm wa-l-Mawālīd” (Cairo 880/1476) Ms. Leiden (UL) Acad. 48, fol. 84v–86v MS; Fien De Block, “Timekeepers-Teachers and Their Discursive Instruments,” in *Living with Nature and Things: Contributions to a New Social History of the Middle Islamic Periods*, ed. Bethany Walker and Abdelkader Al Ghouz (Bonn: V&R unipress GmbH, 2020).

<sup>222</sup> D.M. Varisco, “Takwīm,” in *Encyclopaedia of Islam Second Edition*, ed. P. Bearman et al. (Brill Online: Brill, 2012), [http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/takwim-COM\\_1158?s.num=0&s.f.s2\\_parent=s.f.book.encyclopaedia-of-islam-2&s.q=Takwim](http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/takwim-COM_1158?s.num=0&s.f.s2_parent=s.f.book.encyclopaedia-of-islam-2&s.q=Takwim).

<sup>223</sup> Ibn al-Majdī, “Al-Jāmi' al-Mufīd Fi Bayān Uṣūl al-Taqwīm wa-l-Mawālīd” (Cairo 880/1476) Ms. Leiden (UL) Acad. 48.

<sup>224</sup> Ibn al-Majdī, “Al-Jāmi' al-Mufīd Fi Bayān Uṣūl al-Taqwīm wa-l-Mawālīd” (Cairo 880/1476) Ms. Leiden (UL) Acad. 48.



Overall, the terminology mentioned throughout this manuscript is that of *taqwīm* and of *mīqāt*, but the introduction mentions the terminology of *‘ilm al-nujūm* and of *‘ilm al-hay’a*. Whereas the mentioned *tawqīcāt*, as well as the introduced but omitted chapters on birth horoscopes could be seen as astrological in present day terms, as they link historical events to the position of the planets contemporary to them, the terminology of *‘ilm aḥkām al-nujūm* is not used here. The second and third part of the work on birth horoscopes are omitted in this copy, but are introduced in the introduction as pertaining to timekeeping too.<sup>225</sup>

*Ghunyat al-Fahīm wa-l-Ṭarīq ilā Ḥall al-Taqwīm*

Two fifteenth century manuscripts bear the title of “*Ghunyat al-Fahīm wa-l-Ṭarīq ilā Ḥall al-Taqwīm*”. The first one is kept at the national library of Egypt in Cairo and consists of 37 folios. Ms. Cairo (DAK) ṬM 82 is written in the year 870/1465. The manuscript is a *mukhtaṣar* or short version of the text, which contains three chapters: one on the different calendars, a second chapter on ‘*taqwīm al-kawākib*’ in which a very basic manual for drawing up *taqwīm* tables is given. The third chapter discusses:

ما يترتب على مقومات الكواكب من احوال ذاتية وعرضية وما يلتحق بذلك.<sup>226</sup>

‘What can be derived from the locations of the planets when it comes to essential and circumstantial states and what is linked to this.’<sup>227</sup>

This part consists of a discussion of aspects and a short discussion of the projection of rays. Aspects or *ittiṣālāt* concern the angle between two planets. This angle is 0° when two planets are in conjunction or *qīrān*, it is 60° for a sextile or *tasdīs*, 90° for a square or *tarbīc*, 120° for a trine or *tathlīth* and 180° for an opposition or *muqābila*. All this is explained in the chapter without any discussion of the effect these aspects were considered to have. The principle of projection of rays or *maṭariḥ al-shu‘āc* is

<sup>225</sup> Ibn al-Majdī, “Al-Jāmi‘ al-Mufīd Fi Bayān Uṣūl al-Taqwīm wa-l-Mawālīd” (Cairo 880/1476) Ms. Leiden (UL) Acad. 48.

<sup>226</sup> Ibn al-Majdī, “Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm”, (Cairo, 870/1466) Ms. Cairo (DAK) ṬM 82 fol. 15 R.

<sup>227</sup> Ibn al-Majdī, “Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm”, (Cairo, 870/1466) Ms. Cairo (DAK) ṬM 82 fol. 15 R.

mentioned too but not elaborated upon. The overall focus in this manuscript is very practical: the author emphasizes how one should compile auxiliary tables for *taqwīm* and on how one could calculate aspects. He does this in a very detailed but hands-on manner, for example:

ويجب ان ترسم لذلك دستورا في التقويم – تقويم ست جداول – في كل جدول اتصال – اتصال

القمر كوكب بعد كوكب

‘And you have to draw a grid for the *taqwīm*/longitudes in order to do this – “*taqwīm* of the six tables” – in each table an aspect: the aspects of the Moon planet after planet’<sup>228</sup>

Apart from the terminology of the practise of *taqwīm*, which is used throughout the whole text as well as in the margins, no reference is made to any discipline.<sup>229</sup> The same practical, hands-on mentality is reflected in manuscript Ms. Paris (Bibliothèque Nationale de France), Arabe 2531/3. In the conclusion at the end of Ms. Paris (Bibliothèque Nationale de France), Ar. 2531/3, that has no colophon, the writer explicitly states that:

فمن اراد الوقوف على صحة مساييلها واصول طريقة وكيفية تركيب جداوله والبرهان على ذلك

جميعه فعليه بكتابنا المسمي بالجامع المفيد لاصول مساييل التقويم والموالييد

والله اعلم

<sup>228</sup> Ibn al-Majdī, “Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm”, (Cairo, 870/1466) Ms. Cairo (DAK) ṬM 82, fol. 20 R.

<sup>229</sup> Unfortunately, their names are not known or dated, so I cannot draw any further conclusions with regard to the place and time of this users. One of them frequently refers to Ibn al-Shāṭir’s work, which suggests that he is a contemporary Syrian scholar, as Ibn al-Shāṭir’s work was most popular in the Syrian areas of the Sultanate. Ibn al-Majdī, “Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm”, (Cairo, 870/1466) Ms. Cairo (DAK) ṬM 82, fol. 37V.

‘But for him who wants to contemplate the correctness of these cases and the basis of the method and quality of the composition of the tables, together with its proof, there is our book that has the title “*al-Jāmi‘ al-Mufīd li-uṣūl masā’il al-taqwīm wa-l-mawālīd*” (“*The Useful Compendium on the Basics of Taqwīm and Birth Horoscopes*”). And God knows best.’<sup>230</sup>

Just like ms. Cairo (DAK) ṬM 82, ms. Paris (BnF) Ar. 2531/3 is a *mukhtaṣar* that is part of a *majmū‘a* of different calendars, a second on ‘*taqwīm al-kawākib*’ and a third on ‘What can be derived from the locations of the planets when it comes to essential and circumstantial states and what is linked to this.’<sup>231</sup> The text of this manuscript largely agrees with ṬM 82, but the copyist pays a little more attention to the use of the *ajbād* numbers.<sup>232</sup> In the manuscripts ms. Cairo (Dār al-Kutub) ṬM 82 and ms. Paris (BnF) Arabe 2531 the author or copyist claims to write on *عمل التقويم* or the ‘work/act’ of *taqwīm*.<sup>233</sup> The short introductory paragraph presents *taqwīm* as a very practical discipline and does not dwell on a description of it for long, but starts with an explanation of what to do instead. Throughout both manuscripts, *taqwīm* is also referred to as a *ṣinā‘a* or an art.

#### “*Kitāb al-Durr al-Yatīm*” and the Tables Based on it

“*Kitāb al-Durr al-Yatīm*” is a treatise that has been studied by King and Kennedy. In this work, the method for compiling *taqwīm* tables on the basis of auxiliary tables is discussed. However, King and Kennedy do not base their analysis on one manuscript, but on all the different manuscripts that bear the title of “*Al-Durr al-Yatīm*”. In their analysis they consider the content of the work, that is, Ibn al-Majdī’s

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<sup>230</sup> Ibn al-Majdī, “Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm,” (Cairo 900/1495) Ms. Paris (BnF) Ar. 2531/3, fol. 79V.

<sup>231</sup> Ibn al-Majdī, “Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm,” (Cairo 900/1495) Ms. Paris (BnF) Ar. 2531/3, fol. 52V.

<sup>232</sup> Ibn al-Majdī, “Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm,” (Cairo 900/1495) Ms. Paris (BnF) Ar. 2531/3.

<sup>233</sup> Ibn al-Majdī, “Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm,” (Cairo 900/1495) Ms. Paris (BnF) Ar. 2531/3, fol. 1V.

method for compiling ephemerides as well as his actual *taqwīm* tables, to be clearly distinguishable from all the different material contexts in which the different manuscripts were written down. This reflects their view on knowledge, which I have discussed in the first part of this dissertation.<sup>234</sup> The particular nature of the material manuscript and the context in which it was used is not supposed to be of direct relevance for an understanding of the activities of the actors.

Manuscript Ms. Cairo (Dār al-Kutub), DM 141,1 is also introduced by its copyist – as cited in section 4.2.1. – as a practical manual for *taqwīm*.<sup>235</sup> The work does not elaborate on the mathematics and does not explicitly situate the manual in a certain discipline. As its title makes clear, Ibn al-Majdī’s method was a ‘*tashīl*’ or simplification of the ‘practice’ (*ṣināʿa*) of *taqwīm*. The second text that bears the title of “*Al-Durr al-Yatīm*” has shelf mark 448, 2. Folios 1V to 5R describe how to compile solar tables. This manuscript contains some marginal notes but less than Ms. Cairo (DAK) DM 141,1. The text is introduced as the ‘Treatise on the location of the Sun and the Moon’.<sup>236</sup> The copyist states that this was the first part of ‘*Al-Durr al-Yatīm*’. In the text on folios 5V to 6V, which is listed as a different text (448,3) in the catalogue of David King, Ibn al-Majdī’s calculations for the positions of the Moon are compared to those made on

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<sup>234</sup> Several moves of abstraction can be seen at work in the writings of King and Kennedy: they abstract from the specific use and function of the manuscript in the period under investigation, they abstract the tables from the rest of the manuscript as being its central content, and finally they abstract from the concrete materiality of the tables as written in the manuscript by translating them into modern mathematical notation. Such a translation to contemporary notation has been criticised as distorting our understanding of science and mathematics in the past, first in history of mathematics, and more recently in history of science. Writing on the history of mechanics, Bertoloni Meli for example writes that “Over the last few decades, however, historians of mathematics have produced innovative and historically sensitive works that have changed our understanding of the discipline and its methods. Only comparatively recently has the practice of translating seventeenth-century works into modern notation become unacceptable, for example. We are therefore in a much better position than previous historians in having this new and sophisticated literature at our disposal” Domenico Bertoloni Meli, *Thinking with Objects: The Transformation of Mechanics in the Seventeenth Century* (Baltimore: John Hopkins University Press, 2006); For a general discussion of the problematic nature of translating to contemporary notation in the history of mathematics, and a view on the history of mathematics which has some affinity with the material approach outlined in this paper, see: Jacqueline Stedall, *The History of Mathematics: A Very Short Introduction* (Oxford: Oxford University Press, 2012).

<sup>235</sup> Ibn al-Majdī, “Kitāb Al-Durr al-Yatīm Fī Tashīl Ṣināʿat al-Taqwīm”, (Cairo, 900/1495), Ms. Cairo (DAK) DM 141,1, fol. 2V.

<sup>236</sup> Ibn al-Majdī, “Kitāb al-Durr al-Yatīm fī Tashīl Ṣināʿat al-Taqwīm”, (Cairo, 900/1495), Ms. Cairo (DAK) DM 448,2, fol. 1V.

the basis of the method of his contemporaries al-Wafā'ī and al-Naqqāsh. Al-Wafā'ī and al-Naqqāsh were both themselves Islamic timekeepers or *muwaqqits* like Ibn al-Majdī.<sup>237</sup> The boundary between the didactical work “*Al-Durr al-Yatīm*” and the actual *taqwīm* tables is very difficult to draw. One might even argue that it is non-existent, as the didactical manuscripts that are extant all contain at least some actual tables and most of the tables contain at least a small introduction or note on top of the first page. The only reason I use the distinction here is for the sake of analysis.

Manuscript Ms. Cairo (DAK) DM 405 consists of 39 folios of which all but one are filled with auxiliary tables and *taqwīm* tables. The manuscript has no title page nor a title and is just introduced in a small paragraph that says:

في معرفة عمل دستور القمر من الدر اليتيم

‘About the practical knowledge for the drawing of the grid for the Moon from “*Al-Durr al-Yatīm*”.’<sup>238</sup>

This text is written in a very messy hand. What I have called an introduction, actually looks a lot more like a scribble. Apart from this scribble, the manuscript contains 38 folios of auxiliary tables for lunar and solar *taqwīm* and one more phrase at the end, that indicates that the table above was the last one of the manuscript: ‘The last table of al-Durr, God bless’ آخر جدول الدر وبالله التوفيق.<sup>239</sup> A second manuscript similar to this one is Ms. Cairo (DAK) MM 44,2. This manuscript contains auxiliary tables for the Sun and the Moon and at the end a paper quadrant is added. The *majmū'a* or composite manuscript also contains some tables for other planets, but these are only added in the year 1050/ca. 1640 and hence will not be taken into account here.<sup>240</sup>

<sup>237</sup> al-Sakhāwī, “539 - ‘Abd Al-‘Azīz ibn Muḥammad ibn Muḥammad al-Wafā'ī al-‘Izz Abū al-Faḍl Wa Abū al-Fawā'id”; Ekmeleddin Ihsanoğlu and B.A. Rosenfeld, *Mathematicians, Astronomers and Other Scholars of Islamic Civilisation and Their Works* (Istanbul: Research Centre for Islamic History, Art, and Culture, 2003).

<sup>238</sup> Ibn al-Majdī, “Kitāb Al-Durr Al-Yatīm Fī Tashīl Ṣinā'āt Al-Taqwīm” (Cairo, 850/1447), Ms. Cairo (DAK) DM 405.

<sup>239</sup> Ibn al-Majdī, “Kitāb Al-Durr Al-Yatīm Fī Tashīl Ṣinā'āt Al-Taqwīm” (Cairo, 850/1447), Ms. Cairo (DAK) DM 405, fol. 39V.

<sup>240</sup> Ibn al-Majdī, “Kitāb Al-Durr al-Yatīm Fī Tashīl Ṣinā'āt al-Taqwīm” (Cairo, 850/1447) Ms. Cairo (DAK) MM 44,2.

The manuscript labelled as Muṣṭafa Fādīl mīqāt Ms. Cairo (DAK) MM 85,1 consists of solar tables solely. This is only two folios long, of which the first one is a title page. On this page, the copyist introduces the work as follows:

كتاب الدر النظيم في حل التقويم ومراكز الكواكب السبعة وايام المسير الكواكب السبعة  
ومبسوطه ومجموعتها وتعاديها وشرح الازياج المشهورة للسلطان الغ بيك على التمام والكمال  
والحمد لله

‘Book of the orderly pearl on the solution for compiling ephemerides and the centre position of the seven planets as well as the days of the procession of the seven planets - the extended and the summed - and their equations. This is also a commentary on the famous *zīj*es of sultan Ulugh Beg in completeness and perfection. Praise be to God.’<sup>241</sup>

Whereas this introduction promises the auxiliary tables for *taqwīm* of all the seven planets, the manuscript only contains auxiliary tables for the Sun. On the last folio, there is a scribble with concrete guidelines on how to use the auxiliary tables for *taqwīm*:

طريق العمل بهذه الجداول خذ بتاريخك العربي وخذ ما جاز من الايام واجمع المراتب في الجدول  
المجموعة كل جنس من جنسه

‘Method to work with these tables: Start from your Arabic date and take the appropriate amount of days and add up these values in the schedule of the summed days, sort by sort’<sup>242</sup>

On the level of boundary speech, it is important to note that these *taqwīm* tables seem to have been combined with a revision of a *zīj* or manual for timekeeping.

Manuscripts Muṣṭafa Fādīl mīqāt 25 consists of 30 folios of lunar tables without any marginal notes. This early manuscript is not bound together with other texts and does not look like it has been used a lot, in contrast to the previously discussed late

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<sup>241</sup> Ibn al-Majdī, “Kitāb Al-Durr Al-Yatīm Fī Tashīl Šinā‘āt Al-Taqwīm,” (Cairo, 850/1447) Ms. Cairo (DAK) MM 85,1, fol. 1V.

<sup>242</sup> Ibn al-Majdī, “Kitāb Al-Durr Al-Yatīm Fī Tashīl Šinā‘āt Al-Taqwīm,” (Cairo, 850/1447) Ms. Cairo (DAK) MM 85,1, fol. 1V.

fifteenth century manuscripts. The text does not refer to any other practice or discipline than *taqwīm*. Ms. Cairo (DAK) MM 26 is very similar to ms. Cairo (DAK) MM 25, but contains some corrections and marginal notes, where the user mentions whether he thinks the calculations are correct (*ṣaḥīḥ*) or incorrect (*ghalat*).<sup>243</sup>

Apart from these tables on the Sun and the Moon, there are four manuscripts in the National Library of Cairo that consist of tables for other specific planets than the Sun and the Moon. King and Kennedy have shown in earlier research how, whereas Ibn al-Majdī laid down the numerical values for calculating the tables for other planets than the Sun and the Moon, such tables themselves were compiled by other scholars.<sup>244</sup> The manuscripts that consist in tables for other planets are ms. Cairo (DAK) MM 24, ms. Cairo (DAK) MM 238, ms. Cairo (DAK) DM 43 and ms. Cairo (DAK) K 4022. All three manuscripts are short texts of two folios without any notes or colophon that consists of tables for Saturn (*al-Zahl*) – in the case of ms. Cairo (DAK) MM 24, ms. Cairo (DAK) MM 238 and ms. Cairo (DAK) DM 43 – and for Venus – in the case of ms. Cairo (DAK) K 4022- compiled according to the method of “*Al-Durr al-Yatīm*”. The manuscripts consist of tables solely without any further text except for the comment that they are based on the method of “*Al-Durr*”. They use the terminology of *taqwīm*, but no further reference to a discipline is added.<sup>245</sup>

#### Conclusion: Boundary Speech?

Whereas these texts – especially “*Al-Jāmi‘ al-Mufīd*” and “*Ghunyat al-Fahīm*” – are the reason that Ibn al-Majdī is nowadays perceived as an astrologer<sup>246</sup>, the terminology of *‘ilm aḥkām al-nujūm*, which is considered as the Arabic translation for astrology, is not mentioned once in the entire corpus. As mentioned before, biographical dictionaries’ do not mention this term either in their fragments on Ibn al-

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<sup>243</sup> Ibn al-Majdī, “Lunar Tables Based on Kitāb Al-Durr Al-Yatīm” (Cairo, 825/1422) Ms. Cairo (DAK) MM 25.

<sup>244</sup> King and Kennedy, “Ibn Al-Majdī’s Tables for Calculating Ephemerides,” 49.

<sup>245</sup> Ibn al-Majdī, “[Tables for Saturn Based on al-Durr al-Yatīm],” (Cairo, 900/1495) Ms. Cairo (DAK) MM 24 ; Ibn al-Majdī, “[Tables for Venus Based on al Durr al-Yatīm ]” (Cairo, ca. 900/1495), Ms. Cairo (DAK), K 4022; Ibn al-Majdī, “[Tables for Saturn Based on al-Durr al-Yatīm],” (Cairo, 900/1495), Ms. Cairo (DAK) MM 238 ; Ibn al-Majdī, “[Tables for Saturn Based on al-Durr al-Yatīm],” (Cairo, 900/1495), DM 43.

<sup>246</sup> Charette, “Ibn Al-Majdī: Shihāb Al-Dīn Abū Al-‘Abbās Aḥmad Ibn Rajab Ibn Ṭaybughā Al-Majdī Al-Shāfi‘ī.”

Majdī. This collection of *taqwīm* texts shows that it was not the case among the practitioners of the science of the stars themselves either.<sup>247</sup>

The sources here refer to this collection of texts as *taqwīm* and, when elaborated upon, as in “*Al-Jāmi‘ al-Mufīd*”, as timekeeping: *‘ilm al-mīqāt, masā’il al-waqt* or *al-yawāqīt*. The introduction of “*Al-Jāmi‘ al-Mufīd*” also mentions the terminology of *‘ilm al-nujūm*, a general term for the science of the stars and of *‘ilm al-hay’a*, the science of the constellation. According to Saliba, the term *‘ilm al-nujūm* was no longer used in this period, but these sources clearly suggest otherwise.<sup>248</sup> “*Al-Jāmi‘ al-Mufīd*” even refers to both the practice of *taqwīm* and that of *mawālīd* (birth horoscopes) as *‘ilm al-hay’a* or the science of the constellation. The other works mostly use only the terminology of ‘*šinā‘at al-taqwīm*’ or the ‘*practice of taqwīm*’. Most of them refer to “*Al-Jāmi‘ al-Mufīd*” for further information on the topic and explicitly declare that the goal of the text in question is practical.

In the aforementioned studies on the social role of the learned elite in the Sultanate of Cairo, Chamberlain and Berkey have shown how knowledge practices provided scholars with an important instrument for acquiring strategic positions and status in society.<sup>249</sup> Chamberlain writes in his study on religious scholars in Damascus that:

‘Law, institutions, even knowledge itself cannot be thought of as formal domains. They were rather simultaneously instruments and arenas of a never-ending struggle for social power and status. No contest over the right to represent truth was without a social dimension that gave it a point.’<sup>250</sup>

In Brentjes’ recent studies of the function of the *muwaqqit*, based on biographical dictionaries, she argues that scholars always combined this function with other ones. In my research on the fourteenth century *muwaqqit* Ibn al-Shāṭir, I discussed how a lot of *muwaqqits* had a background in artisans families. Ibn al-Shāṭir, for example, grew up in a family of woodworkers, ivory artists and mother of pearl inlay workers, just as was the case for the Egyptian *muwaqqit* Nūr al-Dīn al-Naqqāsh (whose *laqab*

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<sup>247</sup> Ibn Taghrī Birdī, “156 - Ibn al-Majdī.”

<sup>248</sup> Saliba, *A History of Islamic Astronomy: Planetary Theories during the Golden Age of Islam*, 96 This has also been contested for the Ottoman context by Ahmet Tunç Şen; Tunç Şen, “Astrology in the Service of the Empire: Knowledge, Prognostication and Politics at the Ottoman Court, 1450s-1550s,” 38–39.

<sup>249</sup> Berkey, *The Transmission of Knowledge in Medieval Cairo.*; Chamberlain, *Knowledge and Social Practice in Medieval Damascus, 1190-1350*, 175.

<sup>250</sup> Chamberlain, *Knowledge and Social Practice in Medieval Damascus, 1190-1350*, 175.



means ‘the sculptor’).<sup>251</sup> Chamberlain describes how, from the fourteenth century on, a growing number of artisans held a scholarly function next to another non-scholarly profession. The function of *muwaqqit* seems to have been one of these functions that was practised by an increasing amount of new scholars or people who had no background in scholarly families. As this function was paid for through the *waqf* of a religious institute, this seems to have been one of the easier ways to gain a scholarly function without a scholarly family on whom you could rely.<sup>252</sup> Returning to the manuscripts, the fact that the practice of *taqwīm* was presented as *‘ilm al mīqāt* or more generally as *‘ilm al-nujūm* and circulated under this terminology in the second half of the fifteenth century, could in this context be seen as a way in which the users sought to legitimise what they were doing.

#### 4.2.3. Boundary Work: The Circulation of Ibn al-Majdi’s *Taqwīm* Texts

In the previous section, I looked at how the texts are explicitly situated in a disciplinary context by the boundary speech of their writers. In this section, I will discuss how they are bound together with other texts in *majmū‘as* or composite manuscripts or in multi-text manuscripts. In order to avoid to deduce conclusions from compilations of texts that were only bound together after the fifteenth century, I only discuss the composite manuscripts that consist of fifteenth century texts exclusively. These are the manuscripts listed in the following table.

Library and Shelf Mark	Title [or subject if none]	Date on the text
DAK ṬM 82,1	“ <i>Ghunyat al-Fahīm wa-l-Ṭarīq ilā Ḥall al-Taqwīm</i> ”	870/1466
BnF Ar. 2531/3	“ <i>Ghunyat al-Fahīm wa-l-Ṭarīq ilā Ḥall al-Taqwīm</i> ”	900/1495
DAK DM 141, 1	“ <i>Kitāb al-Durr al Yatīm fī Tashīl Ṣinā‘at al-Taqwīm</i> ”	900/1495
DAK DM 448,1	“ <i>Kitāb al-Durr al Yatīm fī Tashīl Ṣinā‘at al-Taqwīm</i> ”	900/1495

<sup>251</sup> François Charette, *Mathematical Instrumentation in Fourteenth Century Egypt and Syria* (Leiden: Brill, 2003), 19; De Block, “De Muwaqqit in 14de Eeuws Syrië En Egypte. Tussen Religieus Geleerde En Wetenschapper?”; De Block, “Al-Zij al-Jadīd as an Instrument for Fifteenth Century Timekeeping in Cairo: The Materiality of Ms. Oxford (Bodl.) Arch. Seld. A30.”

<sup>252</sup> Chamberlain, *Knowledge and Social Practice*, 63; De Block, “Al-Zij al-Jadīd as an Instrument for Fifteenth Century Timekeeping in Cairo: The Materiality of Ms. Oxford (Bodl.) Arch. Seld. A30.”

DAK MM 85, 1	[Solar tables from “ <i>Al-Durr al-Yatīm</i> ” – here referred to as “ <i>Al-Durr al-Naḍhīm</i> ”]	850/1447
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In his recent study of the library of the Syrian scholar Ibn ʿAbd al-Hādī, Konrad Hirschler discusses the practice of combining small manuscripts into composite volumes or *majmūʿas*. In Ibn ʿAbd al-Hādī’s library, small booklets that contained no more than one or several quires were bound together into composite volumes. The study of composite volumes for this period is however still in its infancy. Hirschler summarises the state of the art as follows:

‘Scholarship has routinely consulted Arabic composite manuscripts, but they have rarely been the object of dedicated study. Some scholars have taken a more profound interest in them [...] yet these articles were mostly on a descriptive level without discussing in any depth whether the character of the manuscript in question was a composite manuscript (a codicological unit made up of formerly independent units) or a multiple-text manuscript (a codicological unit worked in a single operation by one scribe). While they offered tantalising comments on broader issues related to the production, circulation and reception of these manuscripts, the manuscripts’ multiple-text character was not yet the focus of scholarly interest – the terms ‘composite’ and ‘multiple-text’ manuscript themselves had not even been developed at this point. And while we have by now comparatively good handbooks for the study of Arabic manuscripts, they too have relatively little to say on such manuscripts’.<sup>253</sup>

Catalogues and reference works do not encourage the study of *majmūʿa*’s or multiple text manuscripts, as the different units are split up into different categories and titles based on themes or on the chronology of the writing of a first ‘*original*’ version of the texts.<sup>254</sup> Because of the state of the research on this topic, especially for this period, I will only discuss a small part of the manuscripts in this chapter. I discuss only those manuscripts of which I am sure that they consist of texts written and used in the late fifteenth century. I will use the terminology of composite and multiple-text

<sup>253</sup> Hirschler, *A Monument to Medieval Syrian Book Culture: The Library of Ibn ʿAbd al-Hādī*, 119.

<sup>254</sup> Hirschler, *A Monument to Medieval Syrian Book Culture: The Library of Ibn ʿAbd al-Hādī*, 120–22 This issue has also been discussed in the first part of this dissertation, in chapter three, where I elaborated upon the difficulties of getting rid of a classification that has been used and built upon for years in libraries and archives.

manuscripts here according to the definitions that Hirschler introduced, as both types of manuscripts appear in the collection of *taqwīm* treatises discussed here.<sup>255</sup>

In ms. Cairo (DAK) ṬM 82, “*Ghunyat al-Fahīm*” is part of a composite manuscript consisting of 38 folios of which the first 37 are a *mukhtaṣar* of “*Ghunyat al-Fahīm*”, while the last one is a page long note on conjunctions in a different hand. The latter is a one folio long note that has been added to the binding, supposedly by the scholar who was using the copy.<sup>256</sup>

Ms. Paris (BnF) Ar. 2531,3 consists of three known texts and a collection of unknown tables. All of the texts seem to be written in the same hand, so this work is a multiple-text manuscript. The first two texts are authored by Ibn al-Majdī’s colleague ʿAbd al-ʿAzīz al-Wafāʾī and bear the titles of “*Al-Nujūm al-Zāhirāt fī al-ʿIlm bi-Rubʿ al-Muqanṭarāt*” on the use of a sine quadrant. The second work is written by the same author and titled “*Nuzhat al-Nazar fī-l-ʿAmal bi-l-Shams wa-l-Qamar*” on the observation of the Sun and the Moon.<sup>257</sup> After these two texts, Ibn al-Majdī’s “*Ghunyat al-Fahīm*” is copied, on the compilation of ephemerides for the Sun and the Moon. The fourth text in the manuscript is a collection of tables: first a series of *taqwīm* tables for the five planets, then a series of tables for the Moon and Sun based on the work of Ibn Yūnus (d. 399/1009). In between these tables, short texts have been written on how they were compiled according to the method of auxiliary tables discussed in “*Al-Durr al-Yatīm*”, although Ibn al-Majdī is not mentioned by name. Only the second of these texts contains a colophon, which is dated to 887/1482. The name of the copyist is mentioned nowhere in the manuscript, which suggests that it might be the personal copy of an individual interested in the study of *taqwīm*. As the marginal notes in this work are few, it is not clear in which circumstances that might have been the case. The combination of a treatise on *taqwīm* with a treatise on a quadrant and the *taqwīm* tables for the planets suggest a practical application.

This is similar for ms. Cairo (DAK) DM 448. The first part of this manuscript discusses how to compile lunar ephemerides, the second text is a fragment from “*Al-Durr al-Yatīm*” and the third is a text on lunar mean motion according to ʿIzz al-Dīn

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<sup>255</sup> Hirschler, *A Monument to Medieval Syrian Book Culture: The Library of Ibn ʿAbd al-Hādī*, 119.

<sup>256</sup> Ibn al-Majdī, “*Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm*”, (Cairo, 870/1466), Ms. Cairo (DAK), ṬM 82.

<sup>257</sup> Ibn al-Majdī, “*Ghunyat Al-Fahīm Wa-l-Ṭarīq Ilā Ḥall al-Taqwīm*,” (Cairo 900/1495) Ms. Paris (BnF) Ar. 2531/3.

al-Wafā'ī and Nūr al-Dīn al-Naqqāsh. This manuscript too, seems to be the manual of an individual scholar.<sup>258</sup>

Ms. Cairo (DAK) MM 85 is a composite manuscript in which Ibn al-Majdī's text is bound together with a short medical treatise that links the planets to parts of the human body.<sup>259</sup> Ibn al-Majdī's tables are immediately followed by a wheel in which every day of the lunar month is linked to specific parts of the body. The rest of the text is rather unclear, but refers to the parameters of Ulugh Beg's *Sulṭāni zīj*, of which a recension was made for Cairo by Ibn al-Majdī's colleague al-Ṣūfī.<sup>260</sup> As *taqwīm* in the early Ottoman Sultanate transformed into a genre of calendars, in which the longitudes of the planets for the days of a year were always accompanied by a prediction of the events for that day, ms. Cairo (DAK) MM 85 raises the question whether *taqwīm* tables were used more frequently for prognostications. Several other manuscripts written down in the Ottoman period confirm this, as the combination of *taqwīm* treatises with prognostications seems to become more and more common in this period. Ms. Cairo (DAK) DM 141, for example, which is a very large *majmū'a* of different sorts and sizes of folios bound together, contains an Ottoman *taqwīm* for the year 1083 of the *hijra* calendar as well as a treatise on the importance of the Great Conjunction that happened in that year.<sup>261</sup> The role that Ibn al-Majdī's corpus played in this remains an open question for further research in Ottoman studies.<sup>262</sup>

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<sup>258</sup> Ibn al-Majdī, "Kitāb al-Durr al-Yatīm fī Tashīl Ṣinā'at al-Taqwīm", (Cairo, 900/1495), Ms. Cairo (DAK) DM 448,2.

<sup>259</sup> The combination of these sources deserves more attention in future research. As indicated by Liana Saif, theories of astral influences in the Islamicate early modern world had a significant overlap with medicine, as both disciplines made reference to the hidden and assumed latent causes. Liana Saif, "The Arabic Theory of Astral Influences in Early Modern Medicine," *Renaissance Studies* 25, no. 5 (2011): 609–26 See also: ; Emma Gannagé, "Between Medicine and Natural Philosophy," in *The Occult Sciences in Pre-Modern Islamic Cultures*, ed. Nader El-Bizri and Eva Orthmann, Beirut Texts and Studies (Beirut: Ergon Verlag, 2018), 41–66.

<sup>260</sup> Ibn al-Majdī, "Kitāb Al-Durr Al-Yatīm Fī Tashīl Ṣinā'āt Al-Taqwīm," (Cairo, 850/1447) Ms. Cairo (DAK) MM 85,1.

<sup>261</sup> Ibn al-Majdī, "Kitāb Al-Durr al-Yatīm Fī Tashīl Ṣinā'at al-Taqwīm", (Cairo, 900/1495), Ms. Cairo (DAK) DM 141,1.; Ibn al-Majdī, "Kitāb al-Durr al-Yatīm fī Tashīl Ṣinā'at al-Taqwīm", (Cairo, 900/1495), Ms. Cairo (DAK) DM 448,2.; Ibn al-Majdī, "Kitāb Al-Durr Al-Yatīm Fī Tashīl Ṣinā'āt Al-Taqwīm" (Cairo,850/1447), Ms. Cairo (DAK) DM 405.; Ibn al-Majdī, "Kitāb Al-Durr Al-Yatīm Fī Tashīl Ṣinā'āt Al-Taqwīm," (Cairo, 850/1447) Ms. Cairo (DAK) MM 85,1.

<sup>262</sup> King, *A Survey of the Scientific Manuscripts Available in the Egyptian National Library*. 72-73. King mentions the Ottoman composite manuscripts in which Ibn al-Majdī's work is mentioned as informative for Ibn al-Majdī as an individual scholar and for his period and hence concludes on the basis of this that he was involved in fortune telling practices. However, as no fifteenth century manuscripts survive that attest to this, I argue that this conclusion cannot be made here.

For now, we can conclude that a small study of the manuscript in which *taqwīm*-texts circulated suggests a widening of their use in the late fifteenth century. Where they were closely associated with *zīj*es earlier, they seem to become more and more used in combination with other kinds of texts, such as the astrological wheel in ms. Cairo (DAK) MM 85. To learn more about this development, we have to study these sources as manuscripts rather than cutting them up into different themes and authors and catalogue them as such. This preliminary study of *majmū'as* and multi-text manuscripts suggests that a lot of work remains to be done in this respect. On the level of cataloguing we have to take into account the material aspects of manuscripts and on the level of historiography we have to start asking more questions about the categories we use and how we can alter them. Only then can we hope to arrive at a view on these late medieval practices that does not beg the question.



## Conclusion

This collection of late fifteenth century *taqwīm* treatises bears witness to a very concrete part of the science of timekeeping. As the sources, texts and practical tools of *muwaqqits* or Islamic timekeepers, they are nowhere referred to as *‘ilm aḥkām al-nujūm*, notwithstanding the fact that *taqwīm* tables could be – and were – used for prognostications. The latter is suggested by the chapters on birth horoscopes in “*Al-Jāmi‘ al-Mufīd*”, by the focus on planetary conjunctions and aspects in several other manuscripts and by the wheel that is bound together with ms. Cairo (DAK) MM 85,1. This indicates that further study is needed in order to arrive at an account of the significance of these practices for the late medieval and early modern Islamic world. As the alleged product of ‘science in the service of religion’ they have previously been considered as different versions of the theory of one author. When we approach them as manuscripts, they show to have been the products and instruments of an entire group of scholars who identified as scholars of timekeeping and as scholars of the science of the stars: as simultaneously ‘scientists’ and ‘religious scholars’. When we take a material approach towards this often copied and widely circulating collection of *taqwīm* texts in the fifteenth century Sultanate, we find that the terminology used is that of *ṣinā‘at/‘amal al-taqwīm* (the art/practice of compiling ephemerides) which is situated as pertaining to the discipline of *‘ilm al-nujūm* (the science of the stars), *‘ilm al-hay’a* (the science of planetary theory) or *‘ilm al-mīqāt* (the science of timekeeping).

When seen in light of the debates discussed in the first part of this dissertation, we can conclude that research on *taqwīm*, and on timekeeping in general, has up until today been conducted within a framework based on the dichotomy between science and religion, considering all practices that do not fit into a linear story ending in present-day science as pseudo-science or magic. The part of the science of timekeeping that would nowadays be labelled as astrology – the study of conjunctions, of the projection of rays but also the study of medicinal astral wheels – has therefore never been noted in these sources. This approach begs the question by a priori excluding

certain practices as non-scientific. In this way, one can only find what one is looking for. And if researchers did notice it, as was the case in earlier research of Ibn al-Majdī, they set it aside as an exception. However, when we look at this manuscript collection, these tables do not seem exceptional at all: they are tools that bear the marks of intensive use by average, unknown people in the Sultanate. Through their averageness, however, they provide insight and give a voice to a large group of people that have been muted in the research that approaches them merely as instances of science or of the scientific theory of an individual.

The presumption that a practice in which the moments and direction of the Islamic prayer were calculated could not involve practices that are astrological is in itself a product of the science-religion dichotomy, or the science – religion – magic triad, as Melvin-Koushki and Liana Saif have called it. The framework in which one starts from this dichotomy creates a self-fulfilling prophecy: these scientific texts are not religious but used in the service of religion, if they refer to practices that we would consider astrological, then this is exceptional or rare. If we look at the texts in their own terms, however, we see mathematical tables with references to God in their headings, we find a system of timekeeping that is based on society's '*religious*' holidays and traditions. We do not find religion and we do not find science, but we find a practice that was called the science of the stars (*ʿilm al-nujūm*) or more specifically *ʿilm al-mīqāt* and that was intertwined with practices that we could consider astrological from a present-day perspective, but that were not seen as "special" nor as illegitimate by the historical actors.

If these practices pertained to *ʿilm aḥkām al-nujūm*, i.e. the term mostly taken as the Arabic equivalent of the term '*astrology*', then the historical actors would have used this terminology. This terminology was nevertheless used by historical actors in this period, but in different texts and by scholars who had an entirely different view on



their own role and that of their texts. These scholars and their works will be discussed in the next section of this dissertation.

# **Part III**

## **ʿIlm Ahkām al-Nujūm**

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An Ideal Science of Stars,

Letters and Numbers

## Introduction

As we have seen in the second part of this dissertation, the terminology of *ilm aḥkām al-nujūm* is entirely absent from Ibn al-Majdī's *taqwīm* corpus, notwithstanding the fact that we would nowadays consider parts of it as pertaining to astrology. The term did however appear in other texts in the late fifteenth century. In the third part of this dissertation, I will discuss three manuscripts in which this terminology was used. These manuscripts circulated in an intellectual milieu that had an overlap with the intellectual milieu of timekeepers-teachers discussed in part two of this thesis. However, as I will show in this third part, the scholars using this terminology had a very different view on the role and meaning of the science of the stars as well as on their position as scholars. The texts discussed here were written by the scholars Aḥmad ibn Aḥmad Timurbāy (fl. late ninth/late fifteenth century) and al-Jamālī Yūsuf ibn Qurqumās al-Ḥamzāwī (d. 902/ca. 1497) who lived in Cairo and Aleppo respectively, although al-Ḥamzāwī is said to have moved to Cairo in a later stage of his life.

In the fifth chapter, I will discuss a fifteenth century copy of the well-known astrological handbook titled "*Kitāb al-Bārīc fī Aḥkām al-Nujūm*" authored by the 11<sup>th</sup> century Maghribī scholar Abū al-Ḥasan 'Alī Ibn Abī al-Rijāl al-Kātib al-Shaybānī (d. after 429/1037–8) and fragments from an astrological report of political events that happened at the Syrian frontiers of the Sultanate of Cairo in this period that were added at different places in between the text of the handbook. I will argue how Timurbāy, the copyist of the text, presents *ilm aḥkām al-nujūm* as a hermeneutic practice through which an elite group of scholars gains insight into the deeper, hidden truths of the universe as it has been created by God. Timurbāy and al-Ḥamzāwī combine the tradition of anecdotes, that was already present in the work of Ibn Abī al-Rijāl, with their own, contemporary anecdotes, possibly in order to make the handbook accessible for a broader public, albeit in a very patronising, elitist manner.

In the sixth chapter I will discuss the work "*Al-Durr al-Maṭlūb fī Sirr al-Ghālīb wa-l-Maghlūb*", authored by al-Ḥamzāwī and copied in Cairo by Timurbāy. On a first level, this work is a lettrist analysis of important conflicts and battles at the Syrian frontier zone of the Sultanate of Cairo. However, on a second level, it reveals the views on the sciences of the authors. Based on this treatise, I will first discuss the scholars'

view on knowledge, which, I will argue, is Neopythagorean in outlook. This aligns with the references made by both of them to the interregional network of occultist<sup>263</sup> scholars referred to as the *ikhwān al-ṣafā'* in both of the texts discussed in this part, as well as with the references to *ṣufī* practices in the work discussed in chapter six.

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<sup>263</sup> What I call the occult sciences are a group of sciences that are considered related by the historical actors because they concern a part of reality that is considered hidden and which requires unravelling in order to understand oneself and the world. 'Occult' here corresponds to the Arabic-Persian terminology of *khafī*, or the equally often used term of *gharīb* (strange, exceptional). Cf. infra chapter 6, section 6.2.

## Chaper V: The Handbook

The manuscript discussed in this chapter is written by Aḥmad ibn Aḥmad Timurbāy, a scholar who lived and worked in Cairo at the end of the fifteenth century. It consists of a fifteenth century copy of the well-known astrological handbook titled “*Kitāb al-Bāri ‘fī Aḥkām al-Nujūm*” authored by the 11<sup>th</sup> century Maghribī scholar Abū al-Ḥasan ‘Alī Ibn Abī al-Rijāl al-Kātib al-Shaybānī (d. after 429/1037–8) and fragments from an astrological report of political events that happened at the Syrian frontiers of the Sultanate of Cairo in this period. The copyist mentions that these fragmentary reports are copied from a treatise written by a scholar from Aleppo, whose name was al-Jamālī Yūsuf ibn Qurqumās al-Ḥamzāwī (d. 902/ca. 1497). The autograph text, written by al-Ḥamzāwī, has not been found. A later copy of it, written down in 1318/1900 is being kept in the National Library of Cairo. However, as the latter manuscript is catalogued in the section of ‘*ḥurūf wa-awfāq*’ (letters and ‘favorable occasions’) and as this section of the library is currently forbidden to access due to censorship, I could not study the manuscript for the purpose of this dissertation. In this chapter, I will discuss the fragments from the report in a manuscript written by Aḥmad ibn Aḥmad Timurbāy and kept in the *Miqāt* (Islamic timekeeping) section of the National Library of Cairo. The manuscript has no title page, but bears shelf mark ‘Muṣṭafā Fāḍil Miqāt 13’ and will henceforth be abbreviated as ms. Cairo (DAK) MM 13. First, I will discuss the codicological characteristics of this manuscript that bear witness to its circulation. In the second section of this chapter, I will discuss the discourse of Aḥmad ibn Aḥmad Timurbāy with regard to the handbook and with regard to the fragmentary report. There I will show how this work reveals another side of the scholarship within the science of the stars in the later fifteenth century Sultanate: a scholarship that was related to that of the timekeepers-teachers discussed in the second part of this dissertation, but that, on the other hand also shared, exchanged and was influenced by practices and views of other traditions across the boundaries of the Sultanate.

### 5.1. Ms. Cairo (Dār al-Kutub) MM 13

Ms. Cairo (DAK) MM 13 is a manuscript that consists of 99 folios, all written in the same handwriting. The paper on which is written is ‘*Western paper*’, which is not uncommon for an Egyptian manuscript written at the end of the fifteenth century.<sup>264</sup> The work consists of two parts. The first and largest part is a *mukhtaṣar* or shortened edition of the famous handbook “*Kitāb al-Bāri‘ fī Aḥkām al-Nujūm*”, authored by Ibn Abī al-Rijāl. The colophon of this handbook is written at the top of folio 99V and tells us the copy was finished in 896/1490:

هذا آخر ما اردنا اختصاره من كتاب البارِع والحمد لله ما قال قائل وسمع سامع وفرغ من تسويده  
في اوائل سنة ٨٩٦ هجرية وافضل الصلاة والسلام على افضل الانبياء وخير البرية وعلى آله واصحابه  
[...] قال سيد له الفقير احمد بن احمد تمرباي حامدا فضل ربه

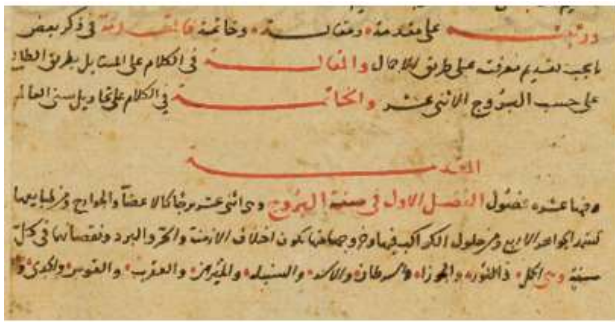
‘This is the last thing we wanted to summarise from the book of “*al-Bāri‘*”. And praise be to God for what the speaker has spoken and the listener has listened to. This draft was finished in the beginning of the year 896 in the *hijra* calendar. The best of prayers and peace goes to the best of prophets, best of creation, and to his family and companions. [...] This said the lord, the humble Aḥmad ibn Aḥmad Timurbāy under the grace of preference of God.’<sup>265</sup>

The second part is a fragmentary report of the positions of the planets during political events taking place at the end of the ninth/fifteenth century.<sup>266</sup> This text is authored by a scholar and *amīr al-ḥajj* from Aleppo named al-Jamālī Yūsuf b. Qurqumās al-Ḥamzāwī. The fragments of the reports are written on folios 4R, 49 R, 49 V and the lower part of 99V, so they are scattered across the manuscript and written down in between the chapters of the handbook. Both texts are copied in the hand of Aḥmad ibn Aḥmad Timurbāy in Cairo at the end of the fifteenth century. Whereas the *mukhtaṣar* has been written quite neatly, the report looks a lot more like a draft or a quickly written text for the copyist’s own use.

<sup>264</sup> Déroche, *Islamic Codicology: An Introduction to the Study of Manuscripts in Arabic Script*, 49–63.

<sup>265</sup> Aḥmad ibn Aḥmad Timurbāy, al-Jamālī Yūsuf b. Qurqumās al-Ḥamzāwī, and Abū al-Ḥasan ‘Alī Ibn Abī al-Rijāl al-Kātib al-Shaybānī, “*Mukhtaṣar Kitāb Al-Bāri‘ fī Aḥkām al-Nujūm*” (Cairo, 844/1490), Ms. Cairo (DAK), MM 13, fol. 49v.

<sup>266</sup> For a facsimile of these folios cf. *infra* pp. 253–6



Detail from *mukhtaṣar* of the handbook fol 4V



Detail from the report fol 49 R

### 5.1.1. Ibn Abī al-Rijāl's Work

The *mukhtaṣar* or shortened version of the handbook in this manuscript, bears a title that is well known in present day scholarship. “*Kitāb al-Bārīc fī Aḥkām al-Nujūm*” is known as a comprehensive astrological handbook in which Ibn Abī al-Rijāl summarises his knowledge of astrology to which he adds his own experiences in the field through short anecdotes.<sup>267</sup> As such, the combination of the theoretical chapters of the handbook with reports of events contemporary to the life of the writer or copyist can be seen as a continuation of a tradition started in the writing of the author of the text himself. Ibn Abī al-Rijāl himself worked at the court of the Zīrid rulers Bādīs b. al-Mansūr (r. 386/996 – 406/1016) and al-Muʿizz b. Bādīs (r. 406/1016 – 454/1062). He was head of the chancery at the court of Bādīs and was the teacher of al-Muʿizz. For al-Muʿizz, he also worked as a court astrologer. Traces of the work Ibn Abī al-Rijāl performed for him can be found in the examples provided throughout the first edition of “*Kitāb al-Bārīc*” (e.g. horoscopes for the Kalbī *amīr* of Sicily, Aḥmad b. Abī l-Ḥusayn, and for the ruler of Tripoli, Saʿīd b. Khazrūn, for whom Ibn Abī al-Rijāl was said to have predicted the dates of death).<sup>268</sup> Sezgin lists thirty-eight extant manuscripts bearing the title of “*Kitāb al-Bārīc*”, of which the earliest was written in 437/1045.<sup>269</sup> Among the manuscripts listed, there were no copies mentioned that were made in the

<sup>267</sup> Julio Samsó, “Ibn Abī L-Rijāl, ‘Alī,” in *Encyclopaedia of Islam Three* (Online: Brill Online, 2018), [https://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-3/ibn-abi-l-rijal-ali-COM\\_30672](https://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-3/ibn-abi-l-rijal-ali-COM_30672).

<sup>268</sup> Samsó “Ibn Abī L-Rijāl, ‘Alī,”.

<sup>269</sup> Samsó “Ibn Abī L-Rijāl, ‘Alī,”.

Sultanate of Cairo.<sup>270</sup> There are, however, several other texts that are not yet dated, just like this one was until King listed it in his catalogue of the scientific manuscripts of the National Library of Egypt.<sup>271</sup>

In general, copies of “*Kitāb al-Bārī*” consist of eight books. The first three provide an introduction and a discussion of *masā’il* or interrogations, which are questions about the short-term outcome of specific events. The fourth, fifth and sixth ones discuss *mawālīd* or nativities. Nativities or birth horoscopes analyse the map of the heavens at the local time and horizon where the subject was born, focusing on relations between a plethora of signifiers (including planets, zodiac signs, celestial houses, etc.). Book seven then discusses *ikhtiyārāt* or elections, which seeks to determine auspicious times for commencing an enterprise. Book eight is about world cycles (*taḥāwīl sinīn al-‘ālam*). The discussions within these chapters are ordered according to the twelve house divisions of the horoscope, starting with the ascendant (*al-ṭālī*). In a general sense, the first house or the house of the ascendant stands for life, the second for fortune, the third for brotherhood, the fourth for parenthood, property and hidden treasures, the fifth for children, pregnancy, childbirth and messages, the sixth for illness, servants and all that concerns sorcerers, the seventh house stands for marriage, fugitive slaves and animals, thieves, buying and selling, partnership and war, the eighth for death, the ninth for travels and dreams, the tenth for power and authority, trades and professions, the eleventh for friends, enemies and love and the twelfth for animals.<sup>272</sup> In the *mukhtaṣar* under discussion, the copyist deliberately omits the last five of the eight books, except for some parts of the last book on the world cycles. I will discuss this more extensively in the next section. Ibn Abī al-Rijāl’s work had been influenced by the author’s travels eastwards, as is clear from the abundance of references to the texts of al-Kindī, Abū Maʿshar and texts attributed to Hermes. Samsó argues that, although the hypothesis that Ibn Abī al-Rijāl had travelled to the Middle East cannot be verified, this must certainly have happened considering

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<sup>270</sup> Fuad Sezgin, *Geschichte Des Arabischen Schrifttums: Astrologie, Meteorologie Und Verwandtes*, vol. VII (Leiden: Brill, 1979), 186–88.

<sup>271</sup> David A. King, *A Survey of the Scientific Manuscripts Available in the Egyptian National Library*.

<sup>272</sup> Samsó, “Ibn Abī L-Rijāl, ‘Alī”; Aḥmad Timurbāy, al-Jamālī Yūsuf ibn Qurqumās al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl al-Kātib al-Shaybānī, “Mukhtaṣar Kitāb Al-Bārī ‘ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fols. 4–10.



the sources he used.<sup>273</sup> The copyist copies most of these references, but, as we shall see, adds his own ones.

Before I discuss the appropriation performed by the copyist, however, I want to draw attention to the fact that Ibn Abī l-Rijāl's text was not the only one in its genre that circulated in the Sultanate of Cairo. The fourteenth and fifteenth centuries witnessed a larger trend of appropriating Maghribī occult texts, as shown in Gardiner's research on the reception of the lettrist works of the *ṣūfī* scholar Aḥmad al-Būnī (d. 622/1225 or 630/1232-3).<sup>274</sup> As mentioned earlier, several manuscript copies of Ibn Abī al-Rijāl's handbook have not been dated yet, so a further study of the circulation of his work in this period might provide interesting insights.

### 5.1.2. *Yūsuf ibn Qurqumās al-Ḥamzāwī and Aḥmad ibn Aḥmad Timurbāy's Work*<sup>275</sup>

The entire manuscript written down by al-Ḥamzāwī was copied in Cairo in the late ninth/late fifteenth century, by Aḥmad ibn Aḥmad Timurbāy who – as his name suggests – was one of the so-called *awlād al-nās* or descendants of the military elite that dominated the state. This is also the case for the Allepian author of the report copied by Timurbāy, al-Jamālī Yūsuf ibn Qurqumās al-Ḥamzāwī.<sup>276</sup> Moreover, both the author and the copyist of the report in this manuscript were scholars too. They are both mentioned by their colleague scholar al-Sakhāwī in his biographical dictionary “*al-Daw' al-Lāmi' li-ahl al-Qarn al-Tāsi<sup>c</sup>*”, which was mentioned in the second part of this dissertation as it also contains an entry on Ibn al-Majdī. The copyist, Aḥmad ibn Aḥmad Timurbāy, is listed in the work, and referred to as a *ḥanafī* scholar and grandson of an important military leader. He is said to have worked with al-Kāfiyājī (d. 879/1474). Muḥyī al-Dīn Muḥammad ibn Sulaymān al-Kāfiyājī was a *ḥanafī* scholar and polymath from Anatolia who worked in Cairo and wrote on such diverse topics as logic, astronomy, and historiography.<sup>277</sup>

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<sup>273</sup> Samsó, “Ibn Abī L-Rijāl, ‘Alī.’”

<sup>274</sup> Gardiner, “Esotericism in a Manuscript Culture: Aḥmad al-Būnī and His Readers through the Mamlūk Period,” 1–4.

<sup>275</sup> For a facsimile of the report on fol. 4 R, 49 R, 49 V and 99V cf. infra Appendix 2.

<sup>276</sup> John Lash Meloy, “Awlād Al-Nās,” in *Encyclopaedia of Islam Three*, ed. Kate Fleet et al. (Brill Online, 2007), <[http://dx.doi.org/10.1163/1573-3912\\_ei3\\_SIM\\_0234](http://dx.doi.org/10.1163/1573-3912_ei3_SIM_0234)>.

<sup>277</sup> Carl Brockelmann, *Geschichte Der Arabischen Litteratur* (Leiden: Brill, 1943), vol. II, p. 139; King, *A Survey of the Scientific Manuscripts in the Egyptian National Library*, 75–76; Franz Rosenthal, *A History of Muslim Historiography*, 2nd ed. (Leiden: Brill, 1968), 245–62; 547–80; Franz Rosenthal, “Al-Kāfiyādji,” in *Encyclopaedia of Islam Second Edition*, Eds. P. Bearman, Th. Bianquis, C.E. Bosworth, E. van Donzel and W.P. Heinrichs. (Leiden: Brill, 1974); Bernard Weiss,

(احمد) بن احمد تمرباي شهاب الدين التمربغاوي الذي كان جده رأس نوبة النواب وتأمراً على الحج

في سنة اربعة واربعين. شاب حنفي اشتغل عند الكافياجي رقيقاً لابن ابي زيد وهو الآن في الأحياء.

‘(Aḥmad) ibn Aḥmad Timurbāy Shihāb al-Dīn al-Timurbighāwī, whose grandfather was chief head of the guards and was appointed *amīr al-ḥajj* in the year [8]44, was a young *ḥanafī* scholar who worked with al-Kafiyājī as a friend of Ibn Abī Zayd. He is alive at the current moment.’<sup>278</sup>

The author of the reports, Yūsuf Ibn Qurqumās al-Hamzāwī is not listed in a separate entry in the work of al-Sakhāwī, but he is mentioned as the *ḥanafī* teacher of another scholar named Alī ibn Khalīl ibn Muḥammad ibn Ḥasan al-Ḥalabī al-Ḥanafī. Al-Sakhāwī mentions that al-Ḥamzāwī was well versed in *‘ilm al-hisāb*, *‘ilm al-nujūm* and *‘ilm al-hay’a* or in arithmetic, the science of the stars and theoretical planetary astronomy.<sup>279</sup> This is confirmed by the astronomical tables compiled by al-Hamzāwī that are extant today in the Dār al-Kutub.<sup>280</sup> In another biographical dictionary from this period, titled “*Durr al-Ḥabab fī Tārīkh A‘yān Ḥalab*”, which focused on the scholarly elite of Aleppo, al-Ḥamzāwī is mentioned more extensively. The author, Muḥammad ibn Ibrāhīm Ibn al-Ḥanbalī (d. 970/1563) writes a page-long entry on the life of the scholar in which he tells the reader that al-Ḥamzāwī’s father was *mamlūk* of the amīr Qāyṭbāy al-Ḥamzāwī. After gaining his freedom his mother arranged for him to become an amīr for Qanṣūh al-Yaḥyāwī. Ibn al-Ḥanbalī then states that there were rumours that al-Ḥamzāwī – who was an experienced teacher of the science of the spheres (*‘ulūm al-falakiyya*) had predicted that Qanṣūh would become sultan. The reigning sultan at that moment, al-Ashraf Qāyṭbāy, therefore chose to appoint al-Ḥamzāwī as *amīr* of the *ḥajj* caravan for the Hijaz region (*amīr rakb al-Ḥijāz*) in Aleppo in order to distance al-Ḥamzāwī from Qanṣūh. Ibn al-Ḥanbalī writes:

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“Al-Kāfiyājī (d. 879/1474),” in *Encyclopedia of Arabic Literature*, ed. Julie Scott Meisami and Paul Starkey (London & New York: Routledge, 1998), 422.

<sup>278</sup> Shams al-Dīn Aḥmad ibn ‘Abd al-Raḥman ibn Muḥammad al-Sakhāwī, *Al-Ḍaw’ al-Lāmi’ Li-Ahl al-Qarn al-Tāsī’*, vol. 1 (Beirut: Dār al-Kutub al-‘Ilmiyah, 2003), 210.

<sup>279</sup> Shams al-Dīn Aḥmad ibn ‘Abd al-Raḥman ibn Muḥammad al-Sakhāwī, *Al-Ḍaw’ al-Lāmi’ Li-Ahl al-Qarn al-Tāsī’*, vol. 3, 12 v. in 6 bd. vols. (Beirut: Dār al-Kutub al-‘Ilmiyah, 2003).

<sup>280</sup> King, *A Survey of the Scientific Manuscripts in the Egyptian National Library*, 78–79 Listed here are the manuscripts Ms. Cairo (DAK) K 4003,4; MM 93,3 ; T M 102,3 and TR 119.

فأوحى أعداؤه للسلطان الملك الأشرف قايتباي أن الجمالي بشر قانصوه الـيـحياوي – وكان من أقرانه –  
بالسلطنة لما أن الجمالي كان من الأساتذة المهرة في العلوم الفلكية وكذا الحسائية وغيرها. فبرز أمر  
قايتباي بأن يكون أمير الركب الحجازي مجلب

‘However, enemies of the sultan al-Malik al-Ashraf Qāyṭbāy gave rise to the idea that al-Jamālī had predicted that Qanṣūh al-Yaḥyāwī, who was one of his [i.e. Qāyṭbāy’s] peers would become sultan, given that al-Jamālī was among the skilled teachers in the sciences of the spheres (*al-ʿulūm al-falakiyya*), mathematics and others. And Qāyṭbāy ordered him to become *amīr* of the caravan of the Ḥijāz in Aleppo.’<sup>281</sup>

After this, Ibn al-Ḥanbalī emphasises that al-Ḥamzāwī spent all his money on his job, and lived a very humble life, even up to the point that he ‘was overcome by his shabby condition’ (الى أن أمت به رثاءة حال). After the death of Qāyṭbāy, al-Ḥamzāwī travelled to Cairo and stayed there until he died in the year 902/1497. It is striking that, in this entry, Ibn al-Ḥanbalī links al-Ḥamzāwī’s teachership in the science of the stars to this rumour of a prediction the scholar would have made for an *amīr*. As I will discuss later in this chapter, in section 5.2.1., the copyist of the work, Timurbāy, discusses in a preface he adds to the work, how the discipline he practices produces hermeneutical claims and not causal ones<sup>282</sup>. He emphasizes how he wants to understand the deeper truth behind the planetary constellations, without pretending to foretell the future. The anecdote about al-Ḥamzāwī here shows the concern of Ibn al-Ḥanbalī about scholars who were engaged in foretelling the future. I will elaborate on this topic in the next section of this chapter.

<sup>281</sup> Muḥammad ibn Ibrāhīm Ibn al-Ḥanbalī, “723 -Yūsuf Ibn Qurqumās al-Sayfī Qāyṭbāy al-Ḥamzāwī al-Amīr al-Kabīr al-Ḥanbalī Jamāl al-Dīn Abū al-Maḥāsīn al-Ḥalabī al-Ḥanafī,” in *Durr Al-Ḥabab Fī Tārīkh Aʿyān Ḥalab*, vol. II, II vols. (Damascus: Wizārat al-Thaqāfah, 1972), 586–87.

<sup>282</sup> As discussed in the work of Liana Saif, a hermeneutical and a causal explanation were not mutually exclusive. In this case, however, these scholars suggest that their claims are primarily hermeneutical, as will be elaborated upon in the next sections of this and the following chapter. Cf. Saif, *The Arabic Influences on Early Modern Occult Philosophy*.

## 5.2. Aḥmad ibn Aḥmad Timurbāy's Appropriation of the Work

### 5.2.1. *ʿIlm Aḥkām al-Nujūm as the Science of the 'Invisible Secrets' of the Stars*

Aḥmad Timurbāy's *mukhtaṣar* of the handbook “*Kitāb al-Bārīc fī Aḥkām al-Nujūm*” opens with a preface in which the copyist discusses his relation to Ibn Abī al-Rijāl's work as well as to the discipline he is practising at large. With regard to the latter, Aḥmad ibn Aḥmad Timurbāy writes in his preface:

احمد الله على ما علمنا من العلوم وأشكره على ما اطلعنا عليه من اسرار النجوم [...] فان علم النجوم  
سر من اسرار الإلهية مكتوم لا يطلع اليه الا القليل من الناس والكثير محترم.<sup>283</sup>

‘I thank God for what He has taught us of the sciences and I am grateful to Him for educating us [some] of the secrets of the stars. [...] The science of the stars is one of the concealed divine secrets. It cannot be apprehended unless by a small group and it is of great respect.’

Whereas the title of this *mukhtaṣar*, in accordance with that of the handbook, refers to the discipline discussed here as ‘*ʿilm aḥkām al-nujūm*’, Aḥmad ibn Aḥmad Timurbāy uses the general terminology of ‘*ʿilm al-nujūm*’ or the science of the stars here. What will be discussed are ‘*asrār al-nujūm*’ or the secrets of the stars, things that are concealed (*maktūm*, further in work also qualified as adjacent to *al-ghāʾib*<sup>284</sup>). After introducing this science (*ʿilm*), the pre-existence of all things in the mind of God before creation is alluded upon:

‘سبحانه لا اله الا هو الحي القيوم<sup>285</sup> ° موجد العالم بعد ان كان معدوم ° وخفيه اذا شأ وكل ما سواه  
لا يدوم ° تعالى [في] صانع ابداع جميع مصنعاته ليستدل بها على وحدانيته المتفكرون ° فارض ذات

<sup>283</sup> Timurbāy, al-Ḥamzāwī, and Abū al-Ḥasan ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb Al-Bārī‘ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 4 R.

<sup>284</sup> Saif, *The Arabic Influences on Early Modern Occult Philosophy* In the marginal notes here ‘*al-ghayb*’ usually refers to the limits of what people can grasp/unveil. The strictly invisible is known only to God.

<sup>285</sup> Qur’ān sūrat al-baqara, āyat 255, اللَّهُ لَا إِلَهَ إِلَّا هُوَ الْحَيُّ الْقَيُّومُ

عيون ° وسماء ذات بروج<sup>286</sup> ° وفنون ° وشمس وقمر كل في ذلك يسبحون ° واختلاف الليل والنهار آيات  
 فهل انتم مبصرون ° لافاعل سواه ° ولا مد الا اياه

‘He who is exalted, there is no God but Him, the Living, the Unshakable ° He who gave the world existence after it being non-existent, concealing it if He so wishes. Everything he creates is not everlasting ° [in] a Maker who has perfected all of his creation so that through them his Singleness is inferred, be it the earth with springs and the sky with the zodiac signs and its arts ° and a sun and a moon, which are all floating in this, and the differences between day and night are all signs ° Aren’t you observing that there is no Agent but Him and no extension but His?’<sup>287</sup>

In this way, Timurbāy refers to the theological discussion of the creation or eternity of the world. In general, supporters of the doctrine of the eternity of the world, among whom the most famous one in the Islamic intellectual tradition is Ibn Sinā, argue that God is the entity necessarily in existence (*wājib al-wujūd*) for all else to exist. Since God is eternal, the world is too. This is considered to be an ontological necessity. Other thinkers, the most famous of whom is al-Ghazālī, emphasised that God must have had the choice to create the world, otherwise He is not strictly speaking omnipotent. According to the latter thinkers, the world is created.<sup>288</sup> Timurbāy’s opinion is in line with the latter group. In the preface, Timurbāy makes mention of the planets as ‘the shining proofs’ البراهين الساطعة among similar references.<sup>289</sup> With this copy of a handbook on *‘ilm aḥkām al-nujūm*, Timurbāy claims to offer a key towards the unravelling of the invisible qualities of the stars.

<sup>286</sup> Qur’ān, sūrat al-burūj, āyat 1, وَالسَّمَاءِ ذَاتِ الْبُرُوجِ

<sup>287</sup> Timurbāy, al-Ḥamzāwī, and Abū al-Ḥasan ‘Alī Ibn Abī al-Rijāl al-Kātib al-Shaybānī, “Mukhtaṣar Kitāb Al-Bārī ‘ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 4V.

<sup>288</sup> Cristina Cerami, “The Eternity of the World,” in *The Routledge Companion to Islamic Philosophy*, ed. Richard Taylor and Luis-Xavier López-Farjeat (New York: Routledge Taylor and Francis, 2015), 141–55.; Peter Adamson, *Philosophy in the Islamic World* (Oxford: Oxford University Press, 2016); Sabine Schmidtke, “Introduction – Re-Thinking the Course of Islamic Philosophy,” in *The Oxford Handbook of Islamic Philosophy*, ed. Sabine Schmidtke and Khaled El-Rouayheb (Oxford: Oxford University Press, 2017), 1–5.

<sup>289</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī ‘ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13.

With this copy of a handbook on *ʿilm aḥkām al-nujūm*, Timurbāy claims to offer a key towards the unravelling of the invisible qualities of the stars. This idea, Liana Saif states in her work on early modern occult philosophy, was crucial to the world view of Islamicate Occult scholars in earlier periods: the stars and planets were seen as intermediaries between the world below and the Divine. In this view, an Aristotelian and Neoplatonist view are combined, resulting in an equally causal, hermeneutical and semiotic practise. Saif writes that:

‘Adopting the Aristotelian epistemological stance, Arabic natural philosophers and astrologers perceived the heavenly bodies as causes of generation and corruption, and it was precisely because of their causation that resemblances occurred in nature [...] Moreover, the Neoplatonic elements in the Arabic works ensured that the soul was accommodated in their causality. The World Soul and her celestial manifestations were integrated into a volitional causality in which they acted as transmitters of astral influences and principles of the universe’s animation. Arabic natural philosophers devised an astral causality that was physical and psychic, compatible with a semiological approach to nature and the heavens.’<sup>255</sup>

Whereas this view is certainly visible in the work of al-Ḥamzāwī and Timurbāy, the scholars emphasise that their practice is in the first place hermeneutical. This becomes clear when we read the second part of the preface, where Timurbāy writes that he did not copy all eight of the parts of Ibn Abī al-Rijāl’s work. As mentioned, this *mukhtaṣar* only consists in a summary of the first three chapters of the work, and some references to the last chapter on the world cycles (*taḥāwīl sinīn al-ʿālam*). This was done intentionally by Timurbāy, as he writes that:

ولم اتعرض المواليده وتحاويلها ° ولا للإختيارات ومسائلها ° لعزى ان سمح الله [ms corrupt] في  
العمر لم اتوقف ° ان افرد لكل منها مصنف °

‘I did not deal with nativities, their revolutions, or with elections and interrogations , for it is my conviction that God desires [ms corrupt] in life. I haven't considered to dedicate a volume to each independently.’

As such, Timurbāy considers the claims made by this book to be of hermeneutical value, but he suggests that the work does not provide the reader with the means for future-telling, as all concrete practices related to this theme are left out. The work thus allows the reader to get an understanding of the deeper truths hidden behind what is visible. As Saif remarks, future-telling was, in the medieval and early modern Islamic world, a complex practice that was represented in several traditions. One of these was *‘ilm aḥkām al-nujūm*, but future-telling was not at all necessarily part of the latter tradition. Saif states that:

‘predications come under the category of ‘ilm al-ghayb – knowledge of that which is veiled- this knowledge is only available to God. [...] But when it comes to astrology, things are a little different. A verse in the Qur’an declares that ‘In the creation of the heavens and the Earth, in the rotation of night and day, are sure signs for those people possessed of minds [ulul albab].’ The heavens are full of signs of God’s omnipotence on which the faithful contemplate with their intellect. We also read in the Qur’an ‘I [Allah] swear by the motions of the stars – and a mighty oath it is, if only you knew! This is a glorious Qur’an, in a Book well-sheltered.’ This verse reveals that the locations of the stars have a divine significance; for only by great things does the Almighty swear, and the greatness of this oath lies in its hidden significance only revealed to the wise or ulul albab. Astrologers then may argue that they are among those who employ the intellect to perceive and analyse the order of the celestial bodies which have great significance as God in His sacred book asserts.’<sup>290</sup>

It is this line of thought that Timurbāy uses in his introduction in order to present the boundaries of his discipline. As such, *‘ilm aḥkām al-nujūm* is presented as a hermeneutical practice that provides scholars with insight into the deeper truths of the world, rather than a practice on the basis of which causal claims can be made, as applied in future-telling. This distinction, Saif argues, was of great importance in late medieval and early modern accounts of natural and astral magic. The planets were seen as efficient causes ‘mediating between the supercelestial and terrestrial worlds, between ideas and seminal reasons, between divine will and terrestrial events’, but these scholars argue that they, as humans themselves cannot make prognostications

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<sup>290</sup> Saif, *The Arabic Influences on Early Modern Occult Philosophy*, 10–11.

based on this system.<sup>291</sup> This view is present here too, as will be discussed in detail in the next chapter, where I will elaborate upon the authors' view on the sciences.<sup>292</sup> The signs generated by the this system of 'activators' were the signs to be unravelled by scholars such as al-Ḥamzāwī and Timurbāy. Where there was causality in nature, scholars could not make any causal claims for the future. This is an important aspect of their practice, as this makes the discipline elitist rather than practical. This is an important difference with the *taqwīm* treatises discussed in the second part of this dissertation. Where the *taqwīm* writers often used the terminology of 'sinā'a' or art/craft, here the terminology of *ilm*, usually translated as science is used almost exclusively.

### 5.2.2. *Elitism: The Ikhwān al-Ṣafā Network Across the Islamicate World*

#### *The Neo-Ikhwān al-Ṣafā'*

The Neopythagorean view expressed in this preface to the work does not come as a surprise when one reads the marginal notes in this and other works of the author and copyist of the reports, where they refer to the opinion of the *ikhwān al-ṣafā'* or brethren of purity. In the fifteenth century, this reference was used as a marker of identification by a widespread and informal network of occult scholars who considered the science of letters (*ilm al-ḥurūf*) as the backbone of their Neopythagorean world view.<sup>293</sup> The science of letters posited the cosmos itself as a text to be read or –in some cases – even rewritten. Lettrism was the backbone to the system of occult sciences, as it posited a mathematical interpretation of language as the key to unravelling the logic

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<sup>291</sup> Saif, *The Arabic Influences on Early Modern Occult Philosophy*, 199. This discussion, in which the authors seem to take the stance that there is causality in the stars, but that humans can only grasp it by means of hermeneutical practices, seems very 'modern' in the sense that it distinguishes between the world as it is, and the world as we know it. I cannot elaborate on this discussion here, but this offers interesting avenues for further research.

<sup>292</sup> Saif, *The Arabic Influences on Early Modern Occult Philosophy*, 199–200.

<sup>293</sup> Gardiner, "Books on Occult Science", 735–765; Gardiner, "The Occultist Encyclopedism of 'Abd Al-Raḥmān al-Biṣṭāmī"; Cornell Fleischer, "Ancient Wisdom and New Sciences: Prophecies at the Ottoman Court in the Fifteenth and Early Sixteenth Centuries," in *Falnama: The Book of Omens* (Washington: Thames & Hudson, 2010), 232–43; İlker Evrim Binbaş, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn 'Alī Yazdī and the Islamicate Republic of Letters*, Cambridge Studies in Islamic Civilization (Cambridge: Cambridge University Press, 2016); İhsan Fazlıoğlu, "İlk Dönem Osmanlı İlim ve Kültür Hayatında İhvânü's-Safâ ve Abdurrahmân Bistâmî," *Divan* 1, no. 2 (1996): 229–40.



of the entire universe.<sup>294</sup> The Persian side of the role of this lettrist network in the fifteenth century has been studied thoroughly by İlker Evrim Binbaş and Matthew Melvin-Koushki.<sup>295</sup> Ihsan Fazlioğlu and Cornell Fleisher studied the Ottoman side of the network, and the Ottoman scholar ‘Abd al-Raḥmān al-Biṣṭāmī (d. 858/1454) in particular.<sup>296</sup> Al-Biṣṭāmī is known for having referred to his fellow occultist scholars as the ‘*ikhwān al-ṣafā*’ *wa-khillān al-wafā*’ or the ‘*brethren of purity and friends of sincerity*’. Gardiner shows in his research on Bunian reading groups that similar references were already made in the fourteenth century among esotericist groups of scholars in the Sultanate of Cairo.<sup>297</sup> Al-Biṣṭāmī spent a substantial part of his career in the Sultanate of Cairo and his life provides insight into the practice of lettrism and the occult sciences in this realm of the Islamicate world, as has also been shown by the research of Gardiner.<sup>298</sup> All the studies agree that the role of Cairo as meeting place for these Persian and Turkish scholars cannot be underestimated, but the works and influences of and on occult scholars from *within* the late fifteenth century Sultanate of Cairo remains to be studied thoroughly up until today.<sup>299</sup> The works of al-Ḥamzāwī and

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<sup>294</sup> Melvin-Koushki, “Afterword: Conjuncting Astrology and Lettrism, Islam and Judaism” From now on, I will refer to this discipline either as “the science of letters” or as “lettrism”, as is common in recent research on the subject.

<sup>295</sup> Melvin-Koushki, “The Quest for a Universal Science: The Occult Philosophy of Ṣā’ in al-Dīn Turka Iṣfahānī (1369-1432) and Intellectual Millenarianism in Early Timurid Iran”; Matthew Melvin-Koushki, “Starlord, Letterlord: Astrology and Lettrism in the Construction of Post-Mongol Persianate Imperial Ideologies” (Political Theologies workshop, Santa Barbara: University of California, 2015); Melvin-Koushki, “Introduction: De-Orienting the Study of Islamicate Occultism”; Melvin-Koushki, “Afterword: Conjuncting Astrology and Lettrism, Islam and Judaism”; Binbaş, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn ‘Alī Yazdī and the Islamicate Republic of Letters*.

<sup>296</sup> Cornell Fleisher, “Ancient Wisdom and New Sciences: Prophecies at the Ottoman Court in the Fifteenth and Early Sixteenth Centuries,” in *Falnama: The Book of Omens* (Washington: Thames & Hudson, 2010), 232–43.; İhsan Fazlioğlu, “İlk Dönem Osmanlı İlim ve Kültür Hayatında İhvānu’s-Safā ve Abdurrahmān Bistāmī,” *Divan* 1, no. 2 (1996): 229–40.

<sup>297</sup> Gardiner, “Esotericism in a Manuscript Culture: Aḥmad al-Būnī and His Readers through the Mamlūk Period,” 177–80.

<sup>298</sup> Gardiner, “The Occultist Encyclopedism of ‘Abd Al-Raḥmān al-Biṣṭāmī.”

<sup>299</sup> As indicated for the fourteenth century Sultanate of Cairo especially in Binbaş, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn ‘Alī Yazdī and the Islamicate Republic of Letters*, 114–64 in which the work of the scholar al-Akhlāṭī (d. 799 / 1397) is discussed in detail. ; For the late fifteenth and early sixteenth century period, see: H.T. Norris, “Aspects of the Influence of Nesimi’s Hurufi Verse, and His Martyrdom, in the Arab East between the 16th and 18th Centuries,” in *Syncretismes et Hérésies Dans l’Orient Seldjoukide et Ottoman (XIVe–XVIIIe Siècle): Actes Du Colloque Du Collège de France, Octobre 2001*,” in *Syncretismes Et Heresies Dans L’orient Seldjoukide Et Ottoman: XIV- XVIII Siecle*, ed. Gilles Veinstein (Peeters Publishers, 2005), 163–82; In his sociohistorical study of the civilian elite of Cairo, Carl Petry also sheds light on the preeminence of Iranian scholars in Cairo in this period. “Iranians, in fact, attained a preeminence in the Cairene elite disproportionate to their [...] numbers. They remained conscious exponents of the Persian intellectual tradition in Cairo and were respected

Timurbāy, I argue, provide a very interesting first glance on this local, Syro-Egyptian side of the network.<sup>300</sup> The terminology of *ikhwān al-ṣafā' wa-khillān al-wafā'* used to refer to a tenth-century intellectual movement of scholars who wrote an encyclopaedic collection of works (which they called letters or *rasā'il*) in which they proclaimed the Neopythagorean principle of the number as the first and most fundamental principle of the universe, the intellect's connection with the Neoplatonist "One". The name of this movement was appropriated by a fifteenth century network of scholars, who distinguished themselves by committing to a specific political, ideological and aesthetic view that manifested itself in the practice of occult sciences, and especially the science of letters. The science of letters in this period became increasingly associated with astrological practices via the link of letters and numbers, as will be elaborated upon in the next chapter of this dissertation.<sup>301</sup>

Another typical feature of this network of scholars that has been expressed in the preface of Timurbāy's introduction is the tendency towards elitism. The scholars who engage with this matter, he argues there, are 'القليل من الناس'<sup>302</sup> or 'few among the people' while their practice was 'الكثير محترم' or 'great in respect'. Apparently it was both very hard and very important to study the secrets of the stars. The contemplators (المتفكرون) who can take this task upon them, Timurbāy argues, do this 'لِيُسْتَدَلَّ بِهَا عَلَى 'وحدانيته', 'so His [i.e. God's] uniqueness is inferred from them [i.e. the signs apparent in the created world]'.<sup>303</sup> The tendency to distinguish oneself from the larger

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for this by their contemporaries." Carl F. Petry, *The Civilian Elite of Cairo in the Later Middle Ages*, 61–68.

<sup>300</sup> In his forthcoming book on the library of the last sultan of Cairo, Qāniṣawh al-Ghawrī (r. 906-922/1501-1516), Kristof D'hulster recently identified another *ḥanafī* letrist author who may well have been related to this network of scholars, known by the name of Ṭūghān Shaykh al-Aḥmadī al-Ashrafī (d. 1477). Kristof D'hulster, *Browsing through the Sultan's Bookshelves. Towards a Reconstruction of the Library of the Mamluk Sultan Qāniṣawh al-Ghawrī (r. 906-922/1501-1516)* (Bonn: Bonn University Press, Forthcoming), 63–70.

<sup>301</sup> Binbaş, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn 'Alī Yazdī and the Islamic Republic of Letters*, 11–12; Matthew Melvin-Koushki, "Astrology, Lettrism, Geomancy: The Occult-Scientific Methods of Post-Mongol Islamicate Imperialism," *The Medieval History Journal* 19, no. 1 (2016): 142–50; Melvin-Koushki, "Introduction: De-Orienting the Study of Islamicate Occultism."

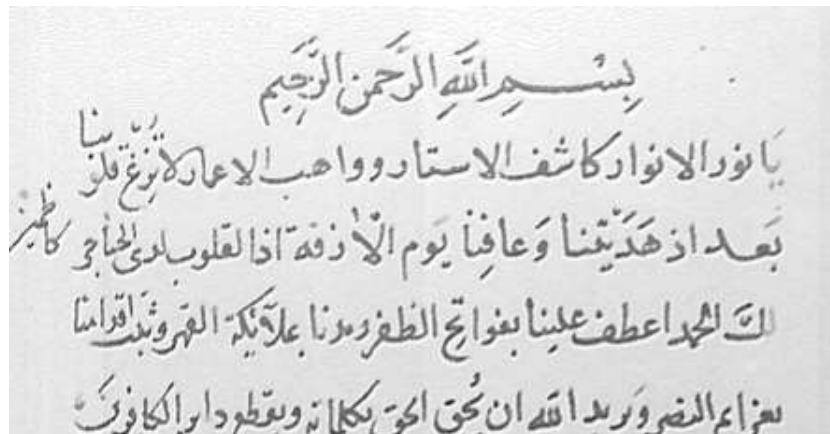
<sup>302</sup> Timurbāy, al-Ḥamzāwī, and Abū al-Ḥasan 'Alī Ibn Abī al-Rijāl, "Mukhtaṣar Kitāb al-Bārī ' fi Aḥkām al-Nujūm" (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 4 R.

<sup>303</sup> Timurbāy, al-Ḥamzāwī, and Abū al-Ḥasan 'Alī Ibn Abī al-Rijāl, "Mukhtaṣar Kitāb al-Bārī ' fi Aḥkām al-Nujūm" (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 4V.

community of scholars is a motive in the works of scholars who identified as *'ikhwān al-ṣafā* in this period, and is also in line with the *ṣūfī* references in the texts that will be discussed in the next chapter. Binbaş states that this informal network of thinkers did not share any rituals, initiation ceremonies or distinctive lineages, but rather arose from an intellectual program with which they distanced themselves from their peers.<sup>304</sup> This is an important difference with the texts discussed in the second part of this dissertation and is, I believe, an important characteristic for the subdiscipline the historical actors called *ʿilm aḥkām al-nujūm*.

### Manuscript Traces of Circulation

Just like these references, the codicological features of the manuscript suggest the circulation of texts between the Ottoman, Persianate and Syro-Egyptian territories. When we take a closer look at the handwriting, we see a mix of a *naskh* and a *nastaʿlīq* styles of writing. Whereas our copyist was writing in Cairo, the capital city of the Sultanate, his hand does not resemble the ‘rather stiff Mamluk Naskh’ described in Adam Gacek’s vademecum for manuscript studies.<sup>305</sup> In fact the handwriting of the actual author of the report, who lived and worked in Aleppo — as we know from an autograph of another text that will be discussed in the next chapter — was much more like Gacek’s ‘Mamluk Naskh’ than the handwriting of this copyist in Cairo.



Detail 1 from microfilm MS Aḥmad al-Thālith Topkapı 8, fol. 1V

The handwriting of the copyist Aḥmad ibn Aḥmad Timurbāy has several characteristics specific to the *nastaʿlīq* script, a script that developed from *naskh* from the fourteenth

<sup>304</sup> Binbaş, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn ʿAlī Yazdī and the Islamicate Republic of Letters*, 104–13.

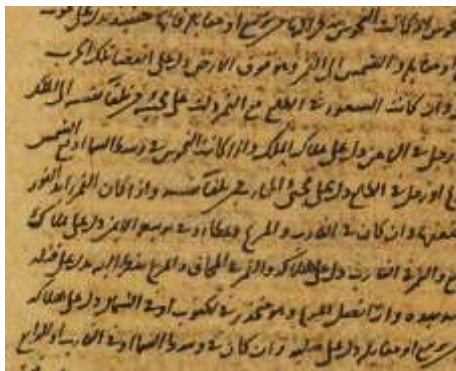
<sup>305</sup> Adam Gacek, *Arabic Manuscripts - A Vademecum for Readers* (Leiden/Boston: Brill, 2009), 163.

century on and was mostly used in Persian and Turkish texts.<sup>306</sup> For example, as we can see in these pictures of the manuscript, the *alif* is rather short and serifless as well as the *ṭā'* and the *lām*.

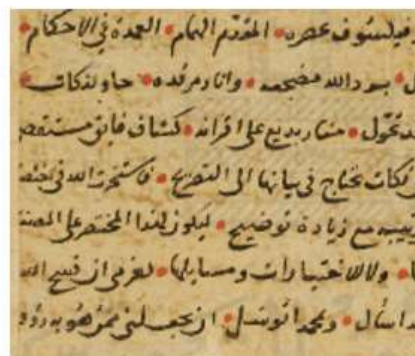


Detail 2 from MS MM 13, fol. 4V – Courtesy of the National Library of Egypt

The text however does not really have the characteristic ductus of ending words below the baseline, the famous characteristic from which '*nastaʿlīq*' (*naskh taʿlīq* or hanging script) gets its name. Some lines have a hint of this 'hanging' style (e.g. detail picture on the left) of writing but others not at all (e.g. detail picture on the right).



Detail 3 MS MM 13, fol. 49R – Courtesy of the National Library of Egypt

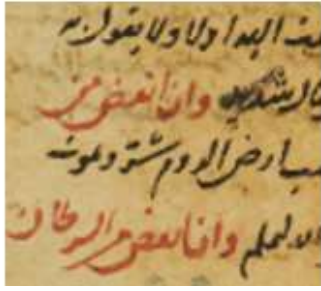


Detail 4 MS MM 13, fol. 4V – Courtesy of the National Library of Egypt

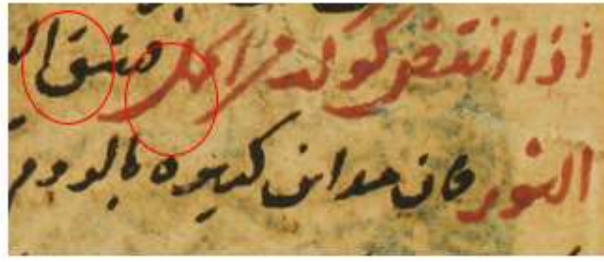
However, on the other hand, horizontal lines in the text are often elongated (cf. infra detail 7) and the last letter of the line is usually written in superscript (cf. infra detail 5), which are again characteristics of *nastaʿlīq* script. The same goes for the *nūn*, which is written like a semi-circle, and for the curves of the *qāf*, *ʿayn* and *lām* which are deep and pronounced (cf. infra detail 6).<sup>307</sup>

<sup>306</sup> Déroche, *Islamic Codicology: An Introduction to the Study of Manuscripts in Arabic Script*, 215; Gacek, *Arabic Manuscripts - A Vademecum for Readers*, 166.

<sup>307</sup> Gacek, *Arabic Manuscripts - A Vademecum for Readers*, 166.



Detail 5 Superscript at the end of the lines MS MM 13, fol. 99R – Courtesy of the National Library of Egypt

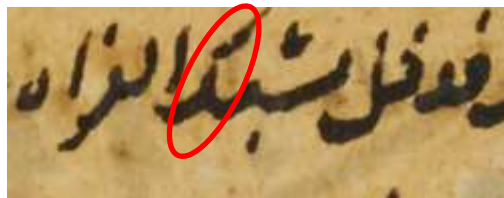


Detail 6 Relatively deep/pronounced kāf and lām MS MM 13, fol. 99R – Courtesy of the National Library of Egypt



Detail 7 Elongated horizontal lines MS MM 13, fol. 4V – Courtesy of the National Library of Egypt

Moreover, the end-*kāf* is written in a typically Persian or Turkish manner, that is as ك instead of the Arabic ك (cf. infra detail 8). In astronomical tables in other works of the copyist Timurbāy, the numbers four and six are written in a typically Persian or Turkish manner too: four as ٤ and six as ٦ instead of the more common Arabic symbol for four ٤ and ٦ for six.<sup>308</sup>



Detail 8 End-*kāf* in 'Yashbak' Ms. Cairo (DAK) MM 13, fol. 4V – Courtesy of Dār al-Kutub

<sup>308</sup> Aḥmad Timurbāy and Aḥmad ibn al-Majdī, “[Tables for the Sun and the Moon Etc.]” (Cairo, 15th C.), Ms. Cairo (DAK), DM 639. I could not get scans of photographs of this manuscript, so this is not included in the facsimiles at the end of this dissertation.

However, as a typology of Arabic paleography has far from been established, no final conclusions can be drawn on the basis of these characteristics in themselves.<sup>309</sup> They can however be considered as evidence supporting the aforementioned suggestion of a link between these scholars and the Persianate-Ottoman network of occult scholars that self-identified as the Brethren of Purity.

### 5.2.3. *For the few to Study but for all to Know*

#### *The use of Anecdotes*

Despite its elitist tone, the preface to this work does not call for secrecy in a strict sense. It was not only the responsibility of this small group of the most intelligent scholars to study the subject of this handbook, but also to make this information accessible for others. Aḥmad ibn Aḥmad Timurbāy writes that this work

مشمتمل على نكات تحتاج في بيانها الى التصريح

‘Is consisting of anecdotes that, in their plainness, need to be made public’

As such, the work could be situated within the fifteenth century tendency that Gardiner has labelled ‘postesotericism’: discourses that were kept secret in earlier times, were no longer treated as such, although their former secrecy was still highly regarded. The secrecy of occultist discourses decreases throughout the fourteenth century. After this, the period from the end of the fourteenth century on can be labelled as ‘postesotericist’. In this text too, Timurbāy suggests that the work is made for ‘*taṣrīḥ*’ or ‘to be made public’.<sup>310</sup> However, contrary to the postesotericism in Gardiner’s manuscripts, this dissemination could only be carried out by a specific small group of well-respected people, ‘القليل من الناس’. This idea comes close to the *shi’ite* idea of religious leadership or the *ṣūfī* idea of guided teachings and learning practices.<sup>311</sup> The author of the report,

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<sup>309</sup> Déroche, *Islamic Codicology: An Introduction to the Study of Manuscripts in Arabic Script*, 205–24.

<sup>310</sup> Gardiner, “Esotericism in a Manuscript Culture: Aḥmad al-Būnī and His Readers through the Mamlūk Period,” 321–22.

<sup>311</sup> Gardiner, “Esotericism in a Manuscript Culture”, 65. Gardiner links this to the terminological discussion about the difference between esotericism and mysticism, or ‘between “the restriction of knowledge to those who are by nature and by experience qualified to receive it,” as Carl Ernst has put it, and “the negation and transcendence of ordinary knowing in unknowing” ’ I will not

al-Ḥamzāwī lived most of his life in Aleppo and – in the biographical dictionary of Ibn al-Ḥanbalī – was said to have lived a very sober life, renouncing all material luxury. Therefore, he was possibly influenced by the *ṣūfī* orders that had their intellectual centers among the intellectual elites of this city, among which the *Biṣṭāmiyya* but certainly also the *Akbariyya*, as will be elaborated upon in section 6.2.3.<sup>312</sup> The use of anecdotes throughout the work could be seen as a method through which the information of “*al-Bāri*” is made accessible. Towards the end of his preface, Timurbāy rather elliptically writes about Ibn Abī al-Rijāl, the author of “*al-Bāri*” that:

حوى نكات ° مفتاح لاشارات ° مختصر غير مطول ° عن اجحاف قد تحوّل °

‘He collected anecdotes ° a key to the celestial signs ° summarising rather than elaborating ° after having changed his mind’<sup>313</sup>

As indicated, Ibn Abī al-Rijāl himself already used anecdotes throughout his handbook. For this manuscript, Timurbāy indicates that it was his intention to make Ibn Abī al-Rijāl’s work even more clear to the readers of his time:

فاستخرت الله في اختصاره والاقتصاد منه على المهم (والشريعي) ° بترتيب احسن من ترتيبه مع  
زيادة توضيح ° ليكون لهذا المختصر على المصنف في هذا الفن الترجيح

‘I relied on God for the summary of this (work) and for cutting it down to what is important and (lawful) in a structure that is better than his (i.e. the author’s) structure, with ample clarification so this summary is, to the writer in this art, the preferred one.’<sup>314</sup>

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use the terminology of mysticism here, as I agree with Nathan Hofer that it does not provide us with any significant means to understand islamic (sufi) texts better, being derived from a Jewish-Christian context, see Nathan Hofer, *The Popularisation of Sufism in Ayyubid and Mamluk Egypt, 1173-1325*, 4.

<sup>312</sup> Gardiner, “The Occultist Encyclopedism of ‘Abd Al-Raḥmān al-Biṣṭāmī.”; Noah Gardiner, “Lettrism and History in ‘Abd Al-Raḥmān al-Biṣṭāmī’s Naẓm al-Sulūk Fī Musāmarat al-Mulūk,” in *Islamicate Occult Sciences in Theory and Practice*, ed. Liana Saif et al. (Leiden: Brill, 2020).

<sup>313</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bāri’ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 4 V.

<sup>314</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bāri’ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 4 V.

This clarification probably refers to the selection the copyist made, as well as to the notes he added in the margins of the handbook and the fragments of reports of fifteenth century events that have been included in the work. The latter, as I will argue more extensively in the next section of this chapter, can be seen as a continuation of Ibn Abī al-Rijāl’s use of anecdotal evidence for the principles that are discussed in the handbook. The anecdotes at hand all refer to political events at the frontiers of the Sultanate involving the Aq-Quyūnlū and the Ottoman Sultanate. This was the concrete context in which the Syrian author of this text wrote his treatises, and the anecdotes may well have served as proofs for or clarification on the topics discussed in the texts. This subject will be elaborated upon in section 5.2.4.

#### A ‘Musawwada’ for Personal Study

Furthermore, in a marginal note at the beginning of the handbook Timurbāy indicates that this work was a draft (*musawwada*). The note says:

الله احمد  
مسودة مختصر البارع بابن ابي الرجال  
كاتبه الفقير احمد بن احمد تمرباي الحنفي  
غفر الله له ولوالده ولجميع المسلمين

‘I praise God.

A draft of the summary of “*al-Bāri*” by Ibn Abī al-Rijāl

Its writer is Aḥmad ibn Aḥmad Timurbāy, the *ḥanafī*.

May God forgive him and his father as well as the Muslim community.’

The depiction of the work as a ‘draft’ is in line with the supposition that this work had to be studied by experts in order for them to pass it along. This is also in line with the codicological features of the manuscript: the quarto-sized paper, the non-scribal handwriting and several small annotations suggests the personal use of the text by its copyist and owner. Throughout the draft, Timurbāy has added his personal notes in the margins. Often this is done with simple indications of correctness (e.g. *ṣaḥḥ*, *ṣaḥīḥ*, *ṣaḥḥa*, *wa-huwa ṣaḥḥ*) or incorrectness (e.g. *gh*, *ghalaṭ*, *wa-huwa ghalat*) in the latter case followed by a correction (e.g. *ṣ* or *ṣawāba*). However, often these corrective notes also provide alternative views on the principles and procedures discussed. As



mentioned above, these alternative views are ascribed to the *ikhwān al-ṣafā* several times. For example, the second part of the introduction, in which the signs of the zodiac are discussed in a general sense, has a marginal note on the discussions between scholars, where Timurbāy indicates that ‘*al-miṣriyīn*’ or ‘the Egyptians are following Ptolemy.’<sup>315</sup> Over the introduction several other differences of opinions and nuances are added in the margins. Along the main text, Aḥmad Ibn Aḥmad Timurbāy frequently adds notes that suggest different opinions on the subject of the work. Whereas the references to Hermes appear in other manuscript copies of the handbook too, this is not known to be the case of the references to the *ikhwān al-ṣafā*.<sup>316</sup> However, the most unique part of Timurbāy’s copy of this handbook are the anecdotes from his own time that he has added to the work on the basis of the work of his contemporary from Aleppo, Yūsuf Ibn Qurqumās al-Ḥamzāwī.

#### 5.2.4. Appropriation Through Anecdotes

The anecdotes Timurbāy discusses on folio 4R, 49R, 49V and 99V of ms. Cairo (DAK) MM13 treat the position of the planets at the moment of several encounters between the Egyptian-Syrian army and the army of the neighboring polities of the Aq-Quyūnlū and the Ottomans using the framework provided by the first three chapters of Ibn Abī al-Rijāl’s handbook. In this section, I will discuss the four folios on which these anecdotes are written in detail. All four of them are, according to the last lines on folio 99V, copied from an original manuscript written by Yūsuf ibn Qurqumās al-Ḥamzāwī. I will discuss the anecdotes in the order they are presented in ms. Cairo (DAK) MM 13. First I will discuss a conflict between the armies of Ūzūn Ḥasan and Yashbak Min Mahdī on the day of Rajab 12 in the year 877/December 13<sup>th</sup> in the year 1472 in the city of al-Bīra (fol. 4R). After that, I will discuss the battle between the Atābak Azbak and his Syro-Egyptian troops and the Ottoman army led by Aḥmad ibn Hersek on the 4<sup>th</sup> of Shawwāl 890/ October 14<sup>th</sup> 1485 in Adana (fol. 49 R & V). Thirdly, I will treat the case of the confrontation between the Dhū al-Qādirid leader Shāh Suwār

<sup>315</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī’ fi Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 5V.

<sup>316</sup> Aly Aben Ragel, *El Libro Conplido En Los Iudizios de Las Estrellas: Traducción Hecha En La Corte de Alfonso El Sabio (Partes 6 a 8)*, ed. Gerold Hilty and Luis Miguel Vicente Garcia (Zaragoza: Instituto de Estudios Islámicos y del Oriente Próximo & Grupo Millás Vallicrosa de Historia de la Ciencia Árane Universidad de Barcelona, 2005); Aly Aben Ragel and Gerold Hilty, *El Libro Conplido En Los Iudizios de Las Estrellas: Traducción Hecha En La Corte de Alfonso El Sabio (Partes 1 a 5)* (Madrid: Real Academia Española, 1954).

and the troupes of Yashbak Min Mahdī in Elbistan on the 10<sup>th</sup> of Shawwāl 874/12<sup>th</sup> of April 1470 (fol. 99V). All three cases are presented in the form of a horoscope: as a description of the sky at the moment of the event. The two first horoscopes are schematised, whereas the third one is only discussed discursively. In the remainder of this chapter, I will discuss the historical background of the events as well as the disciplinary or ‘astrological’ (in the sense it is used in this manuscript, that is as *‘ilm aḥkām al-nujūm* or the ‘ideal science of the stars’) background given in the copy of the handbook in which they are inserted. For the historical background I have drawn on secondary studies of historiographical source material from the period at hand, supplemented with primary source material. For the second, astrological discussion of each horoscope, I draw on this copy of the handbook of Ibn Abī al-Rijāl. As I could – because of censorship issues - only study the latter through very bad quality scans of the microfilm, I also consulted the edition of a thirteenth century copy of Ibn Abī al-Rijāl’s handbook in Classical Catalan, made at the court of the Alfonso X of Castile. The latter edition was of course never used independently of the Arabic text, but only in comparison. As the context of the Old Catalan translation is very different from the one discussed here, using this source as anything more than a point of comparison would be problematic in light of the material approach of this dissertation.<sup>317</sup>



Detail 9 Microfilm of Ms. Cairo (DAK) MM 13 fol. 99V of the handbook dealing with fases (wujūh) –

(Courtesy of Dār al-Kutub)

<sup>317</sup> Aben Ragel and Hilty, *El Libro Conplido En Los Iudizios de Las Estrellas: Traducción Hecha En La Corte de Alfonso El Sabio (Partes 1 a 5)*; Aben Ragel, *El Libro Conplido En Los Iudizios de Las Estrellas: Traducción Hecha En La Corte de Alfonso El Sabio (Partes 6 a 8)*.

#### 5.2.4.1. The First Encounter of Ūzūn Ḥasan and Yashbak Min Mahdī

##### Historical Account

The first confrontation mentioned in the manuscript is the battle between the Egyptian *dawadār* Yashbak Min Mahdī and his army on the one hand and the Turkmen Aq-Quyūnlū troops led by their leader Ḥasan ibn Qarā Yūluk — more commonly known as Ūzūn Ḥasan — on the other. This happened on the 12<sup>th</sup> of the Islamic month of Rajab in the year 877/December 13<sup>th</sup>, 1472. In November of that year, Ūzūn Ḥasan assaulted the territories of the Cairo Sultanate in Syria. The event was part of what John E. Woods calls the second step in Ūzūn Ḥasan's military campaign in West-Asia in the years 877/1472 - 878/1473. The first part of this campaign was an offensive on the lands of Qaramān in southern Anatolia in the summer of 877/1472. This was followed by an assault on Syrian territory in the winter of 877/1472. When the Ottomans attacked the Aq-Quyūnlū, a third phase would consist in Ūzūn Ḥasan's defense of the Aq-Quyūnlū territory.<sup>318</sup> The events about which this anecdotal report is written can be situated in the middle of this tripartite campaign. Wood states that, prior to his attack on Syrian territory, Ūzūn Ḥasan had sent a letter to the governor of the fortress of Besni in the frontier zone of the Sultanate in which he argued that the sultan of Cairo did not grant sufficient freedom to his people, and hence was no good Muslim ruler. Ūzūn Ḥasan would then have stated that it was his responsibility to 'suppress the government of slaves, and thus eliminate this outlandish innovation from among Muslims'.<sup>319</sup> An imperial rescript was said to be addressed to Shāh Budāq, leader of the principality of the Dhū al-Qādirids — who were at that time vassals of the Sultanate of Cairo — in order to ask them to recognise Ūzūn Ḥasan as their new overlord and legal Muslim sovereign. The sultan in Cairo, al-Ashraf Qāyṭbāy (r. 872/1468 – 901/1496), received a similar document. Starting in the month of *Jumādhā al-thānī* 877/ November 4<sup>th</sup> 1472, Ūzūn Ḥasan crossed the Euphrates and took the

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<sup>318</sup> John E. Woods, *The Aqquyunlu: Clan, Confederation, Empire : A Study in 15th/9th Century Turko-Iranian Politics*, Revised and Extended Edition (Utah: The University of Utah Press, 1999), 64–65.

<sup>319</sup> Woods, *The Aqquyunlu*, 116. This is cited from a letter dealing with Ūzūn Ḥasan's alliance with European powers written by Caterino Zeno and transcribed in Domenico Malipiero's *Annali Veneti dall'anno 1457 a 1500*.

cities of Malatya, Kahta, Gerger and <sup>c</sup>Ayntāb over a short period of time, to arrive near Aleppo at the 15th of Rajab/14th of December.<sup>320</sup>

### Astrological Account

The event for which the first horoscope is drawn here is the encounter of Ūzūn Ḥasan's army with the army of the Cairo Sultanate on the morning of the 12<sup>th</sup> day of the month Rajab/December 13<sup>th</sup>. The manuscript tells us that:

[قال] الفاضل العلامة الحساب الجمال يوسف [بن قرقماس] كان خروج يشبك لملاقاة حسن بن قرايلوك على مدينة [عينتاب] المحروسة... [يوم الا] حد الاثنين عشر من رجب سنة ٨٧٧ عند طلوع الشمس

‘The noble, very learned mathematician al-Jamāl Yūsuf [ibn Qurqumās] [said that] Yashbak left to meet Ḥasan ibn Qarā Yulūk in the well-protected city of [<sup>c</sup>Ayntāb] on Sunday the twelfth of Rajab in the year 877 at sunrise.’<sup>321</sup>

This encounter happened early in the morning and the report gives a very detailed description of the sky at the moment of the battle. In the description, Yashbak Min Mahdī is mentioned as ‘*al-ṭālib*’ or the claimant, whereas Uzun Ḥasan is called ‘*al-maṭlūb*’ or the investigated party. The configuration of the planets at that moment was summarized as follows:

فالطالع الجدي وصاحبه زحل [...] ودليل الطالب يشبك هو السابع السرطان وصاحبه القمر ... والكوكب المتصل بالقمر هو الزهرة دليل المطلوب وهو حسن بن قرايلوك

‘The ascendant is Capricorn, and its ruler is Saturn. [...] The indicator (*dalīl*) for the claimant, that is Yashbak, is the seventh house, Cancer, and its ruler is the Moon. [...] The planet that is applying to the Moon, that is Venus, is the indicator for the investigated party and that is Ḥasan ibn Qarā Yulūk.’<sup>322</sup>

So on the one hand, we have Cancer which is taken as the indicator for Yashbak Min Mahdī. Its ruler (*ṣāḥib*, the planet which is the strongest when in this house) is the

<sup>320</sup> Woods, *The Aqquyunlu*, 117–19.

<sup>321</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī<sup>c</sup> fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 4R The manuscript is corrupt at the place where the city is mentioned, but based on secondary sources I assume that it concerns <sup>c</sup>Ayntāb.

<sup>322</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī<sup>c</sup> fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK) MM 13.

Moon. The Moon itself is located in the ninth house and is in square (*tarbīc* i.e. ninety degrees apart) with Venus, which is located in the tenth house. Furthermore, the ascendant is Capricorn and its lord (*rabb*, the most important planet currently located in this house) is Mars. If we take a look at the handbook in which this report is written, we read in the first book that every house has three ‘faces’ (وجوه). As each house occupies thirty degrees of the total of 360° of the horoscope according to Ptolemy’s division of the sky, these faces are referred to as ‘decans’. Each decan has a certain planet as its ruler. For Capricorn, the second decan has Mars as its ruler. If Mars is in Capricorn, this is positive for all that concerns reign, nobility and victory over one’s enemies. Mars is in this case in the first decan of Capricorn, at 4° 44’. Apart from this, the first chapter of the book indicates the nature of the planets and their mutual influence. Here, it is argued that the Sun and Mars reinforce each other, as they share the characteristics of heat and dryness.<sup>323</sup> The Moon, when located in Virgo, indicates a period of sorrow and bad fortune, especially for those who are involved with ‘remembrance’ and stories (*nās al-tadhkīr wa-l-qīṣṣa*<sup>324</sup>). Venus, when located in the house of Libra, indicates help for the cavalry and good luck for attempting to fight the enemy with cavalry and arms. Timurbāy adds that the Sun, when she sets, will be in the seventh house, which is the house of Yashbak. Furthermore, he writes that:

وجدنا المشتري وعطارد والمريخ والشمس والزهرة واقعة بنجير الطالع وهذه عون للطالب

‘We found Jupiter, Mercury, Mars, the Sun and Venus standing in the good part with regard to the ascendant and this is of help to the claimant.’<sup>325</sup>

This claim is probably linked to the statement in the handbook that fortune is often linked to rising, and bad luck is linked to descending movement.<sup>326</sup> Jupiter and Mercury are both rising and Venus is at its highest point in the sky. At the bottom of the page, a schematic horoscope is drawn:

<sup>323</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bāri’ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fols. 4V-10R.

<sup>324</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bāri’ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 7R.

<sup>325</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bāri’ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 4V.

<sup>326</sup> There are exceptions to this rule, as this also depends on the nature of the planets. This is however not important to understand this horoscope and hence will not be elaborated upon here. Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bāri’ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 10 V.

<p>الحادي عشر العقرب ك لظ مشتري جوزهر بدنح بح ف عطارد ح ن</p>	<p>العاشر الميزان ل د ك</p>	<p>التاسع السنبلة ك لظ قمر م المال ط ا د ه م ح م السعادة ال د</p>
<p>الثاني عشر القوس بدنح</p>		<p>الثامن الاسد بدنح</p>
<p>مريخ دمد م الفلج ح ن</p>		<p>السايع السرطان ط بو</p>
<p>الثاني الدلو بدنح</p>		<p>السادس الجوزاء بدنح</p>
	<p>الرابع الحمل ل د ك</p>	<p>الزحل اب ا ب نوهر م الغيب اح ف وند</p>

<p>The eleventh, Scorpius 20°39'</p> <p>Mercury 18°50'</p> <p>Jupiter 14°58'</p> <p>Asc. Node Moon ?</p> <p>The twelfth house Sagittarius 14°58'</p> <p>Mars 4°44'</p> <p>Lot of separation 8°57'</p> <p>Ascendant Capricorn 9°16'</p> <p>The sun 7°33'</p>	<p>The tenth, Libra 14°20'</p>	<p>The ninth, Virgo 20°39'</p> <p>Lot of wealth 5°48'</p> <p>moon 9°34'</p> <p>Lot of fortune 1°34'</p> <p>The eighth Leo 14°58'</p> <p>The seventh, Cancer 9°16'</p> <p>The sixth, Gemini 14°58'</p> <p>Saturn 11°11'</p> <p>Desc. Node moon Lot of Daemon ? 6°54'</p>
<p>The second, Aquarius 14°58'</p>	<p>The fourth Aries 14°20'</p>	

Other information that is mentioned by Timurbāy, are the lots (*sahm*, pl. *ashum*): the lot of fortune (*sahm al-saāda*), the lot of wealth (*sahm al-māl*), the lot of separation (*sahm al-falaj*) and the lot of daemon (*sahm al-ghayb*) are included in the horoscopes. The lots are places in the sky relevant to two or several planets that are explicitly linked to a certain theme or subject. Lots are often extracted when the analysis of the planets does not allow a clear interpretation. Ibn Abī al-Rijāl does not elaborate on the subject in his handbook, although he sporadically mentions the lots. In the famous astrology (*‘ilm aḥkām al-nujūm*) handbook of Abū Maʿshar al-Balkhī – which was used as a source of inspiration for Ibn Abī al-Rijāl’s work – a lot was defined as ‘the knowledge of the distance between the two indicators that indicate one thing by natural indication, and of its falling into a certain position of the sphere’.<sup>327</sup> The specific lots that are mentioned in this manuscript, are however not discussed in Abū Maʿshar’s handbook. After mentioning the lots, Timurbāy elaborates on the relation of certain planets in the horoscope to each other. He states:

وجدنا عطارد على مناظره المريخ بالمتوقعة وعلى مقابل زحل

‘We found Mercury aspecting Mars advantageously and in opposition with Saturn’

As Mars and Mercury are aspecting one another with a positive aspect while Mercury and Saturn are said to be in opposition, which means that they are an angle of 180° separated from each other, although this does not seem to be exactly the case when we look at the grid. Saturn is below the horizon, as Timurbāy remarks. He also mentions that the Moon is in square (*tarbīc*) with Saturn (*zaḥl*), which means that they are about 90° apart. The lord of the ascendant, Mars, is also in square (*tarbīc*) with the lord of the ninth house, the Moon. The latter is in sextile (*tasdīs*) with Jupiter (*al-Mushtarī*). Timurbāy does not discuss the significance of the constellation in further detail, but instead ends this description with the sentence:

‘فكان الامر بينهما على السواء’

‘And as such, the case between the two of them was even.’

<sup>327</sup> Abū Maʿshar, *The Great Introduction to Astrology*, trans. Keij Yamamoto and Charles Burnett, vol. 1, *Islamic Philosophy Theology and Science* 106 (Leiden/Boston: Brill, 2019), 820–21 هو معرفة  
بعد ما بين الدالين على شيء واحد دلالة طبيعة ووقوع ذلك في موضع معلوم من الفلك

The horoscope does not reveal a practical outcome or advice. If al-Ḥamzāwī and his copyist Timurbāy would have mentioned it with the intention of giving advice to the Egyptian *amīr*, this discussion does not seem to be of any relevance. If, on the other hand, the goal of this report is – as suggested in Timurbāy’s preface – interpretational rather than predictive, this is not an issue. The author and copyist draw the attention to the deeper meaning of a certain moment in their near past, in order to grasp the truth or logic at work behind it.

After this horoscope, some events following this moment are discussed shortly, without further analysis of the planetary constellation, on folio 4V. Timurbāy writes:

دخل نواب الممالك في حلب المحروسة قاصدين البيرة فوافدوها نهار الاحد في خامس عشر شوال  
 في السنة المذكورة [فنولوا] شيء في الفرة العظمى وحسن [في شرقها] حاضرا للبيرة فنهض اغرلو  
 محمد ولده على بلاد الشام ووافا جسر الساجور ليلة الاثنين سادس عشر شوال وبها نازل شاد بك  
 دوادار السلطان على [...] مع جميع من العساكر الحلبية والمشاة فكبسهم وقبض على شاد بك  
 وبعض من الجند ثم في نهار تاسع عشر شوال نزل يشبك بالعساكر المصرية [...] في الفرة العظمى  
 [في؟] البيرة نازلا لحسن وحسن بشرها فحصل بينهما مناقشة بالقتال ولم يتم بينهما مصافحة ثم  
 في النهار الثاني من ذي القعدة رحل حسن بن قرايلوك من البيرة متوجها الى الشرق فاقرواه على  
 السواء ثم بعد ايام ورد الخبر بنصره ملك الروم محمد بن مراد خان وهزيمة حسن بن قرايلوك

‘The viceroys of the provinces entered the well-protected city of Aleppo, heading towards al-Bīra, gathering there on Sunday the 15th of Shawwāl in the aforementioned year, but something [happened] at the Euphrates when [Ūzūn] Ḥasan was in the East, present in al-Bīra, so Ughurlū Moḥammad, his son, embarked upon the Syrian land and he crossed the bridge over the Sājūr in the night of Monday the sixteenth of Shawwāl. In this (night), Shād Beg, the dawādār of the sultan, had set up camp there with all of the Aleppian troops and the foot soldiers. He [Ughurlū] attacked them [Shād Beg and the others] and captured Shād Beg. After this, on the day of 19 Shawwāl, Yashbak came with the Egyptian troops of the greatest military expedition to al-Bīra, arriving [to meet] [Ūzūn] Ḥasan[...]. There was a confrontational fight between the two parties, but no agreement was reached. On the next day of Dhū al-Qaʿda Ḥasan ibn Qarā Yulūk retracted from al-Bīra and headed to the



East to likewise defend it. After a couple of days, the news of the victory of the leader of Rūm, Muḥammad ibn Murād Khān and of the defeat of Ḥasan ibn Qarā Yulūk reached them.”

#### 5.2.4.2. *The Battle Between Azbak Min Ṭuṭūkh’s Army and the Ottomans in Adana*

The second case Timurbāy copied from al-Ḥamzāwī’s work and inserted into his copy of the handbook concerns the battle between the army of the Egyptian *amīr* Azbak (also known as Uzbek, which is closer to the Turkish original<sup>328</sup>) and the Ottoman army led by Aḥmad ibn Hersek (known under his Turkish name as Hersek-oğlu) in Adana. Azbak Min Ṭuṭūkh and Yashbak Min Mahdī were the two most important grand amīrs under Qāyrbāy’s reign, being his marshal of the army (*atābak*) and his executive secretary (*dawādār*) respectively.<sup>329</sup>

#### Historical Account

This battle took place in 890/1485 and was part of a longer conflict at the frontier of the Sultanate of Cairo with the Ottoman Sultanate between 890/1485 and 896/1491. In hindsight, Shai Har-El calls this conflict the first Mamluk-Ottoman war, the second Mamluk-Ottoman war being the series of conflicts that eventually led to the downfall of the Sultanate of Cairo and to its annexation to the Ottoman Sultanate in 922/1516-923/1517.<sup>330</sup> However, because the terminology of a first Mamluk-Ottoman war entails a ‘presentist’ interpretation of these events because it anachronistically labels the conflicts based on the outcome of the so-called second war, I will not use it here. Har-El describes how the Ottoman Sultan Bāyezīd started a campaign against the Sultanate of Cairo with the goal to annex the Adana-Tarsus region, the lower plain of Cilicia. For this campaign he got help from the Turkmen Qaramanid army. The Sultanate of Cairo on the other hand, had a military alliance with the Turkmen principality of the Ramadanids, whose centre of power was located in the city of Adana

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<sup>328</sup> Carl F. Petry, *Protectors or Praetorians: The Last Mamluk Sultans and Egypt’s Waning as a Great Power* (New York: State University of New York Press, 1994), 26. Uzbek is probably the transcription closest to the Turkish original. As Petry indicates, Azbak is more commonly used in Arabic. Therefore, I will use this variant throughout this chapter. For the general rules used for transcription cf. supra p. 9.

<sup>329</sup> Petry, *Protectors or Praetorians*, 15.

<sup>330</sup> Shai Har-El, *Struggle for Domination in the Middle East: The Ottoman-Mamluk War 1485-1491* (Leiden/New York/Köln: E.J. Brill, 1995), xi–xiii.

at the frontiers of the Sultanate. In May 1485, an army led by the Qaramanid leader Karagöz Mehmet Pasha crossed the frontier of the Syro-Egyptian territory. At first, the Syro-Egyptian forces retracted to Aleppo. When the news of the Ottoman invasion reached Cairo around August 1485, Qāyṭbāy, the sultan of Cairo, ordered the army to mobilise and sent money and provisions to the Ramadanids asking them to show resistance to the Ottoman forces. In Shawwāl 890 or October 1485, the Egyptian army left for Adana under the command of the atābak Azbak. In Damascus and Aleppo the army joined forces with the provincial armies of Syria. For this moment right before the confrontation of both armies, the horoscope discussed on folio 49 was drawn.

### Astrological Account

The case is discussed on folio 49 and is inserted in the second part of the second chapter of the handbook, which deals with the seventh house. The seventh house, the handbook tells us, has to be looked at for insight in – among other things that have to do with relationships – issues of wars (*al-ḥurūb*). A few folios before the report, Timurbāy copies from the handbook the part where Ibn Abī al-Rijāl states:

إِعلم ان الحروب متصلة بدول الملوك فاذا اردت معرفة حالها فانظر الى الدولة وما معنى اعضاء ثم الى ملك الملوك القائم وما هو معاني في مدته فاذا علمت ذلك فانظر الى وقت تحويل سنين العالم فان كانت قد اقتضت الى بعض المواضع التي قد تنازلها او كان للشعب نوحم

‘Know that wars are linked to polities of leaders, so if you want to know more about their status, then look at the polity [in question] and what its people go through. Then look at the current leader of their leaders and what he goes through in his period [of reign]. If you have studied this, then look at the time of the revolution of the world years and whether there have been incidents that made some of them go to war or whether the people lamented [something].’<sup>331</sup>

Wars, the handbook teaches, should be understood by studying the political entities (*duwal*) engaged in battle, and more specifically by studying their leader (*malik*). In the cases he adds to the handbook, Timurbāy focuses on the individuals of Yashbak Min Mahdī and Azbak Min Ṭuṭukh on the Egypto-Syrian side and on the Aq-Quyūnlū

<sup>331</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī’ fi Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 42 V.

leader Ūzūn Ḥasan, the Ottoman leader Ibn Hersek (known under his Turkish name as Hersek-oğlu) and the Dhū al-Qādirid ruler Shāh Suwār on the other. None of the main characters in these horoscopes is the principal ruler of the political entity he represents. Instead, all of them are the commanders of the troops in battle. For the case on folio 49, the protagonists are the Egyptian *amīr* Azbak on the one hand and the Ottoman commander Aḥmad Ibn Hersek on the other. The description of the event's horoscope goes as follows:

‘خروج ازبك اتابك العساكر المصرية لملاقاة عساكر الروم على مدينة ادنة المحروسة فكان ذلك يوم الخميس رابع شوال سنة ٨٩٠ كان الطالع الميزان **ناح** والسابع الحمل **ناح** والعاشر السرطان **بب مه** والرابع الجدي **بب مه** والمريخ بالميزان **نه ح** والشمس بالميزان **بح ح** والزهرة بالعقرب **د مد** وعطارد بالعقرب **ز مع** وزحل بالعقرب **اح ن** والمشتري بالقوس **ط نط** والقمر بالقوس **نه مه** والجوزهر بالحوت **ك ا** والنوهر بالسنبلة وسهم الفلج بالطالع وهو الميزان **نوك** وسهم القتال بالثالث وهو القوس **ناه** فالطالع الميزان [...] وصاحبه الزهرة والقمر كونه قبل الامتلا [...] والمنصرف عنه القمر وهو المسترى ادله الطالب وهو ازبك والسابع الحمل في [...] وصاحبه المريخ والشمس كونه قبل الامتلا والمتصل به القمر وهو المريخ ادله المطلوب وهم عسكر الروم‘

‘Azbak, the Atābak of the Egyptian army left to meet the Ottoman army in the well-protected city of Adana, on Thursday the fourth of Shawwāl in the **year 890** when the ascendant was Libra **11° 8’**. The seventh house was Aries **11° 8’** and the tenth house was Cancer **12° 45’**. The fourth house was Capricorn **12° 45’**. Mars was in Libra at **15° 3’** and the Sun was in Libra at **13° 3’**. Venus was in Scorpio at **14° 44’**, Mercury was in Scorpio at **7° 48’** and Saturn was in Scorpio at **18° 50’**. Jupiter was in Capricorn at **9° 59’** and the Moon was in Capricorn **15° 45’**. The descending node of the Moon was in Pisces at **21°** and the ascending node of the Moon was in Virgo **21°**. The lot of separation was located in the ascendant Libra at **16° 20’**. The lot of battle was in the third house Sagittarius at **19° 15’**. And the ascendant Libra is part of [...], and its ruler is Venus. The Moon was in a stage before its completion, [...]. In

separation with the Moon is Jupiter. The indicator for the requesting party, that is Azbak, is the seventh house, Aries, [...], its lord is Mars and the Sun is in the phase before its completion and the Moon is in conjunction with Mars, the indicator for the requested party which is the Ottoman army.<sup>332</sup>

The corresponding schematic version of the horoscope at the bottom of the folio looks like this:

<p>الحادي عشر الاسد يب ح</p> <p>م السعادة نوهر د ح ك ا</p> <p>ثاني عشر السنبله ياه</p>	<p>العاشر السرطان بب مه</p>	<p>التاسع الجوزاء بب ح</p> <p>ثامن القوس ناه</p>
<p>م الفلج بوك</p> <p>الطالع الميزان باح</p> <p>شمس مريخ</p> <p>به ح</p>	<p>زائجة طلوع ازبك لملاقاه احمد بن هرسك [به] ٤ شوال سنة ٨٩٠ هجرية ١٣ تشرين الاول سنة ١٧٩٧ للاسكندر ذي القرنين</p>	<p>السابع الحمل ياح</p>
<p>ثاني العقرب انا اد</p> <p>زهرة بد مد عطارد زم ع زحل اح ن</p> <p>م القتال بط به</p> <p>م الغيب ر نو مشتري ط نط قمر به مه</p>	<p>الرابع الجدى بب مه</p>	<p>السادس الحوت نا ند</p> <p>جوزهر ك ا</p>

<sup>332</sup> Timurbāy, al-Ḥamzāwī, and Ibn Abī al-Rijāl al-Kātib al-Shaybānī, fol. 49V.

<p>The eleventh Leo <math>12^{\circ} 3'</math></p> <p>Lot of fortune <math>4^{\circ} 8'</math></p> <p>Asc. Node moon <math>21^{\circ}</math></p> <p>The twelfth Virgo <math>11^{\circ} 5'</math></p>	<p>The tenth Cancer <math>12^{\circ} 45'</math></p>	<p>The ninth Gemini <math>12^{\circ} 3'</math></p> <p>The eighth Sagittarius <math>11^{\circ} 5'</math></p>
<p>Lot of separation <math>16^{\circ} 20'</math></p> <p>Ascendant Libra <math>11^{\circ} 8'</math></p> <p>Sun <math>13^{\circ} 3'</math></p> <p>Mars <math>15^{\circ} 3'</math></p>	<p>Horoscope of the risings for Uzbek's confrontation with Aḥmad ibn Hersek on the 4th of Shawwāl in the year 890 of the hijra calendar, the 13th of tishrīn al-awwal in the year 1797 since Alexander with the two horns</p>	<p>The seventh Aries <math>11^{\circ} 8'</math></p>
<p>Second Scorpio <math>11^{\circ} 14'</math></p> <p>Venus <math>14^{\circ} 44'</math></p> <p>Mercury <math>7^{\circ} 48'</math></p> <p>Saturn <math>18^{\circ} 50'</math></p> <p>Lot of daemon <math>7^{\circ} 56'</math></p> <p>Jupiter <math>9^{\circ} 59'</math></p> <p>Moon <math>15^{\circ} 45'</math></p> <p>Lot of battle <math>19^{\circ} 15'</math></p>	<p>The fourth Capricorn <math>12^{\circ} 45'</math></p>	<p>The sixth Pisces <math>11^{\circ} 14'</math></p> <p>Des. Node moon <math>21^{\circ}</math></p>

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This horoscope corresponds to the location of the stars for Adana on the 14<sup>th</sup> of October just after noon, which suggests that al-Ḥamzāwī himself was present in Adana at the moment of the conflict or was in the possession of *taqwīm* tables for this time and place. Timurbāy looks at Aries, for information on Azbak. Mars, the ruler (*ṣāḥib*) – i.e. the planet that thrives in – of Aries, is in the ascendant, Libra. This apparently means that the situation of the Ottoman army is not good. Again, Timurbāy does not go into detail here. The handbook however tells us that Mars rules Aries and Scorpio, but not Libra. On the other hand, the Moon is in conjunction with Jupiter, which seems to be

<sup>333</sup> Timurbāy, al-Ḥamzāwī, and 'Alī Ibn Abī al-Rijāl, "Mukhtaṣar Kitāb al-Bāri' fi Aḥkām al-Nujūm" (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 49 V.

fortunate for Azbak. Moreover, all seven of the planets are ‘*bi-khayr al-ṭālī*’ or on the ‘good’ side of the ascendant. All seven planets are in fact on the rising side of the horoscope, in the eleventh, twelfth and first three houses. Mars, the ruler of the seventh house – which is Aries, Azbak’s sun sign - is in conjunction with the Sun in the ascendant. Timurbāy states that this is a situation that happened twice in the year 890/1485 according to the author, but the first time Azbak did not witness it.

ووجدنا الكواكب السبعة في خير الطالع [...] تم في هذه السنة مرتين المرة الواحدة يكون فيها ازبك غير

شاهد لاتصال والمرة الاخرى يكون حاضرا مشاهدا لها

‘We located the seven planets in the goodness of the ascendant [...] This happened twice this year. One time Azbak was not approaching application and the other time he was present and approaching it.’<sup>334</sup>

Timurbāy uses the term ‘*ittiṣāl*’ here, which was used for applications. Probably he refers to the conjunction of Mars and the Sun, as Mars, the ruler of the house of Azbak, is in conjunction with the Sun in the ascendant at the moment for which the horoscope is drawn. As indicated in the handbook, the Sun and Mars reinforce one another, as the element associated with Mars is fire. In the first part of the handbook it was indicated that Mars represents combativeness and courage. The Sun represents vitality and will for power. In conjunction, these two represent the situation of Azbak and his army: powerful and ready for battle. This conclusion is not made explicitly by Timurbāy in the report, but by combining the report with a handbook that provides the keys for its interpretation, he lays out all the arguments without actually having to write them down. Instead of arguing for a causal link between the horoscope chart and the events discussed, Timurbāy literally lays them out next to each other as two different ways of reporting on the same reality.

In winter, Azbak went north to ʿAyntāb and sent an *amīr* to secure the submission of the Dhū al-Qādirid leader ʿAlā al-Dawla. ʿAlā al-Dawla promised his allegiance to the Sultanate of Cairo. However, an Ottoman ambassador was also sent to ʿAlā al-Dawla, asking the Dhū al-Qādirids to join forces with the Ottoman army in Qaramān or Rūm. ʿAlā al-Dawla would have replied that the Syro-Egyptian delegation

<sup>334</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bāri’ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 49V.

who visited him first had reported that peace between both armies could be attained. According to the chronicle of Ibn Iyās, ʿAlā al-Dawla promised to wait and see whether peace would be concluded between both parties and make his decision depending on the actions of the Syro-Egyptian army. This information is not mentioned in the report, which continues with the events of the 4<sup>th</sup> of the month Ṣafar 891/February 9, 1468, when the Syro-Egyptian troops actually marched upon the Ottoman forces in Adana, after a peace messenger sent by Azbak was rejected.<sup>335</sup> Just like in the first anecdote, the description of the events after the fourth of Shawwāl does not include a horoscope, but consists in a discursive overview of the events. So here too, the astrological interpretation does not include the events that could, from hindsight, be considered the most crucial in the conflict between the Ottoman and the Syro-Egyptian army. After the description of the horoscope, the report summarises:

ولما كان بتاريخ يوم الخميس رابع صفر سنة ٨٩١ فوض ازبك اتابك العساكر المصرية وقايدهم الاخر الى  
تمراز امير سلاح وارسله الى مدينه اذنة بالعساكر

‘When it was Thursday the fourth of ṣafar of the year 891 Azbak, Atābak of the Egyptian troops and their other leader, appointed Timrāz, the ‘*amīr* of arms’ (*amīr silāh*) as deputy and sent him to the city of Adana with the troops.’<sup>336</sup>

The amir took the troops to Adana and fulfilled his task :

‘التي كانت الخضم على اذنة’

‘which consisted in the defeat of Adana’<sup>337</sup>

What happened, Timurbāy adds, happened first and foremost because of ‘*Qadr al-Lāh al-ʿazīz al-qadīm*’ or ‘the power of God, the merciful and the Pre-existing’.<sup>338</sup>

<sup>335</sup> Har-El, *Struggle for Domination in the Middle East: The Ottoman-Mamluk War 1485-1491*, 133–51.

<sup>336</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bāri’ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 49V.

<sup>337</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bāri’ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 49V.

<sup>338</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bāri’ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13.

The news of the victory reached Azbak on the ninth of Rabī<sup>c</sup> al-Awwal in 891/March 15<sup>th</sup> 1486. What happened next, according to the report, was the counterattack led by the Ottoman *amīr* and son-in-law of sultan Bayezid Aḥmad ibn Hersek:

برز احمد بن هرسك قائد العساكر الرومية اوائل النهار فيردون المصرية لملاقاته وكان ازبك لما  
بلغه ان قائد الروم اسمه احمد وانا اسمي احمد غالب على اسمه فاقام على اللقاة تحت اللوا السلطاني  
[مع تمراز] وفوض اليه امر العساكر في تلك الساعة فقبض على احمد بن هرسك [...] وكان اذ  
ذاك حاضرا للوقعة الثانية ووقع الحكم كما تقدم

‘Aḥmad ibn Hersek, the leader of the Ottoman [Rūmiyya] troops came forth at the break of dawn; so the Egyptian [troops] moved on to confront him. And when [news] reached Azbak that the name of the leader of Rūm was Aḥmad – and my name is Aḥmad – a winner according to his name, he arranged a meeting under the Sultanic banner [together with Timrāz] and he claimed the command of the troops at this hour. Thus he took Ibn Hersek captive. And it was at this moment that Azbak was present at the second event and the judgement happened like it was laid out.’<sup>339</sup>

This part of the report offers a lot of interesting information. First, Timurbāy argues with al-Ḥamzāwī – from whom he copied the report – that Azbak decided to take the command of the battle upon him because of the name of the Ottoman commander: Aḥmad. This seems like an odd argument. However, both al-Ḥamzāwī and Timurbāy combined their practice of the science of the stars with an expertise in the science of letters (usually referred to as *‘ilm al-ḥurūf wa-l-asmā’* or the science of letters and names). In the next chapter of this dissertation, I will discuss a text written by al-Ḥamzāwī and copied by Timurbāy on exactly the topic of *‘al-ghālib wa-l maghlūb’* or *‘the victor and the vanquished’*. The terminology of the victor and the vanquished echoes the pseudo-Aristotelian work of the *“Sirr al-Asrār”* (*“Secret of Secrets”*) in which Aristotle explains to Alexander the Great how one can determine *‘the victor’* (*al-ghālib*) and *‘the vanquished’* (*al-maghlūb*) in a battle or conflict based on an analysis of the letters of the names of the leaders of the parties in battle.<sup>340</sup> It is remarkable how

<sup>339</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī’ fi Aḥkām al-Nujūm” (Cairo, 844/1490), Ms. Cairo (DAK), MM 13, fol. 49 R.

<sup>340</sup> Miklos Maroth, *The Correspondence between Aristotle and Alexander the Great* (Piliscaba (Hungary): The Avicenna Institute of Middle Eastern Studies, 2006), 2–9.



our copyist, who does not mention his own name anywhere in the manuscript except for the colophon, adds to this paragraph the remark that he himself was named Aḥmad too. This confirms again that not only the handbook, but also this report was copied by Timurbāy.<sup>341</sup> The last part of this case further reveals the context of the author of the text, Yūsuf Ibn Qurqumās al-Ḥamzāwī. In a similar vein, the text continues with a personal story of the author on how and why he drew this horoscope. It says:

ثم بعد بدهة من الزمان حضر قاصد صاحب الشرق الى صاحب مصر ونزل اعيان حلب وهو الامير  
 [اخي باك] فسأل عن طالع شخوص ازبك لما ابلغ الحكم المتقدم من اخواه اصحابه. فقال في ربي  
 دليل [علمته هنا]. فوضت عليه النصب الفلكية فنظر فيها وقال لم لا قلت إن عامة جند ابن هرسة  
 تمر بك لوجود صاحب الباهر وهي الزهرة في العقرب وببروج ثاني رفعا عطارد وزحل. فقلت قد  
 احتضرت في الحكم غير اطناب والادلة ظاهرة

‘Thereafter, after some time, an envoy from the ruler of the East came to the ruler of Egypt and stayed with the *aʿyān* of Aleppo. He is the *amīr* [Akhī Bāk]. And he asked about the rising of the ascendant for Azbak when he was informed about the aforementioned judgement by the brothers of his hosts. He said: In my opinion the indicator [I have learned about can be found here]. And he was given the chart of the stars. He looked into it and said: Why not? I said why haven’t you said that most of the army of Ibn Hersek marched past you due to the presence of the ruler of the oppressive planet, which was Venus, in Scorpio, while in the other signs both Mercury and Saturn were rising. I told him I had already prepared the judgement without exaggeration and the indications were clear.’

وكان قد سألتني بعض العيان من الامراء المتقدمين الالوف بالديار المصرية لما حضر اتابك ازبك الى  
 مدينة حلب المحروسة عن حال الفريقين [...] فقلت له قولا مختصرا ان المشهور بين الناس كثرة  
 عساكر الروم وانه لامقاومة لاحد منهم لكن ارى جميع الكواكب في خير الطالع ولم يكون واحد

<sup>341</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī’ fi Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 49V.

بجبر السابع فهذا دليل لقوة الطالع [...] وان السابع لا قوة له [...] وما اتفق اراده الله مع تحقيق عندي

ذلك وعلمته تقصنا

‘And one of the leading amirs of one thousand in Egypt had already asked me about the situation of the two parties when Atābak Azbak had arrived in the well-protected city of Aleppo. I told the short version of the story that the numerosity of the Ottoman troops is known among the people and that there was no resistance against one of them. I told them that I saw all of the planets in the goodness of the ascendant and not one of them in the goodness of the seventh, which was the indicator for the strength of the ascendant that the seventh house had no power at all. God wanted [to happen] what happened, irrespective of any research from me on the subject. I only study it.’<sup>342</sup>

This paragraph suggests that Yūsuf ibn Qurqumās al-Ḥamzāwī was consulted to cast horoscopes for a fellow *amīr*. This practical context may seem to oppose to the elitist preface written by Timurbāy. However, Timurbāy emphasises that the anecdotes (*nukāt*) of the text functioned as the means to bring the science of the stars to a broader public. The autobiographical interlude al-Ḥamzāwī gives as part of an anecdote could be seen as a kind of meta-example of this. The last sentences confirm this, as ‘God wanted [to happen] what happened, irrespective of any research from [al- Ḥamzāwī] on the subject.’ He only studied it.<sup>343</sup> Once again, the practice is suggested to be hermeneutical rather than causal.

#### 5.2.4.3. *The Battle Between Yashbak Min Mahdī and Shah Suwār*

The third and last anecdote is written on the last page of the last folio of the text, but concerns the event that happened first when considered chronologically. This fragment reports about the conflict between the Dhū al-Qādirid leader Shāh Suwār and the Sultanate of Cairo. More specifically, the location of the planets on the day of Shawwāl 10<sup>th</sup> 874/ April 12<sup>th</sup> 1470 is discussed here.

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<sup>342</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī’ fi Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 49 V.

<sup>343</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī’ fi Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 49 V.

## Historical Account

Dhū al-Qādir was a principality under the authority and protection of the sultan of Cairo at the frontier of the Sultanate between northern Syria and southeastern Anatolia. Situated in this strategically important area between the Sultanate of Cairo, the neighbouring principality of Qaramān and the Ottoman Sultanate, the Dhū al-Qādirids had ever since the mid-fourteenth century used their neighbours' rivalries to their own advantage.<sup>344</sup> On the date of this report, Monday the 10<sup>th</sup> of Shawwāl 874/ ca. April 12<sup>th</sup> 1470, the Sultanate of Cairo was in the midst of trying to cope with a revolt of one of the Dhū al-Qādirid rulers, Shāh Suwār, after initial victories on his part in 872/ ca. 1468 and 873/ ca. 1469. Shāh Suwār had deposed his brother Shāh Budāq, the former leader of the principality and renounced its ties of vassalage to Cairo in 872/ 1468. At that moment the Sultanate was under the leadership of sultan Khushqadam, who died before the expedition he had planned could leave Cairo. After a short period of conflict around the succession of Khushqadam, Qāyrbāy became the new sultan and reinitiated his predecessor's campaign. The revolt of Shāh Suwār did not only prove difficult to suppress, but also provided food for thought for other potential rebels in the area. 'So unsettling were they', states Carl Petry in his monograph on Qāyrbāy's reign, 'that rumors of supernatural forces converging the regime proliferated.'<sup>345</sup> A first campaign led by atābak Jānibak Qulaqsīz drove Shah Suwār out of ʿAyntāb and was continued under the leadership of Azbak Min Ṭuṭukh, who was at that time governor of Damascus. However, shortly after this first victory, the Dhū al-Qādirid leader lured the Egyptian army into an ambush and re-occupied the city of ʿAyntāb, capturing several important *amīrs*. Azbak Min Ṭuṭukh led the army back to Aleppo and reported the defeat to the sultan in Cairo. At this point, preparations were made for a large military expedition. It took the Sultanate several months to collect the money and to select and prepare the troops for battle, until finally in 873/1469 a campaign led by

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<sup>344</sup> Carl F. Petry, *Twilight of Majesty: The Reigns of the Mamluk Sultans al-Ashraf Qaytbay and Qansuh al-Ghawri in Egypt* (Seattle: University of Washington Press, 1993); Barbara Kellner-Heinkele, "The Turkomans and Bilad Al-Sham in the Mamluk Period," in *Land Tenure and Social Transformation in the Middle East*, ed. Tarif Khalidi (American University of Beirut Press, 1984), 169–80; Margaret L. Venzke, "The Case of a Dulgadir-Mamluk Iqtā': A Re-Assessment of the Dulgadir Principality and Its Position within the Ottoman-Mamluk Rivalry," *Journal of the Economic and Social History of the Orient* 43, no. 3 (2000): 399–474.

<sup>345</sup> Petry, *Protectors or Praetorians: The Last Mamluk Sultans and Egypt's Waning as a Great Power*, 44 Petry especially refers to the work of two contemporary historians when making this statement. The first one is al-Jawḥarī al-Sayrafī's (d.900/1496) "Inbā' al-Ḥaṣr fī abnā' al-ʿasr" and the second one is ʿAbd al-Bāsiṭ al-Malaṭī's (d. 920/1514) "al-Rawḍ al-Bāsim fī Hawādith al-ʿUmr wa ʿl-Tarājim" here.

Azbak was sent out to Syria. Despite initial successes, this expedition would in the end fail too. At the beginning of 874/mid 1469, the governor of Malatya managed to drive off the Dhū al-Qādirid army from the town again. An emissary from Shah Suwār was sent to the citadel in Cairo to negotiate a truce, but Qāyrbāy rejected.<sup>346</sup> It is at this moment in the conflict that the last report in manuscript MM13 can be situated. After a difficult period, a new expedition was planned under the sultan's *dawādar* Yashbak Min Maḥdī. The expedition left Cairo on the fourth of Shawwāl and Yashbak chose to proceed slowly and lavishly in order not to tire the troops and, according to contemporary sources, to impress the local population of the area. At the beginning of the expedition, this horoscope can be situated: on the 10<sup>th</sup> of Shawwāl, when Yashbak had just set out with his army for what eventually ended up to be the long last phase of the conflict.<sup>347</sup> It was only in 877/1473 that Yashbak Min Maḥdī, the sultan's *dawadār*, finally overthrew Shāh Suwār's troops. After this, the streets of Cairo were said to have been decorated with caricatures of the defeated ruler as a public display of the power of the sultan. A public display that was, according to contemporary historians, extraordinary in comparison with previous ones.<sup>348</sup> The events discussed in the last anecdote report about the period between 874/1470 and 877/1473.

### **Astrological Account**

This anecdote does not include a schematically drawn horoscope, but the location of the planets is discussed in detail discursively. The most important part of the description goes as follows:

خروج يشبك من مهدي الدوادار لقتال شهسوار صاحب الالبستين ومرعش وكان ذلك يوم الاثنين  
عاشر شوال في سنة ٨٧٤ هجرية وكان [في] وقت طلوع الشمس والطلع الحمل ك درج والشمس  
بالحمل ط ما والزهرة بالحمل ط ل ط وعطارد مقيم للرجوع بالشور د د وزحل بالشور د ح والقمر  
محاسداً لسهم السعادة ب ب ه والمشتري بالسنبلة راجع يونز وسهم القتال بالسابع ه ر وصاحبه بالطلع

<sup>346</sup> Petry, *Twilight of Majesty: The Reigns of the Mamluk Sultans al-Ashraf Qaytbay and Qansuh al-Ghawri in Egypt*, 57–72.

<sup>347</sup> Petry, *Protectors or Praetorians*, 68–71.

<sup>348</sup> Petry, *Protectors or Praetorians*, 44.

وسهم الغيب بالقوس **نوبو** [...] والمريخ بالحوت **ومط** والنوبهر بالطالع والطالع الحمل وصاحبه المريخ والقمر كونه قبل الامتلاء والمنصرف عن القمر وهو الشمس وهي ايضا نبرة النوبة وربها شرف الطالع وممثلة الاولى دليل الطالب وهو الميزان وصاحبه الزهرة والشمس كونه قبل الامتلاء والمتصل به التتم وهو الزحل وايضا رب شرف السابع وممثلة الاولى دليل المطلوب وهو شهسوار

Yashbak Min Mahdī, the *dawadār* left for battle against Shah Suwār, the lord of Elbistan and Mar<sup>c</sup>ash. This was on Monday the tenth of Shawwāl of the year 874 in the hijra calendar, at sunrise. The ascendant was Aries  $20^{\circ}$  and the Sun was in Aries at  $19^{\circ} 41'$  and Venus was in Aries at  $19^{\circ} 39'$ . Mercury was in retrograde in Taurus at  $4^{\circ} 14'$ . Saturn was in Taurus at  $14^{\circ} 8'$  and the Moon was in contact with the lot of fortune a b a h. Jupiter was in Virgo [in retrograde] at  $16^{\circ} 57'$  and the lot of battle was in the seventh house at  $5^{\circ} 17'$  while its ruler was in the ascendant. The lot of separation was in Sagittarius  $16^{\circ} 16'$  [...]. Mars was in Pisces  $6^{\circ} 49'$  and the ascending node of the Moon was in the ascendant. The ascendant was Aries and its ruler is Mars. The Moon was in a stage before its completion and opposite the Moon was the Sun, which was also in a stage before her completion. And the lord of the east of the ascendant, and its first stage, was the indicator for the requesting party, that is Libra and its ruler is Venus. The Sun, in its stage before its completion, in full conjunction with Saturn and with the lord of the east of the seventh house in the first completion is the indicator for the requested party, and that is Shah Suwār.<sup>349</sup>

This situation proves to be to the advantage of Yashbak, Timurbāy reports with al-Ḥamzāwī, mainly because:

وجدنا خمسة من السيارة بنجر الطالع وهي المريخ والشمس والزهرة وعطارد وزهل وهذه عون للطالع فهذه ادلة تدل علو قوة الطالب وهو يشبك

<sup>349</sup> Timurbāy, al-Ḥamzāwī, and 'Alī Ibn Abī al-Rijāl, "Mukhtaṣar Kitāb al-Bārī ' fi Aḥkām al-Nujūm" (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 99V.

‘We found five of the planets on the goodness of the ascendant, which are Mars, the Sun, Venus, Mercury and Saturn. These are signs indicating the sublime power of the claimant, who is Yashbak’.<sup>350</sup>

About Shah Suwār on the other hand, the author tells us that:

ثم نظرنا فوجدنا السابع الميزان وفيه الزهرة منحوسة [...] ولمقابلة رب بيته الزهرة منحوسة بالوبال  
[...] ووجدنا من السيارة كوكبان بخير السابع وهما المشتري منحوسا بالوبال والرجوع وهو مقابل المريخ  
بالبرجية [...] ووجدنا [القمر] في الميزان وهو متوسط الحال بالنسبة الى السابع لو كان طالعا لان  
فيه [...] والتربيع لرحل رب بيت وباله [...] فهذه ادله تدل على الاوباء للمطلوب وهو شمسوار وان جنده  
واعوانه يغدون عنه بعضهم بالمحاربة وبعضهم بالخديعة

‘After this, we looked and found Libra to be the seventh house with Venus in it [...] and for the opposition between the lord of its house - Venus the unfortunate - we found two of the planets in the good part of the seventh house: that are Jupiter, who is unfortunate with evil consequences and in retrograde and opposite on the ecliptic to Mars. We located the Moon in Libra and she is in an neutral situation with regard to the seventh house and she is rising in it she is [...] and in square with Saturn, the ruler of the house of evil. This is the indication for the evil that came upon the requested party, which is Shah Suwār, so his soldiers and allies left him, some because of conflict, others out of treachery.’<sup>351</sup>

The report does not discuss the exact situation in which the horoscope is drawn, but we know from historiographical sources that Yashbak Min Mahdī was at this moment in time still travelling toward Aleppo with his troops. The army left Cairo on the fourth of Shawwāl 874/April 6<sup>th</sup> 1470 but proceeded with leisure in order to arrive at the frontier in full capacity. The first confrontation between the two parties would only take place in 875/1470, when Īnāl al-Ashqar, an *amīr* who had been sent to the area earlier, helped Yashbak by trying to lure Shah Suwār out of hiding.<sup>352</sup> This long, time-

<sup>350</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī’ fi Ahkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 99V.

<sup>351</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī’ fi Ahkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 99V.

<sup>352</sup> Petry, *Twilight of Majesty: The Reigns of the Mamluk Sultans al-Ashraf Qaytbay and Qansuh al-Ghawri in Egypt*, 68–70.

consuming strategy lingered on for a year, until the final battle between the two armies was fought, which is discussed at the end of the anecdote and at the same time of the entire manuscript:

فوقع من يشبك وشهسوار بارض [خموص] حرب يوم الاثنين تامن عشر في جمدا الاول سنة ٨٧٦ وكان القمر بالعقرب على يدين الزهرة وبتثليث المريخ واستم الحرب في وقت الظهيرة الى بعد العصر [...] شهسوار وقتل من جمعه جميع كبير وقال بينما الليل وخلص شهسوار في يوم الثلاثاء رابع عشر ذي الحجة المحرم في سنة ٨٧٦ هجرية قبض على شهسوار

And a war between Yashbak and Shah Suwār took place in the area of [Khamūd?] on Monday the 18th of Jumādā al-awwal in the year 876. The Moon was in Scorpio very close to Venus and [in trine with] Mars. The war continued from noon until after evening fell, Shah Suwār [...] and many of this troops were killed. It was said that when it was night and Shah Suwār gave up on Tuesday the 14th of the month Dhū al-Hijja in the year of 876 in the hijra calendar, he was taken capture.<sup>353</sup>

As mentioned, the manuscript does not contain a schematised horoscope for this situation. When we put the values of the text in a grid similar to the first two horoscopes, such a horoscope would look like this:

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<sup>353</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī ‘ fi Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 99V.

<p>المريخ (بالحوت) ومط</p>		<p>وسهم الغيب (بالقوس) نونو</p>
<p>الطالع الحمل ك الشمس يط ما الزهرة يط لط</p>		<p>سهم القتال ه بر</p>
<p>عطارد (بالثور) د يد زحل (بالثور) يدح القمر يط به</p>		<p>المشتري (بالسنبله) يونر</p>



Mars (in Pisces) 6° 49'		Lot of separation (in Sagittarius) 16° 16'
The ascendant Aries 20° The Sun 19° 41' Venus 19° 39'		Lot of Battle 5° 17'  The moon
Mercury (in Taurus) 4° 14' Saturn (in Taurus) 14° 8' The moon 12° 15'		Jupiter (in Virgo) 16° 57'

After this, the manuscript summarises how Shah Suwār was first brought to Damascus, where he was made to wear a black robe. Afterwards he was brought to Cairo in 877/1473, where he was eventually executed (Timurbāy uses the verb *istashhada*: ‘he became a martyr’). Finally, this report and the manuscript in its entirety ends with the citation of its source:

‘نقل ذلك من خط مولف الحساب الجمال يوسف ابن قرقماس الحمزاوي.’

‘This was handed down from the writing of the author and mathematician al-Jamāl Yūsuf ibn Qurqumās al-Ḥamzāwī.’<sup>354</sup>

<sup>354</sup> Timurbāy, al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī‘ fi Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 99V.

## Conclusion

In this chapter, I have analysed manuscript Cairo (DAK) MM 13 as a text and artefact that bears witness to a late fifteenth century practice for which the terminology of *‘ilm aḥkām al-nujūm* was used, in contrast to the practices in part two of this dissertation. In doing so, I have argued that the difference between the practices in the former part and these practices, was not so much whether they were astrological or astronomical in the present day sense, but rather the view their practitioners had on knowledge. In this *mukhtāṣar* of the astrological handbook authored by Ibn Abī al-Rijāl that was made in fifteenth century Cairo, the copyist Aḥmad ibn Aḥmad Timurbāy presents his discipline as a form of an ‘ideal’ science of the stars: a science that looks beyond what is visible and aims to get a glimpse of the divine truth. This is combined with an elitist view: *‘ilm aḥkām al-nujūm* is a discipline for the most intelligent scholars only. On the other hand, it had to be made accessible to the wider public – albeit guided by a small elite of scholars. This elitist but – in Gardiner’s terminology – ‘post-esotericist’ tendency is visible in the handbook through Timurbāy’s use of anecdotes, taken from the work of his contemporary Yūsuf Ibn Qurqumās al-Ḥamzāwī. By applying the handbook to contemporary cases of conflicts with the Aq-Quyūnlū, the Dhū al-Qādirids and the Ottomans, Timurbāy illustrates the need and use of the discipline. In the second report, the discussion of future-telling and its place within the discipline comes forward in the form of an anecdote of al-Ḥamzāwī, but the copyist keeps the references of future-telling to a minimum and emphasises that the goal of this practice is, in the first place, to get a better understanding of the universe created by God by means of the stars as the ‘shining proofs’ (*barāhin sāṭi‘a*) they are. Furthermore, this work contains one small reference to the significance of names, when Aḥmad ibn Hersek is discussed. The practice of *‘ilm al-ḥurūf wa-l-asmā’* or the science of letters and names however proves to be more strongly related with *‘ilm aḥkām al-nujūm* than this reference suggests. In the next chapter, I will discuss how the view expressed here interweaves both disciplines within a broader Neopythagorean framework of occult sciences.

## Chapter VI: The Science of Letters and Numbers

In this chapter, I will situate the view on the science of the stars expressed in ms. Cairo (DAK) MM 13 within the broader intellectual framework within which Yūsuf Ibn Qurqumās al-Ḥamzāwī and Aḥmad ibn Aḥmad Timurbāy worked. I will do this using another work written by al-Ḥamzāwī and copied by Timurbāy. The work discussed here bears the title “*Al-Durr al-Maṭlūb fī Sirr al-Ghālib wa-l-Maghlūb*” (“*The Requested Pearl on the Secret About the Victor and the Vanquished*”) and treats the possibility of analysing the outcome of wars and conflicts through an alphanumerical analysis of the names of the commanders in battle. This alphanumerical analysis is framed within a lettrist view that links it to a Neopythagorean metaphysics in which number is the basic principle. Treating the same as well as other conflicts as have been discussed on the basis of ms. Cairo (DAK) MM 13 in the last chapter, these manuscripts – an autograph by al-Ḥamzāwī and a copy by Timurbāy – allow for a study of the links between this practice and that of the science of the stars. This link, it will be argued, can be found in the Neopythagorean ideology of the interregional network of scholars who identified themselves as *ikhwān al-ṣafā*. Through the appropriation of the so-called rational sciences in religious sciences, and a subsequent mathematisation and ‘sacralisation’ of occult sciences, it will be argued, the latter gained importance.

More concretely, I will discuss this treatise here in the light of Yūsuf Ibn Qurqumās al-Ḥamzāwī and Aḥmad ibn Aḥmad Timurbāy’s view on the sciences more general, in order to situate their views on the science of the stars. The latter was for these scholars derivative of the highest two of sciences: the science of mathematics and lettrism on the one hand and the supreme science of religion on the other. In the second half of this chapter, the concrete use of this science of mathematics and lettrism will be discussed via the principle of ‘*al-Ghālib wa-l-Maghlūb*’ or ‘The Victor and the Vanquished’, by way of which the ‘victor’ and ‘vanquished’ party of a conflict or battle could be indicated through a lettrist analysis of the names of the commanders in battle. This principle is, just like it was the case in ms. Cairo (DAK) MM 13, made accessible through the use of examples, discussed in section 6.3.2. of this chapter.

## 6.1. The Manuscripts

In the case of “*al-Durr al-Maṭlūb*”, we have both the autograph of the manuscript written by Yūsuf ibn Qurqumās al-Ḥamzāwī and the copy written by Aḥmad ibn Aḥmad Timurbāy. The autograph is held in the Topkapı Sarayı Museum Library in Istanbul and bears shelf mark Ahmet al-Thālith 2485, 6, henceforth mentioned as ms. Istanbul (Topkapı Sarayı Museum Library) Ahmet III 2485, 6.<sup>355</sup> The text is part of a fifteenth century multiple text manuscript of texts on similar topics, of which the other ones will not be discussed here.<sup>356</sup> Ms. Istanbul (Topkapı Sarayı Museum Library) Ahmet III 2485, 6 consists of 11 folios and has a colophon in which the author, Yūsuf al-Ḥamzāwī acknowledges his authorship and dates his writing to the first days of the month Muḥarram in the year of 894/ December 1488. The manuscript is quarto sized and contains no marginal notes although the margins are wide enough for something to be written in them. The layout of the text is very structured and clean and titles or keywords are written in red ink.<sup>357</sup> The copy, made by Timurbāy in Cairo, is less neatly written and is part of a *majmūʿa* compiled by the copyist and currently held in the Real Biblioteca del Monasterio de San Lorenzo de El Escorial in Spain where it bears the shelf mark Arabe 922,3.<sup>358</sup> The copy of “*Al-Durr al-Maṭlūb*” is part of a quarto sized manuscript that contains several marginal notes and a colophon that dates it to the year 904/1499. Except for this text, it also contains a commentary on Ptolemy’s *Centiloquium* - a collection of a hundred aphorisms on the influence of the planets on Earth - and a copy of a treatise on the same topic by ʿUmar ibn al-Farruḥan al-Ṭabarī (fl. 145/762–196/812). The latter was a Persian scholar who translated texts from Pahlavi to Arabic at the court of the Abbasids.<sup>359</sup> All three of the texts have notes in their

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<sup>355</sup> For a facsimile of these manuscripts, cf. *infra* pp. 273-84 and pp. 285-9.

<sup>356</sup> Timurbāy and al-Ḥamzāwī, “*Al-Durr al-Maṭlūb Fi Sirr al-Ghālib Wa-l-Maghlūb*” (Cairo, 904/1499), Ms. San Lorenzo de El-Escorial (Real Biblioteca del Monasterio de San Lorenzo de El Escorial) Arabe 922/3. The other texts concern treatises on *ʿilm aḥkām al-nujūm* that are similar to but a lot shorter than the *mukhtaṣar* of Ibn Abī al-Rijāl discussed in the last chapter and reveal a similar view on the discipline as an ideal science of the stars. These texts provide interesting material for further study on the individual scholar Ahmad ibn Ahmad Timurbay. As the goal of this chapter is to give a more general view of the practices of the authors, I will not discuss these other texts in detail.

<sup>357</sup> al-Jamālī Yūsuf ibn Qurqumās al-Ḥamzāwī, “*Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb*” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6.

<sup>358</sup> For a facsimile of this manuscript, cf. *infra* pp. 269-272.

<sup>359</sup> David Pingree, “ʿUmar Ibn Al-Farrukhān al-Ṭabarī,” in *Complete Dictionary of Scientific Biography* (Encyclopedia.com, 2020), <https://www.encyclopedia.com/science/dictionaries-thesauruses-pictures-and-press-releases/umar-ibn-al-farrukhan-al-tabari>.

margins by the copyist himself, which was also the case for ms. Cairo (DAK) MM 13. Although the other two texts provide interesting material for further research, I will not focus on them here. The third text on the other hand, gives an idea of the broader framework in which these scholars positioned their practice of *‘ilm aḥkām al-nujūm*. This will be the main subject of this chapter.

## 6.2. The *Malik* of Science and his *Wazīrs*

In this treatise, al-Ḥamzāwī writes that he wanted to bring to attention something about which, he argues, there was a lot of misunderstanding in his age. In the introduction to the work, he states:

لما رأيت أهل زماننا يحتدوا عن أسرار الغالب من الملوك لما ضمتهم الحق وغدتهم الفن والاكثر منهم لا يقف فيه على صواب فوضعت لهم هذا الكتاب يستمد في برقه اللامع ونوره الصادع وسهله الطالع فادس افكار كل قابيس او فارد بالاسم الاشهر بعد ان دلت بفواتح اياته الخاتمة لصدور [...] على واضعه متوجة او ايل صدورها بالاسم الشريف ١٢ ظهر تم وسمته بالدرر المطلوب في سر الغالب والمغلوب اذ هو عمل عظيم وضعه العلاما وتكلم به الفضلا

‘When I saw the people of our times neglecting the correctness of the secrets of the victorious (*al-ghālib*) among the rulers when I brought them the truth and nourished them with the art, and when most of them did not agree on its correctness, I placed before them this book from which the famed name is derived through its bright lightning, dazzling light, and its rising plain. I have inserted the thoughts of every thinker and expert, after having been indicated by the openings of its concluding verses for [or since] its [...] on the one placing it, emerging to crown the beginnings of its emergence with the noble name . It was completed in 12 folios then I gave it the title “*al-Durr al-Maṭlūb fī Sirr al-Ghālib wa-l-Maghlūb*”. This is a big work about which the scholars have written and about which the most eminent among us are talking.’<sup>360</sup>

<sup>360</sup> al-Ḥamzāwī, “*Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb*” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library ), Ahmet III 2485,6.

As such, al-Ḥamzāwī wants to introduce the reader to ‘*Sirr al-Ghālib wa-l-Maghlūb*’ or the secret of the victor and the vanquished. This expression refers to a popular motive that comes from the pseudo-Aristotelian work titled “*Sirr al-Asrār*” or “*The Secret of Secrets*”, known in the Latin tradition as ‘*Secretum Secretorum*’. “*Sirr al-Asrār*” is a treatise that circulated under Aristotle’s name, although it does not actually go back to a work written by the Greek philosopher, or to any known Greek work. The text is extant in a lot of different versions in which the alphanumerical method is appropriated by copyists in ways benefitting their own circumstances. The oldest of these manuscripts is an epistolary work bearing the title “*Kitāb al-Siyāsa fī Tadbīr al-Ri’āsa*”. In the latter work, ‘*sirr al-asrār*’ is the topic discussed in the final part. “*Kitāb al-Siyāsa*” was written as though it was a letter of advice on an entire range of diverse political, moral and dietary topics from Aristotle to his pupil Alexander the Great who was at that time campaigning in Persia.<sup>361</sup> The part titled *Sirr al-Asrār* is the part of this work that concerns magic. Here, as Saif indicates, magical theory is expressed in terms of astral agency.<sup>362</sup> One among the many topics discussed is ‘*Sirr al-Ghālib wa-l-Maghlūb*’ or the secret art of indicating the ‘victor’ and the ‘vanquished’ in a battle or military campaign on the basis of an analysis of the names of the leaders of the fighting parties. The pseudo-Aristotelian work became a very popular treatise during the medieval and Renaissance period and was copied and adapted frequently. The work circulated both in Arabic and in Latin translation.<sup>363</sup> Al-Ḥamzāwī does not copy this work, but he refers to it implicitly, by using its terminology. One time, in the beginning of the work, a more explicit reference is made when the scholar writes:

وبرهن على تحقيق الحكماء خصوصًا في كتاب السياسة الذي رسمه اريسطوطاليس للاسكندر ذي

القرنين تلقاه عن الفاضل ارشميدس وفيثاغوراس

<sup>361</sup> ‘Abd al-Rahmān Badawī, *Al-Uṣūl al-Yunāniyya Li-l-Nazariyyāt al-Siyāsiyya Fī al-Islām*, Dirāsāt Islāmiyya 15 (Cairo: Maṭbaqat Dār al-Kutub al-Masriyya & Maṭbaqat al-naḥḍa, 1954), 152–55.

<sup>362</sup> Saif, *The Arabic Influences on Early Modern Occult Philosophy*, 36.

<sup>363</sup> Badawī, *Al-Uṣūl al-Yunāniyya Li-l-Nazariyyāt al-Siyāsiyya Fī al-Islām*, 69 & 152–55; Mahmoud Manzalaoui, “The Pseudo-Aristotelian *Kitāb Sirr al-Asrar*: Facts and Problems,” *Oriens* 23 (1974): 146–257; Maroth, *The Correspondence between Aristotle and Alexander the Great*; Steven J. Williams, *The Secret of Secrets: The Scholarly Career of A Pseudo-Aristotelian Text in the Latin Middle Ages* (Ann Arbor: The University of Michigan Press, 2003); Saif, *The Arabic Influences on Early Modern Occult Philosophy*, 36–37.

‘It was on the basis of the verification of the ancient scholars, especially in the Book on Politics that Aristotle wrote for Alexander, the one with the two horns, transmitting it from the eminent Archimedes and Pythagoras.’<sup>364</sup>

Interesting here, is al-Ḥamzāwī’s statement that Aristotle transmitted this information from Archimedes and Pythagoras. This agrees with the epistemology he will defend throughout this text, which, I argue, is Neopythagorean in outlook. Neopythagoreanism became popular in the Hellenistic period and Late Antiquity and was especially widespread in the early modern Islamicate world. Central to this philosophy was the number as a metaphysical principle. Muslim Neopythagorean philosophers generally argued that the essence of all things created by God could be grasped through mathematics. It is however often emphasised that this does not mean that God created the world according to mathematical principles, but rather that people – and more specifically educated scholars – could grasp reality through this discipline.<sup>365</sup> Neopythagoreanists generally considered the ancient Greek philosopher Pythagoras as the most important figure in classical thought. Even Aristotle, as expressed here by al-Ḥamzāwī, is said to have based his ideas on Pythagoras’ work. In the next three sections I will contextualise this Neopythagoreanism within the context of the late medieval and early modern Islamicate world. In 6.2.1. I will first discuss how the ‘occult sciences’ were considered part of the natural sciences in the medieval period. Thereafter, I will discuss how, at the end of the fifteenth century, Persian, Turkish and Arabic texts show a shift towards what Melvin-Koushki refers to as a ‘*mathematisation*’ of natural sciences through the science of letters. Thirdly, in section 6.2.3. I will elaborate on the notion of a ‘*sacralisation*’ of these mathematised occult sciences.<sup>366</sup>

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<sup>364</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library ), Ahmet III 2485,6, fol. 2V.

<sup>365</sup> Anna Izdebska, “The Pythagorean Metaphysics of Numbers in the Works of the Ikhwān Al-Ṣafā’ and Shahrastānī,” in *Pythagorean Knowledge from the Ancient to the Modern World: Askesis, Religion, Science*, ed. Almut-Barbara Renger and Alessandro Stavru, vol. 4, Episteme in Bewegung: Beiträge Zu Einder Transdisziplinären Wissensgeschichte (Wiesbaden: Harrasowitz Verlag, 2016), 361–62.

<sup>366</sup> Melvin-Koushki, “Powers of One: The Mathematicalization of the Occult Sciences in the High Persianate Tradition.”

### 6.2.1. *The Naturalisation of Occult Sciences*

As shown clearly in recent research on the Persian and Turkish Islamic world, the post-Mongol, early modern period was a period in which the occult sciences flourished. What I call the occult sciences are a group of sciences that are based on the presumption that part of reality is hidden and requires unraveling in order to understand oneself and the world. ‘Occult’ here corresponds to the Arabic-Persian terminology of *khafī*, or the equally often used term of *gharīb* (strange, exceptional). In this text, as in other sources from the period of the fourteenth century on, the indicator ‘*gharīb*’ starts to denote ‘exceptional’ or ‘special’ rather than the more negatively connoted ‘strange’. This evolution was visible in contemporary classifications of the sciences, as has been studied by Melvin-Koushki. He has shown that, in at least two influential classifications of science in the encyclopaedic tradition from this period, the occult sciences are considered to have been an integral part of the natural sciences. The

first one is “*Irshād al-Qāṣid ilā Asnā l-Maqāṣid*”, written by the physician and alchemist Ibn al-Afkānī (d. 749/1348) in Cairo. The second classification circulated widely among Persian-speaking scholars, namely *Nafāyis al-funūn fī ‘arāyis al-‘uyūn* written by Shams al-Dīn Muḥammad Āmulī (d. 753/1352) under Ilkhanid rule.<sup>367</sup>

This development, I argue, has to be considered in the light of the ‘appropriation and subsequent naturalisation’ of the so-called rational sciences, posited by Sabra and discussed in the first part of this dissertation.<sup>368</sup> Sabra argued that the ‘rational sciences’ (*al-‘ulūm al-‘aqliyya*) were increasingly being appropriated by scholars of the traditional Islamic sciences in the middle period, to the extent that they eventually got ‘naturalised’ and became part of Islamic traditional sciences in the standard ‘curriculum’ – if there ever was any.<sup>369</sup> I believe that it is in this same movement that the occult sciences - as a part of natural sciences that dealt with the invisible parts of nature - circulated too.<sup>370</sup> This gave way to classifications of the sciences such as the

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<sup>367</sup> Melvin-Koushki, “Powers of One: The Mathematicalization of the Occult Sciences in the High Persianate Tradition.”; Melvin-Koushki, “Is (Islamic) Occult Science Science?”

<sup>368</sup> Sabra, “The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam: A Preliminary Statement.”, 223–43.

<sup>369</sup> A.I. Sabra, “The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam: A Preliminary Statement,” 224.

<sup>370</sup> Whereas it is visible in the late medieval period, the naturalisation of the Occult Sciences is a process that started earlier in the Islamic world. Liana Saif emphasises the importance of this movement for the 9th to 11th century in particular, cf. Liana Saif, “From Ġāyat Al-Ḥakīm to Šams al-Ma‘ārif: Ways of Knowing and Paths of Power in Medieval Islam,” *Arabica*, no. 64 (2017): 297–345.



mentioned ones and made it possible for aspects of these practices, to become an integral part of the common education in the Sultanate. Further research of the immense amount of unstudied and even unclassified manuscripts from this period will hopefully shed more light on this. Until this is done, this claim cannot but remain an educated guess.

As discussed in chapter six, the science of the stars had such an occult subdiscipline too: a ‘real astronomy’ that dealt with the invisible side of the stars. This is again expressed by al-Ḥamzāwī in the following paragraph:

[إعلم] ان الحروف وان كانت في الصور النفسانية لكنها خزان الله اودع فيها اسراراً شريفة واثاراً لطيفة من الاعداد حال التركيب والافراد فظهر من ارواحها الروحانية بواسطة صورها الجسمانية اوجد الله بها العالم وجعلها اعلام الاعلام واسرار الاحكام

‘Know that the letters, although they are inside the forms of the soul, are the treasures in which God placed noble secrets and subtle signs, [that is] some of the numbers whether in composition or in singles, related to the state of their [i.e. the beings’] consistence. Their individual parts show themselves through their immaterial spirits by means of their bodily forms in which God brought into being the world and in which He put the signs there and made them the signs of the stars/signs and the secrets of judgements.’<sup>371</sup>

As discussed by Gardiner, the expression of *a‘lām al-a‘lām* that has been used here is polysemic:

‘[A]n a‘lam can be a star or asterism as well as a sign or letter, such that the phrase can be the “sign of a sign,” “the sign of a star,” “the star of a letter”’<sup>372</sup>

In this paragraph written by al-Ḥamzāwī, the author thus expresses the idea that in reading and interpreting the signs of the stars we get an indication of the numbers that constitute their form, a number that is referred to in the language we use to talk about these stars. Their form (*ṣūra*) is the ideal, non-material part in them that makes up their essence and that keeps the parts of their body together as a principle of unity. This

<sup>371</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 62R. I want to thank Liana Saif for her help with this translation.

<sup>372</sup> Noah Gardiner, “Stars and Saints The Esotericist Astrology of the Sufi Occultist Ahmad Al-Buni,” *Magic, Ritual, and Witchcraft*, Spring 2017, 52.

is not only the case for the stars, but for all existing things. Letters are used to name all existing things, that is, all combinations of form and matter. In this way, letters give us an idea of the number specific to the essence of a being and are thus a part of the ideal world inserted in matter. This ideal form inside matter is invisible, and its study can thus be called an occult science. The exact way in which this works is described by al-Ḥamzāwī' through the example of a magnet:

وقد نشاهد المغناطيس يجذب الحديد بخاصية كامنية فيه لان العدد من الصور العقلية ولفظهم في انوار العقول وانه مادته امتدح به سبحانه فقال "وكفى بنا حاسبين" <sup>373</sup> الا له الحكم وهو اسرع الحاسبين <sup>374</sup> وانه سريع الحساب اذا العقول اقرب العوالم اليه والطبيعة ابعد العوالم عنه  
 'We may witness a magnet pulling iron towards it by a hidden property in it because number is among the intellectual forms and its expression is in the lights of the intellects, which is an extension from the Glorified [i.e. God]. He said: "it is sufficient that we are accountable". "There is no judgement but His, He is the swiftest in taking account." And the account is made up quickly if intellects are close to the signs and (material) nature is held far from them. <sup>375</sup>

In their view on numbers, letters and forms, al-Ḥamzāwī and Timurbāy remind us of the view of the tenth century *Ikhwān al-ṣafā'* after whom the fourteenth and fifteenth century movement named itself. Nader El-Bizri refers to the tenth century *ikhwān's* view on numbers, which appears similar to the view expressed here, as a combined arithmology and arithmetic. The combination of these was based on these scholars' microcosm-macrocosm analogy. Where they considered the human being to be a microcosm (*al-insān ʿālam ṣaghīr*), they considered the universe on the other hand to be a 'macrohuman' (*al-ʿālam insān kabīr*). The reality of the invisible realm, or the immaterial ideas, they argued, could not be expressed discursively. In order to do this, numbers were used. Numbers, they write, 'assist

<sup>373</sup> Qur'ān, sūrat al-anbiyā', āyat 47: "وَنَضَعُ الْمَوَازِينَ الْقِسْطَ لِيَوْمِ الْقِيَامَةِ فَلَا تُظْلَمُ نَفْسٌ شَيْئًا وَإِنْ كَانَ مِثْقَالَ حَبَّةٍ مِنْ خَرْدَلٍ أَتَيْنَا" <sup>373</sup> بها وكفى بنا حاسبين" This verse refers to the moment on the Day of Ressurrection when people will be judged on whether they have taken the signs of God (brought to them through revelation) into account throughout their lives.

<sup>374</sup> Qur'ān, sūrat al-anʿām/6, āyat 62: ثُمَّ رُدُّوا إِلَى اللَّهِ مَوْلَاهُمُ الْحَقُّ أَلَا لَهُ الْحُكْمُ وَهُوَ أَسْرَعُ الْحَاسِبِينَ

<sup>375</sup> al-Ḥamzāwī, "Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb" (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 2V.

in grasping the multitude that issues ontologically from the One'.<sup>376</sup> Whereas one cannot discuss the invisible real directly, al-Ḥamzāwī seems to state here that this is possible indirectly, because God connected the numbers to letters. An analogy is drawn between the relation of numbers to letters and that of the spirit (*al-rūḥ*) to the intellect (*al-ʿaql*). As such, the author presents his intellectual endeavours as a way to gain insight into the Divine within the limits of human cognition. Language thus becomes a way to discuss mathematics and mathematics provides the possibility to grasp the divine, immaterial realm so far as this is humanly possible. I will elaborate on this topic in section 6.2.3. below.

### 6.2.2. Neopythagoreanism: A Mathematization of the Occult Sciences

Towards the end of the fifteenth century, Melvin-Koushki argues, the Islamic world witnessed an increasing tendency to 'mathematise' occult sciences, which can be seen as in the evolution from an Avicennan classification towards a Neopythagorean classification of the sciences. While the first classifies the occult sciences as natural sciences, the latter mathematizes the natural sciences. In a Neopythagorean classification, the mathematical sciences are the highest sciences in the hierarchy of knowledge.<sup>377</sup> This evolution is visible in al-Ḥamzāwī's work, where the terminology of *ʿilm al-ḥisāb* (mathematics, arithmetic) is used for both letterism and mathematics. Al-Ḥamzāwī continues the paragraphs cited above as follows:

فذلك لم يمتدح سجانته بالحروف تكونها من الصور النفسانية الا انها اوعية قابلة لحمل الاعداد  
 باختلاف اطوارها للتوصل النطقى كما ان لاشباح اوعية قابلة للجمل الارواح للتوصل الفعلى فاذن  
 العداد للحروف كالعقول للارواح

Because of this, the Glorified [i.e. God] only has His extension in letters, which have their existing form in the forms of the souls, in as far as they are a preliminary container to carry the numbers with their different conditions, in

<sup>376</sup> Nader El-Bizri, "The Occult in Numbers: The Arithmology and Arithmetic of the Ikhwān al-Ṣafā'," in *The Occult Sciences in Pre-Modern Islamic Cultures*, ed. Nader El-Bizri and Eva Orthmann, Beirut: Texte Und Studien 138 (Beirut: Ergon Verlag, 2018), 20.

<sup>377</sup> Melvin-Koushki, "Powers of One: The Mathematization of the Occult Sciences in the High Persianate Tradition," 137–38.

order to connect them to speech, just like the shapes are preliminary containers for the spirits in order to connect them to action. Therefore, the numbers are to the letters as the intellects to the spirits.<sup>378</sup>

In this paragraph, the author suggests a symmetry between language and mathematics, that is central to the science of letters or lettrism. It is argued that language, or letters, are instruments for people to interpret, in order to arrive at the numbers that characterise the essence of all things. The letters are mere ‘containers’ of meaning and the latter can be expressed in mathematics. After this, al-Ḥamzāwī compares this to another symmetry, this time between the intellect and the spirit, which brings us to the topic of Sufism, which will be discussed in the next section.

### 6.2.3. *The ‘Sacralisation’ of Occult Sciences*

This mathematisation, Melvin-Koushki argues, goes hand in hand with a ‘sacralisation’ or a ‘scripturalisation’ of occult sciences in the early modern Islamic world.<sup>379</sup> In a period of a growing tendency towards the synthesis of different intellectual movements, the synthesis of Sufism and philosophical thought that identified or drew on a Neopythagorean tendency<sup>380</sup> became central to the author’s work. Al-Ḥamzāwī writes:

لما اراد ظهور الوجود من عالم العلم الى عالم الكون باختلاف اطوارها وتعاقب ادوارها في حيلة ادم  
وبعدما في العقل معانى وفي الروح الطايف وفي النفس صوراً وفي القلب نقوشاً في اللسان قوة ناطقة  
وفي السمع تشكيلاً سريراً قليلاً  
اذا نظر ناظراً في الحروف وجد لها الطباعة في النفس قبل وجودها في الشكل يدرك بها الحقايق ويفهم  
بها الخفا فلماذا كان للحروف في عالم البحث اسرار وآثار يدركها من نور الله بصيرة بنور الحكمة

<sup>378</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 2V.

<sup>379</sup> Matthew Melvin-Koushki, “Is (Islamic) Occult Science Science?,” *Theology and Science* 18, no. 2 (2020): 9–10.

<sup>380</sup> Gardiner, “Books on Occult Science”, 736.

فيقتبس في مشكاتها الامور كامنة قبل وقوعها يستخرجها في الاسرار الكامنة في حروفها فما من رسم  
او اسم شئ يوسم الا ويظهر منه سر عند ارباب المكشف والشهور لانه لا ينطق ناطق ولا ينطق ناعق  
ولا يسبح صباغ ولا يتارى شبح الاشبح الا وتحت ذلك اسرار واسارات ورموز وعلامات اذ كل ظاهر  
جلي له باطن خفي فالكون اجمعه باطن بذلك

He wanted to make visible the coming-into-existence from the world of knowledge to the world of existence with its different circumstances and the succession of its revolutions in the generation of Adam, after he endowed the intellect with meaning, the spirit with vision (*ṭayf*), the soul with form (*ṣūra*), the heart with picture/appearance (*naqsh*), the tongue/speech (*lisān*) with an ability of expression (*quwwa nāṭiqā*) and the hearing with a partial secret shaping ability (*tashkīlan sirriyan qalīlan*).

When someone contemplates the letters, he discovers in them the impression on the soul that is prior to their existence in form, perceiving by means of them the [divine] realities and understanding them by means of what is hidden. Therefore, in the world of inquiry, the letters have both secrets and effects which one apprehends visionarily from the light of God by the light of wisdom. Thus one acquires in their [i.e. the letters'] niches of knowledge of affairs which are latent prior to their occurrence, deriving them from the secrets concealed in their letters. For no mark or name of a thing is marked except that the lords of the hidden and the known can make evident from it a secret."<sup>381</sup>

In this paragraph, al-Ḥamzāwī frames the alphanumerical technique of “*al-Ghalīb wa-l-Maghlūb*” in a lettrist cosmology. More specifically, he paraphrases the work of Aḥmad al-Būnī here, which circulated widely in the Sultanate.<sup>382</sup> This influence is

<sup>381</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sirr al-Ghālīb Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fols. 61V-62R.

<sup>382</sup> I want to thank Noah Gardiner for pointing this out to me, and for helping me with the translation of this fragment. Gardiner, “Esotericism in a Manuscript Culture: Aḥmad al-Būnī and His Readers through the Mamlūk Period,” 192; The text is esotericist according to the definition of this term by Saif cf. Saif, “What Is Islamic Esotericism?,” *Correspondences: Journal for the Study of Esotericism* 7, no. 1 Special Issue: Islamic Esotericism (2019): 1–59 This has to be distinguished from the use of “esotericism” earlier in this dissertation, where I followed Gardiner’s definition

explicitly acknowledged when al-Ḥamzāwī refers to ‘the lords of Sufism’ (*‘arbāb ʿulūm al-ṣūfiyya*) as a source of inspiration for his work, although he does not specify it.<sup>383</sup> As discussed in Gardiner’s research, the Sultanate witnessed a growing influence of Akbarian or Būnian *ṣūfī* thought throughout the fourteenth and fifteenth century.<sup>384</sup> This text explicitly paraphrases the Būnian cosmology discussed in the work “*Laṭāʾif al-Ishārāt*” which circulated among reading groups in the Sultanate. As explained by Gardiner, this lettrist cosmology and its related view on humanity centers around a discourse of Ādam’s creation. “*Laṭāʾif al-ishārāt*” describes how, when Ādam was created, the letters were placed in his being on different levels: that of his intellect (*ʿaql*), his spirit (*rūḥ*), his soul (*naḥs*), and his heart (*qalb*).<sup>385</sup> These four levels or worlds are central to al-Būnī’s cosmology as well as the human microcosm. In this text, the latter’s four levels have been supplemented with the level of the tongue or speech (*lisān*) and that of the ability to hear (*al-samʿ*). Letters are thus present on a level that is prior to that of the reality that is visible to humans, and on this level they actively shape the world. Scholars, or the masters of the science, have the privilege of accessing this level, the *ʿālam al-baḥṭh* or world of inquiry. In this way, they are able to perceive what is going to happen before it actually happens, as this is already latently (*kāmin*) or potentially present in the things.<sup>386</sup>

This *ṣūfī* terminology used here is intertwined with an illuminationist or *ishrāqī* discourse, an influence to which al-Ḥamzāwī refers as ‘the ‘people of the lights and the secrets’ (*ahl al-anwār wa-l-asrār*). Illuminationism is a school of thought that was named after the philosophy of the twelfth century thinker Shihāb al-Dīn Yaḥyā al-Suhrawardī (d. ca. 587/1191). As discussed in the work of John Walbridge, the philosophy of Al-Suhrawardī and his followers and later interpreters had a far-reaching an important influence on late medieval and early modern thought in the Islamicate world.<sup>387</sup> Al-Suhrawardī responded to the Avicennan view on knowledge,

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of the term, that is referring to seclusion and secrecy among scholars with regard to certain texts. Saif uses the term to denote *bāṭiniyya*.

<sup>383</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 70V.

<sup>384</sup> Gardiner, “Esotericism in a Manuscript Culture”, 190-200.

<sup>385</sup> Gardiner, “Esotericism in Manuscript Culture”, 192.

<sup>386</sup> Gardiner, “Esotericism in Manuscript Culture”, 194.

<sup>387</sup> John Walbridge, “Illuminationist Manuscripts: The Rediscovery of Suhrawardī and Its Reception,” in *Illuminationist Texts and Textual Studies*, ed. Ali Gheissari, John Walbridge, and Ahmed Alwishah (Leiden/Boston: Brill, 2018), 21–41; Walbridge, *The Wisdom of the Mystic East: Suhrawardī and Platonic Orientalism*.

defining his own position in opposition to it. In the Avicennan framework, all knowledge was considered to be attained through empirical inquiry, through the study of things outside of oneself. The illuminationist paradigm suggest that the highest form of knowledge can only be attained through introspection and intuition. It is possible to gain knowledge through introspection, according to Suhrawardī, because, on a higher level, we already know things, given that God has planted the seeds for all the ideas in our intellects in the form of light emanating from Him, the One and unifying principle of the entire universe. According to this paradigm, learning is a form of remembering, of rekindling the light inside. Illuminationism draws on a version of the Neoplatonist philosophy of emanationism, according to which the world and all its beings emanates from God through two hypostases, that of the intellect (*ʿaql*) and the soul (*naḥs*). The intellect is directly caused by the One, God, and is the principle of essence of a being. The soul, on the other hand, is the instance that is related to desire for things external to the agent. Every being with a soul is trying to act with the goal of satisfying its desires.<sup>388</sup> Only the most intelligent scholars, whose desires are entirely guided by the goal of an intellectual life, are capable of grasping something of the divine truth. Illuminationism adds to the Neoplatonist concept of emanation the idea that the whole process happens through light. All beings have a smaller or bigger amount of light in them, that connects them to God. Needless to say, this entails a negative view on matter, seeing it either as the lowest stage in the emanation or, for illuminationists, as the shadow that is a necessary but evil by-product of light.<sup>389</sup>

This synthesis of *ishrāqī* thought or philosophy (*ḥikma*) and *ṣūfism* results in a particular view on the role of the scholar. Al-Ḥamzāwī, echoing al-Būnī, distinguishes between an ideal world or a world of knowledge (*ʿālam al-ʿilm*), a created world (*ʿālam al-mukawwan*) and a world of inquiry (*ʿālam al-baḥṭh*). Scholars, he argues, are able to read the signs that God has put in the world through the skills and faculties coming from the same divine origin. Apart from the idea of the natural world as a readable book, this fragment also expresses the elitism that Aḥmad ibn Aḥmad Timurbāy’s introduced in ms. Cairo (DAK) MM 13.<sup>390</sup> Scholars are referred to as the ‘lords of the

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<sup>388</sup> Peter Adamson, “Bright Ideas - Illuminationism,” in *Philosophy in the Islamic World* (Oxford: Oxford University Press, 2016), 323–29; Gerson Lloyd, “Plotinus,” in *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta (Brill Online, 2002), <https://plato.stanford.edu/entries/plotinus/>.

<sup>389</sup> Adamson, “Bright Ideas - Illuminationism.”

<sup>390</sup> Cf. supra: Chapter V section 5.2.2.

revelation and of the known' (*arbāb al-mukashshaf wa-l-shuhūr*) and as the only people capable of reading the world. Because, as al-Ḥamzāwī argues about humanity:

اکترهم لا يفهمون شعر كل شيء

'Most of them do not understand the poetry of everything'<sup>391</sup>

Both in Sufism and illuminationism, the idea of scholarship is strictly hierarchical: only scholars devoted to the intellectual life are able to grasp the highest knowledge. This highest knowledge is referred to by al-Ḥamzāwī as '*malik al-ʿulūm*' or '*the ruler of sciences*'. About this ruler of the sciences, he writes:

قال من اخوان الصفاء جميع العلوم كالوزير وعلم الحساب كالمملك قلت ما خلا علم الدين

'It was said among *the ikhwān al-ṣafā'* that all the sciences are like a governor, and the science of mathematics (*ʿilm al-ḥisāb*) is like the ruler, and I add to this: except for the science of religion (*ʿilm al-dīn*).'<sup>392</sup>

This quote is taken from the fifty-second letter of the tenth century corpus of the "*Rasā'il ikhwān al-ṣafā'*". This letter was dedicated to the topic of magic (*sihr*).<sup>393</sup> Whereas the tenth century *ikhwān* use the terminology of *ʿilm al-ḥisāb* for mathematics, I argue that this terminology is appropriated here in a lettrist context. Because of the aforementioned symmetry between the letters and the numbers, *ʿilm al-ḥisāb* is used here both for lettrism and mathematics. However, the science of religion or *ʿilm al-dīn* is, according to al-Ḥamzāwī the leader or *malik* of all sciences. Just like in ms. Cairo (DAK) MM13, al-Ḥamzāwī refers to the *ikhwān al-ṣafā'* or the Neopythagorean network of occult scholars active in the early modern Islamic world. This remark of the science of religion being superior to mathematics and lettrism (referred to simultaneously as *ʿilm al-ḥisāb*) although they are clearly strongly interrelated, reminds of a tendency of mathematisation-sanctification that was already part of the Neopythagoreanism ideology, but has become increasingly thematised in early modern Islamic occult scholarship. In Nicholas Harris' recent work on the

<sup>391</sup> al-Ḥamzāwī, "Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb" (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 62V.

<sup>392</sup> al-Ḥamzāwī, "Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb" (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 61V.

<sup>393</sup> Ikhwān al-Ṣafā', *Rasā'il Ikhwān al-Ṣafā'*, vol. IV, IV vols. (Beirut: Dār Ṣader, 2008).



fourteenth century Cairene scholar ʿIzz al-Dīn Aydemir al-Jildākī (d. mid-fourteenth century), it is argued that al-Jildākī presents alchemy as the highest religious science, but states that mathematics (both *ʿilm al-handasa* or geometry and *ʿilm al-ḥisāb* or arithmetic) has to be mastered in order to practice it. Al-Jildākī does however not distinguish between alchemy and religion, as he sees the first as part of the latter.<sup>394</sup> Al-Ḥamzāwī on the other hand, does make this distinction here, although throughout the rest of the text, it is not really clear what then exactly the difference between the two sciences might then be, as he clearly considers *ʿilm al-ḥisāb* as the key to divine truth.

### 6.3. al-Ghālib wa-l-Maghlūb

#### 6.3.1. The Method

After this contextualisation within a *ṣūfī* and *ishrāqī* discourse, al-Ḥamzāwī introduces the central topic of the text, which is the principle of ‘*al-Ghālib wa-l-Maghlūb*’ or ‘*the victor and the vanquished*’. The author writes:

واعلم أن الاسم له تأثير في المسمى اتيا وسمًا وسموًا فيولد به مرةً عين المسمى ومرةً غيره وكل اسم ظهر  
مضاه في مسماه فهو سموله وكل اسم لا يظهر معناه في مسماه فهو ستة له ولا بد من عوده سموًا ولو بعد  
حين

‘Know that the name has an influence on the named, on the level of provenance, heavens and superiority, so that one time one source of the named is created in it, the other time another one. Every name reveals its permeation in his named one, and the other way around. Not every name shows its meaning in the named one, but [the named one bears it as a] mark and there is no doubt that this will have repercussions on him after some time.’<sup>395</sup>

This principle can be seen as an application of the view discussed in the introduction to the work. As every being has an immaterial form or essence that corresponds to a numerical value, which – together with the matter in which it was situated - could be referred to on the basis of letters, the name of a being provides a key to his or her essence

<sup>394</sup> Nicholas G. Harris, “In Search of ʿIzz al-Dīn Aydemir al-Jildākī, Mamlūk Alchemist,” *Arabica* 64, no. 3–4 (2017): 531–556; Melvin-Koushki, “Is (Islamic) Occult Science Science?”, 13.

<sup>395</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 62V.

and ultimately to the divine truth from which it emanated. This is reinforced by a reference to a fragment from the *hadīth* collection ‘*al-Muwatṭā*’ of the Mālikī Imām Mālik Ibn Anas (d. ca. 179/796) about ‘Umar Ibn al-Khaṭṭāb (d. 23/644), the second caliph after the prophet Muḥammad. The author quotes:

وهو ما رواه مالك في الموطاء عن يحيى بن سعيد ابن عمر بن الخطاب رضى الله عنه قال لرجل ما اسمك قال جمرة قال ابن من قال ابن شهاب قال ممن قال من الحرقة قال اين مسكنك قال بجرة النار قال بايها قال بذات لظى قال ادرك اهلك فقد احترقوا فكان كما قال رضى الله عنه

“And this is what Mālik related from Yaḥyā ibn Sa‘īd in the *Muwatṭā*’: that ‘Umar ibn al-Khaṭṭāb, God’s grace be upon him, said to a man: “What is your name?”. He said Jamra [i.e. coal]. He said: “Son of whom?” [The man] replied: “Son of Shihāb [i.e. flame, shooting star].” He said: “From whom?” [The man] said: “From al-Ḥaraqa. [i.e. the burning]”. “And where do you live?” said [‘Umar]. “In Ḥarrat al-Nār [i.e. the lava field of fire]” said [the man]. “In which one?” said [‘Umar]. “In Dhāt Laḥhā [i.e. the one containing flames]” he replied. “Then reach out to your family,” [‘Umar] said “for they have witnessed a fire”. And it happened like he, may the grace of God be upon him, said.”<sup>396</sup>

After this reference, al-Ḥamzāwī adds that this is only an example of what we can learn from the visible (*zāhir*) part of a name. He elaborates on this by stating that therefore, one should be aware of the effect of naming on the named individual, tribe or place.

Thereafter, the author finally proceeds with the discussion of the principle of *al-Ghālib wa-l-Maghlūb* itself:

<sup>396</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library ), Ahmet III 2485,6, fol. 63R; Mālik Ibn Anas, *Al-Muwatṭā*’, 2nd ed., vol. 2 (Dār al-Gharb al-Islāmī, 1997), 567, <https://play.google.com/books/reader?id=wHdICwAAQBAJ&hl=nl&pg=GBS.PT1>.

إذا اردت ان توصل على معرفة اسم الغالب في المغلوب ليظهر لك سر الله الكامن في الغيوب فاحسب اسم كل واحد من المتحاربين بالجمل الاق واسقطها فاحسب اسم كل واحد من المتحاربين بالجمل الاق واسقطها تسعة تسعة الى لن تبقى تسعة او دون تسعة فادخل به في جدول تعرف الجواب من اعلاه هذا لو كان العددان مختلف فاذا كانا متساويين فاصغرهما [...] غالب وكذا ان كانا متساويين واحدهما صاحب سيف والاخر صاحب قلم فالغالب هو صاحب السيف

‘If you want to arrive at knowledge of the name of the victor and the vanquished, so that the latent secret of God in the hidden [side of] things will be revealed to you, then calculate the name of everyone involved in the war according to the following rule: eliminate nine, so there is nothing more than nine left or something less than nine, then enter this in the table. You will know the answer is the one that is the highest of them, when the two numbers are uneven. And if both numbers are even, then the smallest of them both is the winner. And if they are both alike then one of them both is the lord of the sword and the other one is the lord of the pen, the dominant party is the party of the sword’<sup>397</sup>

Remarkably, al-Ḥamzāwī here suggests the possibility for scholars to get a glimpse of the hidden, divine secret, or *al-ghā’ib*. Where the copyist of Cairo (DAK) MM 13, Aḥmad ibn Aḥmad Timurbāy was very careful in his use of this word, referring to it as the limit of human knowledge. Al-Ḥamzāwī shows less caution in using it. In his copy of the text, Timurbāy here however uses the exact same words as al-Ḥamzāwī does.<sup>398</sup> The text goes on to discuss the values of the letters of the Arabic alphabet as follows:

<sup>397</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 63V. The sentence “eliminate nine until there is less than nine or nine” might refer to the calculation of the sum of the separate letter values/numbers. In the indications cited by Ibn Khaldūn in his section on *ḥisāb al-nīm*, he writes that one has to divide the total of the letter value through nine. ; ‘Abd al-Raḥmān b. Muḥammad Ibn Khaldūn, *Al-Muqaddima - Ta’rikh al-’alama Ibn Khaldun* (Tunis: kitab inc, 1984), 158–60.

<sup>398</sup> Timurbāy and al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb,” (Cairo, 904/1499), San Lorenzo de El Escorial (Real Bibliotheca del Monasterio), Ar. 922/3, fol. 104V.

وهذا اعداد الحروف ايقع كل حرف منه بواحد بكر كل حرف منه باثنين جلش كل حرف منه بثلاثة  
دمت كل حرف منه باربعة هنت كل حرف منه بخمسة وسخ كل حرف منه بستة زعد كل حرف منه  
بسبعة حفص كل حرف منه بثمانية طصظ كل حرف منه بتسعة

‘And these are the values of the letters: *ālif*, *yā*’, *qāf* and *ghayn* have a value of one. *Bā*, *kāf* and *rā* have a value of two. *Jīm*, *lām* and *shīn* each have a value of three. *Dāl*, *mīm*, *tā*’ have a value of four. *Hā*’, *nūn*, *thā*’ have a value of five. *Wāw*, *sīn*, *khā*’ each have a value of six. *Zā*’, *‘ayn* and *dhāl* have a value of seven. *Ḥā*’, *fā*’ and *ḍāl* each have a value of eight. *Ṭā*’, *ṣād* and *ḍhā*’ have a value of nine.’

The sources of these values, al-Ḥamzāwī situates in the Qur’ān and in the authority of ‘Alī Ibn Abū Ṭālib, the cousin and son-in-law of the prophet Muḥammad. He writes:

والمعتبر في اتجا رسم مصحف عثمان رضى الله عنه هذا معتقد حكماء الاسلاميين واما المتقدمون لم  
يعتبروا له الا اللفظ وقد يغرى الى مولانا امير المؤمنين على بن ابو طالب كرم الله وجهة بعثمان في  
معرفة ذلك فقال رضى الله عنه شعر

واكثرها عند التخالف غالبا	اذ الزوج والافراد يسموا اقلها
وعند استواء الفرد يغلب طالب	ويغلب مطلوب اذ الزوج يستوى

‘And the leading example for direction was put down in writing in the Qur’ān of ‘Uthmān, God bless him, on which the sages among the Islamic people have relied. With regard to their predecessors, they were not led except [by] formulation. And our leader, the commander of the faithful (*amīr al-mu’minīn*) ‘Alī ibn Abū Ṭālib, may God have mercy on him, may have been encouraged by ‘Uthmān in the knowledge of that. And he recited, may God be pleased with him, the poem:

In the case of even or odd numbers (for both), the smaller number will gain the upper hand

When the numbers differ (as to being even or odd), the larger number will be the victor

The object of the inquiry will be victorious, if the numbers are both equal and even.

And if they are both equal and odd, the one who made the inquiry will be victorious<sup>399</sup>

Two things stand out in this cited paragraph. The first is the reference to ʿAlī as the master of this practice, the second is the poem, which has also been cited by Ibn Khaldūn in the sixth prefatory discussion to his *Muqaddima*.<sup>400</sup> The ‘Alid’ orientation of this text does not come as a surprise when we take Tawfiq Fahd’s well-known research on lettrism into account. In this author’s works, the science of letters is presented as the prototype of *shīʿī* esotericism, as ʿAlī was considered to have been the founder of letter magic, here commonly referred to as *jafr*.<sup>401</sup> However, al-Ḥamzāwī and the copyist Timurbāy both identified as *ḥanafī* scholars and were referred to as such by their contemporaries, as discussed in chapter six.<sup>402</sup> As more recent research on this period has shown, this is not uncommon. Hanafism has in fact been identified by Ihsan Fazlioğlu and Cornell Fleischer as one of the central characteristics among the scholars of the early modern occult network of the *neo-Ikhwān al-ṣafāʾ*.<sup>403</sup> According to Melvin-Koushki ‘alidism’ – that is, the explicit devotion to ʿAlī ibn Abī Ṭālib – was common among *Shīʿī* and *Sunnī* culture alike in the Islamicate world of the post-Mongol early modern period. It was on the one hand often associated with the occult sciences of lettrism and alchemy, and on the other hand also with the upcoming

<sup>399</sup> ʿAbd al-Raḥmān b. Muḥammad Ibn Khaldūn, *The Muqaddimah : An Introduction to History*, trans. Franz Rosenthal (Princeton: Princeton University Press, 1967), <https://www.arabislamicscience.ugent.be/wp-content/uploads/2014/12/Muqaddima-English.pdf> Translation of the poem by F. Rosenthal.

<sup>400</sup> Ibn Khaldūn, *Al-Muqaddima - Taʾriḫ al-ʿalama Ibn Khaldun*, 158–60.

<sup>401</sup> Toufiq Fahd, *La Divination Arabe* (Leiden: Brill, 1966).

<sup>402</sup> Ibn al-Ḥanbalī, “723 -Yūsuf Ibn Qurqumās al-Sayfī Qāyṭbāy al-Ḥamzāwī al-Amīr al-Kabīr al-Ḥanbalī Jamāl al-Dīn Abū al-Maḥāsin al-Ḥalabī al-Ḥanafī”; al-Sakhāwī, *Al-Ḍawʾ al-Lāmiʿ li-Ahl al-Qarn al-Tāsiʿ*, 2003, 1:210; Yūsuf ibn Qurqumās al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library ), Ahmet III 2485,6. Timurbāy and al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Cairo, 904/1499), Ms. San Lorenzo de El-Escorial (Real Biblioteca del Monasterio de San Lorenzo de El Escorial) Arabe 922/3.

<sup>403</sup> Fazlioğlu, “İlk Dönem Osmanlı İlim ve Kültür Hayatında İhvānu’s-Safā ve Abdurrahmān Bistāmī”; Fleischer, “Ancient Wisdom and New Sciences: Prophecies at the Ottoman Court in the Fifteenth and Early Sixteenth Centuries.”

mode of millennial sovereignty, an idea of philosopher-kingship that was realised in Timurid, Aq-Quyūnlū, Safavid, Mughal and Ottoman imperialism.<sup>404</sup> The fact that al-Ḥamzāwī refers to ʿAlī as a leader in this lettrist-political treatise may well have been influenced by this political discourse that circulated widely in this period.

The second remarkable aspect of this paragraph was its reference to the poem cited above. Ibn Khaldūn cites this poem in the sixth prefatory discussion to his “*Muqaddima*”, where he ascribes it to Aristotle’s “*Sirr al-Asrār*”. In this sixth prefatory discussion Ibn Khaldūn discusses:

اصناف المدركين للغيب من البشر بالفطرة أو بالرياضة

‘the types of human beings who have perception of the concealed either through natural disposition or through exercise’.<sup>405</sup>

Here Ibn Khaldūn discusses all the manners in which human beings can arrive at perception of *al-ghayb* or the concealed. This is exactly what the author of this texts argues to do through *ʿilm al-ḥisāb*. In Ibn Khaldūn’s work, it is emphasised that God has chosen some of the people as the intermediaries between Him and the people, which is in line with the elitism al-Ḥamzāwī and Timurbāy display in their texts. However, according to Ibn Khaldūn, only prophets are by nature fitted to achieve revelation. The subchapter in Ibn Khaldūn’s work in which this poem is mentioned bears the title ‘*al-kihāna*’ or ‘divination/soothsaying’, which, he argues, is inspired by devils rather than by God.<sup>406</sup> As noted by Saif, early modern occult scholars emphasised

<sup>404</sup> Melvin-Koushki, “Powers of One: The Mathematicalization of the Occult Sciences in the High Persianate Tradition”; Melvin-Koushki, “Is (Islamic) Occult Science Science?”; Matthew Melvin-Koushki, “Early Modern Islamic Empire: New Forms of Religiopolitical Legitimacy,” in *The Wiley-Blackwell History of Islam*, ed. Armando Salvatore, Roberto Tottoli, and Babak Rahimi (Oxford: John Wiley & Sons Ltd, 2018).; Melvin-Koushki, “Starlord, Letterlord: Astrology and Lettrism in the Construction of Post-Mongol Persianate Imperial Ideologies.”

<sup>405</sup> Ibn Khaldūn, *Al-Muqaddima - Ta’rikh al-ʿalama Ibn Khaldun*, 158–59.

<sup>406</sup> <sup>406</sup> Ibn Khaldūn, *The Muqaddimah: An Introduction to History*, 156 Ibn Khaldun’s view on the occult sciences has been discussed extensively in academic literature, see e.g. Mushegh Asatrian, “Ibn Khaldun on Magic and the Occult,” *Iran and the Caucasus* 7, no. 1/2 (2000): 73–123; Robert Irwin, “Al-Maqrizi and Ibn Khaldun, Historians of the Unseen,” *Mamluk Studies Review* 1, no. VII (2003): 217–30; S. Haq and Robert Irwin, “Occult Sciences and Medicine,” in *The New Cambridge History of Islam, volume 4*, ed. Robert Irwin (Cambridge: Cambridge University Press, 2010), 640–67. I will not pursue this further, as this topic is not the subject of this chapter. Moreover, I agree with Matthew Melvin-Koushki that it is a regrettable fact “that more ink has been spilled to date on a single fourteenth century anti-occultism polemicist, Ibn Khaldūn, than all of the Islamicate occult sciences combined” although more and more material evidence

the influence of the planets as efficient causes and not as demons, reacting exactly against such a view on divination.<sup>407</sup> The practice in relation to which this poem is cited itself is referred to as *ḥisāb al-nīm* by Ibn Khaldūn. Until today, the expression of ‘*ḥisāb al-nīm*’ has not been found in other sources.<sup>408</sup> Both al-Ḥamzāwī and Ṭimurbāy refer to this practice as *‘ilm al-ḥisāb* or the science of mathematics (arithmetic). Tawfiq Fahd mentions the term of *ḥisāb al-jammal* as a related one. The author of this text is often given the *laqab* al-Jamālī, which may refer to this term. *Ḥisāb al-Jammal* is translated to French by Fahd as ‘l’arithmomancie’. This arithmomancy, Fahd argues, evolved from ‘rhapsodomancie’ or *‘ilm al qur’a*, which was:

‘la divination par le moyen de phrases détachées, rencontrées au hasard dans des livres inspirés. [...] Le plus ancien auteur pseudonyme d’un K. al-qur’a est Imam Gafar b. Ali Talib, cousin du prophète.’<sup>409</sup>

This was done with the Qur’ān from the Umayyad period onwards, Fahd writes. After the work of the philosopher al-Kindī (d. 256/873), and more specifically his text “*al-Qur’ā al-Mubāraka al-Ma’mūniyya*”, the practice was mixed with lettrist influences, which gave way to the Islamic practice of ‘*arithmomancy*’:

‘Dans ces écrits, tous tardifs, la rhapsodomancie perdit sa simplicité primitive et devint une technique divinatoire basée sur le tirage au sort des lettres de l’alphabet, dont les significations oraculaires respectives sont réunies dans un recueil. Cependant ces significations continuent à être extraites de versets coraniques auxquels on parvient par une exégèse arbitraire et des procédés fort compliqués communs au gafr et au *ilm al-huruf wa-l-asmaa* et où le *hisab al-jammal* ou arithmomancie joue un rôle capital.’<sup>410</sup>

Moreover, he notes that arithmomancy or *ḥisāb al-jammal*, was largely based on the letter – number system from the pseudo-Aristotelian work of “*Sirr al-Asrār*”, which aligns with the aforementioned references made to this work by al-Ḥamzāwī.<sup>411</sup>

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suggests the importance of the latter for this period, see Melvin-Koushki, “Is (Islamic) Occult Science Science?,” 7–8.

<sup>407</sup> Saif, *The Arabic Influences on Early Modern Occult Philosophy*, 27–30.

<sup>408</sup> Ibn Khaldūn, *Al-Muqaddima - Ta’rikh al-‘alama Ibn Khaldun*, 158–60.

<sup>409</sup> Fahd, *La Divination Arabe*, 217.

<sup>410</sup> Fahd, *La Divination Arabe*, 126–27.

<sup>411</sup> Fahd, *La Divination Arabe*, 217.

### 6.3.2. The Anecdotes

Just like in ms. Cairo (DAK) MM 13, al-Ḥamzāwī and Timurbāy use several anecdotes of events that happened in their own time in order to make the text more accessible. In contrast to ms. Cairo (DAK) MM 13, the anecdotes here are shorter but more numerous. For most of the cases that happened before his birth, the author only mentions the names of the commanders in battle and their numerical value, after which he shortly indicates which of both parties is the ‘*ghālib*’. In the tables below, I have listed all the cases and their outcome with some information on the event referred to.

First Party	N°	Second Party	N°	‘ghālib’/victor	Explanation
al-Zāhir Jaqmaq (sultan of Cairo, r. 842/1438 – 857/1453)	9	Qurqumās al-Sha‘bānī ( <i>amīr</i> )	6	al-Zāhir Jaqmaq	Two different types of numbers (even/odd): the highest is the victor  والقاعدة في مختلفي العدد ان الاكثر غالب <sup>412</sup>

Qurqumās al-Sha‘bānī was a prominent *amīr* during the reign of the sultan al-Ashraf Barsbay (1422-1438). After the latter’s, death, however, he was executed by Barsbay’s successor al-Zāhir Jaqmaq (r. 842/1438 – 857/1453).<sup>413</sup>

al-Ashraf Ināl (sultan of Cairo, r. 857/1453-865/1461)	2	Al-Manṣūr ‘Uthmān ibn Jaqmaq	4	Al-Ashraf Ināl	For two even numbers: the lowest is the victor
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<sup>412</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 64V.

<sup>413</sup> Jo Van Steenberghe and Stijn Van Nieuwenhuyse, “Truth and Politics in Late Medieval Arabic Historiography: The Formation of Sultan Barsbay’s State (1422–1438) and the Narratives of the Amir Qurqumās al-Sha‘bānī (d. 1438),” *Der Islam* 95, no. 1 (2018): 147–88.



		(sultan of Cairo, r. 857/1453)			العددان زوجان فالأقل غالب <sup>414</sup>
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In 857/1453, al-Ashraf Ināl succeeded al-Manṣūr ibn ʿUthmān as sultan, after the latter’s entourage betrayed him by choosing the side of his opponent and enforcing Ināl’s right to the leadership.

al-Zāhir Khūshqadam (sultan of Cairo 865/1461- 871/1467)	9	al-Mu’ayyad Aḥmad (shortly sultan of Cairo 865/1461)	8	al-Ḍhāhir Khūshqadam	For two different types of numbers: the highest is the victor  اختلف العددان فالأكثر غالب <sup>415</sup>
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After a very short reign al-Mu’ayyad Aḥmad was overthrown by a group of *amīrs* and succeeded by al-Ḍhāhir Khūshqadam in 1461.<sup>416</sup>

al-Ashraf Qāyṭbāy (sultan of Cairo r. 872/1468 – 901/1496)	2	Khayr Bek ( <i>amīr, dawādār</i> )	4	Qāyṭbāy	For two even numbers: lowest is the victor  العددان زوجان فالأقل غالب <sup>417</sup>
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<sup>414</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 64V.

<sup>415</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 64V.

<sup>416</sup> Petry, *Twilight of Majesty: The Reigns of the Mamluk Sultans al-Ashraf Qaytbay and Qansuh al-Ghawri in Egypt*, 19–21.

<sup>417</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb fī Sīr al-Ghālib wa-l-Maghlūb” (Aleppo, 894/1489), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 64 V.

In the tumultuous period between 865/1461 and 871/1467, the former secretary (*dawādār*) Khayr Bek plotted with several *amīrs* to seize power. Khayr Bek claimed the leadership, but was not accepted as sultan by the most important *qāḍī*'s in the Sultanate. Qāyṭbay, in contrast, was accepted by them, mostly because of his marriage with a relative of Ināl's wife, to whom they were loyal.<sup>418</sup>

The aforementioned conflicts happened before al-Ḥamzāwī was born, he states. On the remaining folios, he discusses conflicts of which he explicitly states that they happened in his own time (*'fī zamāni-nā'*).<sup>419</sup> For some of these conflicts, he gives a bit more context than for others. As al-Ashraf Qāyṭbāy remained sultan up until the date this text was written, al-Ḥamzāwī focuses on conflicts between *amīrs* and leaders of other polities in or close to the Syrian frontier zone of the Sultanate.

al-Ḥasan ibn ʿAlī ibn ʿUthmān Qarā Yuluk [i.e. Ūzūn Ḥasan, leader of the Aq- Quyūnlū]	1	Jahānkīr [brother of Ūzun Ḥasan, lord of Dyār Bakīr and 'Āmad]	1	Ūzūn Ḥasan	The numbers are the same: it depends on the circumstances:  والقاعدة في تساوى الفرد ان يكون الطالب غالبا وايضا اعتبر بالشروط المتقدمة فكان الحسن اصغر سنا من اخيه جهانكر وكان اميا شجاعا وهو اذن صاحب سيف وكان جهانكر الكرمة ساوادرى منه بالقراءة و الكتابة وهو اذا صاحب قلم فكان الحسن غالبا غلبه في جميع اموره  The rule, if the two values are the same, is that the investigating party is the ruler, and it also depends on the
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<sup>418</sup> Petry, *Twilight of Majesty: The Reigns of the Mamluk Sultans al-Ashraf Qayṭbay and Qansuh al-Ghawri in Egypt*, 21–22.

<sup>419</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library ), Ahmet III 2485,6, fol. 64V.

					preceding circumstances. Ḥasan was younger in age than his brother Jahānkir and he was more brave. Therefore, he was the lord of the sword. Jahānkir was well versed in reading, so he was lord of the pen. Ḥasan was the victor, all things considered.
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Ūzūn Ḥasan overthrew his brother Jahānkir in 861/1457, thus becoming the only leader of the Aq-Quyūnlū confederation.<sup>421</sup>

Rustam ibn Tarkhān [Aq-Quyūnlū chief]	7	Ūzūn Ḥasan	1	Ūzūn Ḥasan	The same type: the lowest number is the victor. والقاعدة في مخالفة الفرد الاقفل <sup>422</sup>
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Rustam ibn Tarkhān is an Aq-Quyūnlū chief who joined Jahānkir in battle in 861/1457. Still, Ūzūn Ḥasan won.<sup>423</sup>

<sup>420</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maḡhlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, 65 R-V.

<sup>421</sup> Woods, *The Aqquyunlu: Clan, Confederation, Empire: A Study in 15th/9th Century Turko-Iranian Politics*, 87–90.

<sup>422</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maḡhlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 65V; Matthew Melvin-Koushki, “The Delicate Art of Aggression: Uzun Hasan’s Fathnama of Qaytbay of 1469,” *Iranian Studies* 44, no. 2 (2011): 193–214.

<sup>423</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maḡhlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 65V; Woods, *The Aqquyunlu: Clan, Confederation, Empire*, 91.

Jahanshāh ibn Qarā Yūsuf [leader of the Turkmen polity of the Qara Quyūnlū]	5	Pir Budāq [son of Jahānshah]	4	Jahānshāh	The two values were of different types, to the highest is the winner.  اختلف العدان فالأكثر غالب <sup>424</sup>
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While Jahanshāh, the leader of the Qara-Quyūnlū - a Turkmen polity in the area of current Northwest Iran, Eastern Turkey and Azerbaijan - was at war with the Aq-Quyūnlū, led by Ūzun Ḥasan, his son Pir Budāq revolted against him in 864/1459, together with his brother Ḥasan cAlī.<sup>425</sup>

Jahanshāh ibn Qarā Yūsuf [leader of the Turkmen polity of the Qara Quyūnlū]	5	Ḥasan Ibn Qarā Yuluk [i.e. Uzūn Ḥasan]	1	Uzūn Ḥasan	For two odd numbers: lowest is the victor
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After a period in which the Qarā Qūyūnlū leader Jahānshāh had been busy with internal conflicts, he began to prepare troops again for a battle with the Aq-Quyūnlū. In March 1467/Shawwal 871 the Qara Quyūnlū armies invaded Kurdistan and Diyār Bakr, which was in violation with an earlier treaty between the two parties. After unsuccessful negotiations in the summer, Ūzūn Ḥasan and his troops attacked an unprepared and half-deserted Qara-Quyūnlū camp during the winter of 872/1467 and killed Jahānshāh.<sup>426</sup>

<sup>424</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb fī SIRR al-Ghālib wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 65 V.

<sup>425</sup> Woods, *The Aqquyunlu: Clan, Confederation, Empire: A Study in 15th/9th Century Turko-Iranian Politics*, 96.

<sup>426</sup> Woods, *The Aqquyunlu: Clan, Confederation, Empire*, 97–98.

Ḥasan ʿAlī ibn Jahānshāh [i.e. son of Jahānshāh and next leader of the Qara Qūyūnlāh and next leader of the Qara-Quyūnlū]	3	Ḥasan Ibn Qarā Yuluk [i.e. Ūzūn Ḥasan]	1	Ūzūn Ḥasan	Two different odd numbers, so the lowest is the victor  وهما فرضان مختلفان فالأقل  غالب <sup>427</sup>
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After Jahānshāh was killed, one of his sons used his father’s treasury to buy him the support he needed to succeed him. Trapped between an approaching Aq-Quyūnlū army and an approaching Timurid army, Ḥasan ʿAlī fled to Ardabil with some of his Kurdish allies, which left the area of Eastern Azerbaijan open for Ūzūn Ḥasan to conquer in 872/1468.<sup>428</sup>

Abū Saʿīd ibn Tīmūr [i.e. leader of the Timurids]	9	Ḥasan Ibn Qarā Yuluk [i.e. Uzūn Ḥasan, leader of the Aq-Quyūnlū]	1	Uzūn Ḥasan	Two different odd numbers: the lowest is the victor  يختلفان فالأقل غالب <sup>429</sup>
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The Timurid leader Abū Saʿīd Tīmūr reconquered great parts of Persian Iraq in the late fifteenth century. After several rounds of negotiations with the Aq-Qūyūnlū leader Ūzūn Ḥasan, the conflict eventually escalated and ended in the capture of Abū Saʿīd Tīmūr and his death in 874/1469.<sup>430</sup> In the meantime, al-Ashraf Qāyṭbāy became sultan of Cairo and Ūzūn Ḥasan declared his friendship to him, asking for the support and legitimation of the Sultanate, which he got.<sup>431</sup>

<sup>427</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 65V.

<sup>428</sup> Woods, *The Aqquyunlu: Clan, Confederation, Empire*, 98.

<sup>429</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 65V.

<sup>430</sup> Woods, *The Aqquyunlu: Clan, Confederation, Empire*, 98-99.

<sup>431</sup> Woods, *The Aqquyunlu: Clan, Confederation, Empire*, 100.

Dawlat bey al-Khazinadār [governor in Malatya]	3	Ḥasan Ibn Qarā Yuluk [i.e. Ūzūn Ḥasan]	1	Ūzūn Ḥasan	Two different numbers [from the same type] so the lowest is the victor هما مختلفان فالأقل غالب <sup>432</sup>
(Ja'im/Janim) governor of cAyntāb	4	Ḥasan ibn Qarā Yuluk [i.e. Ūzūn Ḥasan]	1	(Ja'im) governor of Ayntab	Two different types: highest is the victor والقاعدة في اختلاف الجنس ان يكون الأكثر غالباً <sup>433</sup>

[No further information is known on these two battles]

Ḥasan ibn Qarā Yuluk [i.e. Ūzūn Ḥasan]	1	Qanṣūh governor of Aleppo	4	Qanṣūh	Two different types: highest is the victor
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This case relates to a battle in one of the conflicts for which a horoscope was compiled in MM13<sup>434</sup>: the conflict between the Sultanate of Cairo and the Aq-Qūyūnlū. In the year 877/1472, Ūzūn Ḥasan attacked the Syrian territories of the Sultanate, heading for Al-Bīra via Aleppo.<sup>435</sup> At that moment, Qanṣūh al-Ghawrī was governor of Aleppo. Al-Ḥamzāwī elaborates on this case, writing:

فخرج حسن عن منازل مدينة حلب ورد منها ونازل البرثة فحاصرها اشد حصار ونقب على قلعتها  
النقوب فكان وردبش اذ ذاك نايبا بها وفاضل وردبش ثمانية

<sup>432</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 65V.

<sup>433</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 66 R.

<sup>434</sup> Timurbāy and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bārī ‘ fī Aḥkām al-Nujūm” (Cairo, 844/1490), Ms. Cairo (DAK), MM 13, 49 V.

<sup>435</sup> Woods, *The Aqqyunlu: Clan, Confederation, Empires*, 115.

‘Hassan left his camp in Aleppo and withdrew from it. He went to al-Bīra and encircled the city with a heavy blockade. He got through and reached its citadel where Wardabash was at that time governor, and the numeric value of Wardabash was eight.’<sup>436</sup>

This gives way to the next lettrist analyses:

Wardabāsh [i.e. governor of al-Bīra]	8	Ūzun Ḥasan	1	Wardabāsh	The two numbers are different and it has already repeatedly been said that the rule for a difference in type of the two numbers is that the highest will be the victor.  فالعديان  مختلفان وقد تكرر ان  القاعدة في اختلاف جنس  العديين ان يكون الاكثر  غالبا
Muḥammad ibn Murād Khān [i.e. the Ottoman Sultan]	2	Ḥasan Ibn Qarā Yuluk [i.e. Uzūn Ḥasan]	1	Muhammad Ibn Herlu Khan Ibn ‘Uthman Ḥasan	The two numbers were different both in quantity and in type, so the highest of them is the victor

<sup>436</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 66 R.

					<p>فالعَدان مختلفان في الكم والجنس فاكثرهما غالب</p>
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As discussed in chapter six and in Ms. Cairo (DAK) MM 13, Ūzūn Ḥasan had to leave Syria because of an attack of the Ottomans at the eastern frontier. After this, his son, Ughurlū Muḥammad took over the leadership of the campaign in al-Bīra. Ūzūn Ḥasan’s army fought the Ottoman army of Muḥammad Ibn Murād Khān but lost.<sup>437</sup> Ūzūn Ḥasan lost his son Zaynal in the battle, al-Ḥamzāwī adds, after which Ūzūn Ḥasan stopped the war.<sup>438</sup>

Qānṣū al-Yaḥyāwī governor of Aleppo	4	Al-Ghādir	8	Qānṣū al- Hiyāwī, governor of Aleppo	Two even numbers: the lowest is the victor  والحكم للاقل <sup>439</sup>
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The next amīr al-Ḥamzāwī mentions is Qanṣūh al-Yaḥyāwī (d. 902/1497). He was not only the viceroy of Damascus, but also the *amīr* who – according to the biographical dictionary of Ibn al-Ḥanbalī<sup>440</sup> – asked al-Ḥamzāwī for advice on his plans to become sultan, as discussed in chapter five of this dissertation on MM13. Boaz Shoshan mentions in his research on Damascus between 1480 and 1500 that the *amīr*’s wish to become sultan was also mentioned in the chronicle of al-Buṣrāwī (d. 905/1500), where the author states that Qanṣūh even employed the help of an ‘infidel’ (*shakḥ min al-*

<sup>437</sup> Woods, *The Aqqyunlu: Clan, Confederation, Empire*, 116; Aḥmad Timurbāy, Yūsuf ibn Qurqumās al-Ḥamzāwī, and ‘Alī Ibn Abī al-Rijāl, “Mukhtaṣar Kitāb al-Bāri’ fī Aḥkām al-Nujūm” (Cairo, 844/ 1490), Ms. Cairo (DAK), MM 13, fol. 49 v.

<sup>438</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 66 V.

<sup>439</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 66 V.

<sup>440</sup> Ibn al-Ḥanbalī, “723 -Yūsuf Ibn Qurqumās al-Sayfī Qāyṭbāy al-Ḥamzāwī al-Amīr al-Kabīr al-Ḥanbalī Jamāl al-Dīn Abū al-Maḥāsīn al-Ḥalabī al-Ḥanafī.”



*zanādiqa*) in order to increase his chances of becoming the next sultan of Cairo. As discussed in chapter six, however, Qāyṭbāy appointed al-Ḥamzāwī as *amīr* of the *hajj* caravan in order to create distance between Qanṣūh and al-Yaḥyāwī, so it is unlikely that al-Buṣrāwī’s reference here is about our author.<sup>441</sup> The conflict mentioned at this point is one between the *amīr* of al-Shām or Syria, named al-Ghādir and the viceroy of Aleppo Qanṣūh al-Yaḥyāwī.

Yashbak Mahdi [ <i>amīr</i> , <i>dawādār</i> of the sultan of Cairo]	Min	6	Bayandar [Aq-Quyūnlū <i>amīr</i> ]	8	Yashbak Mahdī	Min	Two numbers: lowest is dominant	even the
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After this, the conflict between Yashbak Min Mahdī and the Aq-Quyūnlū *amīr* Bayandur is mentioned. This minor battle in the conflict between the armies happened around the city of al-Rūhā’ or Edessa and was won by Yūsuf Bayandar. Yashbak’s army was a lot stronger, al-Ḥamzāwī adds to this, but citing the Qur’ān he writes:

وقد قال الله تع في محكم كتابه العزيز وقتل داوود جالوت وقتل داوود جالوت وآتاه الله الملك  
والحكمة وعلمه مما يشاء الله ولولا دفع الله الناس بعضهم ببعض لفسدت الأرض ولكن الله ذو  
فضلٍ على العالمين

‘God, who is exalted, had said in His precious book of wisdom that “David killed Goliath, and God gave him the kingship and prophethood and taught him from that which was in His will. And if it were not for God controlling [some] people by means of others, the Earth would have been corrupted, but God is full of bounty to the worlds.’<sup>442</sup>

<sup>441</sup> Boaz Shoshan, *Damascus Life 1480-1500: A Report of a Local Notary* (Leiden/Boston: Brill, 2009), 44–45.

<sup>442</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sirr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1489), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 66 V.fol. 67 R Quoted from the Qur’ān Sūrat al-baqara/2, āyat 25: وَنَشَرِ الَّذِينَ آمَنُوا وَعَمِلُوا الصَّالِحَاتِ أَنَّ لَهُمْ جَنَّاتٍ تَجْرِي مِنْ تَحْتِهَا الْأَنْهَارُ كُلَّمَا رُزِقُوا مِنْهَا مِنْ ثَمَرَةٍ رَزَقُوا قَالَوا هَذَا الَّذِي رُزِقْنَا مِنْ قَبْلُ وَأَنُوبُوا بِهِ مُتَشَابِهًا وَلَهُمْ فِيهَا أَزْوَاجٌ مُطَهَّرَةٌ وَهُمْ فِيهَا خَالِدُونَ

In the text, the number 7 has been added under the name of Goliath and 8 under the name of David: for two different types of numbers, the highest is the victor.<sup>443</sup> Given that Yashbak Min Mahdī was a colleague *amīr* of al-Ḥamzāwī within the Sultanate, this quote does not show much confidence in or sympathy of the author with the *dawādār*. The fact that he does not mention the battles that the army of Yashbak did win in this period suggests a similar animosity.

Qujmās al-Ishāqī [i.e. viceroy of Syria]	6	°Alā al-Dawla	2	°Alā al-Dawla	Two even numbers: the lowest is dominant  وهما من جنس واحد فاتفق منازل الفريقين  بالعرض فلم
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In 888/1483, the Dhū al-Qādirid leader °Alā al-Dawla laid siege on the city of Malatya. The Dhū al-Qādirids had, by then, gained the support and active assistance of the Ottomans.<sup>444</sup>

Qara Beg [Governor in Syria]	8	°Alā al-Dawla	2	°Alā al-Dawla	Two even numbers: the lowest is dominant
Wardabash [governor of el-Birra]	8	°Alā al-Dawla	2	°Alā al-Dawla	Two even numbers: the lowest is dominant
Timrāz al-Shamsī	9	°Alā al-Dawla	2	Timrāz	Two different kinds: highest is the victor

<sup>443</sup> al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālib Wa-l-Maghlūb” (Aleppo, 894/1488), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6, fol. 67 R.

<sup>444</sup> Har-El, *Struggle for Domination in the Middle East: The Ottoman-Mamluk War 1485-1491*, 124–25.

[grand master of the armour in the Sultanate of Cairo and son of Qāyṭbāy's sister]				
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When the news of the above-mentioned defeat against the army of ʿAlā al-Dawla Dhū l-Qādir arrived, Qāyṭbāy sent a new force of royal *mamlūks* under the command of Timrāz al-Shamsī. One of the *amīrs* involved was Qanṣūh al-Ghawrī, who would become the next sultan of Cairo. The army was joined by the forces of the governors Qujmās al-Iṣḥāqī and Uzdamur al-Sayfī, to finally meet the Dhū al-Qādirids. After initial successes for the Dhū al-Qādirids, the army of the Sultanate, led by Timrāz al-Shamsī, ambushed the Dhū al-Qādirid army near Malatya which led to the victory of the Egyptian-Syrian troops in 890/1485.<sup>445</sup>

Azbak [atābak/marshal of the army of the sulṭān in Cairo]	3	Aḥmad ibn Hersek [commander of the Ottoman army]	8	Azbak	Two types of numbers, so the highest is the victor
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Finally, al-Ḥamzāwī ends his list of examples (*amthila*) with a case that was also discussed in Ms. Cairo (DAK) MM 13: the battle between the army of the Cairo Sultanate led by Azbak Min Ṭuṭukh and the Ottoman army led by Aḥmad ibn Hersek. As discussed in chapter five of this dissertation, this battle ended with the victory of the army of Azbak. The copyist who wrote Ms. Cairo (DAK) MM 13 mentions there that the defeat could be explained by Aḥmad ibn Hersek's name, adding that he himself also had 'Aḥmad' as his *ism* or first name. Al-Ḥamzāwī remarks here that this case, too, is similar to the tale of David and Goliath. After this, the author concludes the anecdotes with the following sentences:

<sup>445</sup> Har-El, *Struggle for Domination in the Middle East: The Ottoman-Mamluk War 1485-1491*, 126–27.

واعلم ان هذا من اسرار الله الكافي في الغيب لكل من المتحاربين من غير شك ولا ريب ذلك فضل  
الله يرفض لها من شآ في عباده والله ذو الفضل العظيم لمن شآ في عباده

‘Know that this is part of the secrets of God, who is perfect in concealment, for all those who are at war, without doubt or uncertainty. This is the mercy of God. God is the possessor of great bounty for who He wills among His servants.’<sup>446</sup>

### 6.3.3. The Role of This Text for its Author

Just like Ms. Cairo (DAK) MM 13, this text shows no concrete traces of its use, as there are no marginal notes nor possessors’ statements added. The information about Yūsuf ibn Qurqumāṣ al-Ḥamzāwī on the basis of the biographical dictionary of Ibn al-Ḥanbalī, does however suggest the author’s personal involvement in at least some of the conflicts discussed here. Ibn al-Ḥanbalī stated that al-Ḥamzāwī had predicted for Qanṣūh that he could become sultan of Cairo, after which Qāyṭbāy appointed al-Ḥamzāwī as *amīr* of the *hajj* caravan in Aleppo.<sup>447</sup> Regardless of the historicity of this story, we know that al-Ḥamzāwī was in fact *amīr* in Aleppo for the period in which all of these conflicts took place. As such, he probably was involved in a lot of these battles, if not directly then still in indirect ways.

When it comes to al-Ḥamzāwī’s relation to the people mentioned in these lettrist calculations, his preoccupation with the Aq-Quyūnlū is highly remarkable. Being an *amīr* in the Sultanate of Cairo, al-Ḥamzāwī discusses relatively many of the conflicts in which Ūzūn Ḥasan was one of the fighting parties. Even if the other party involved is no colleague *amīr* of his, al-Ḥamzāwī deems these conflicts worth mentioning. This is for example the case for the conflict between Ūzūn Ḥasan’s army and that of the Ottoman leader Aḥmad ibn Murād Khān or that of the Qara-Quyūnlū leaders Jahānshāh ibn Qarā Yūsuf and his son Ḥasan ʿAlī ibn Jahānshāh. One of the reasons for this preoccupation may well have been the growing significance and threat posed

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<sup>446</sup> Yūsuf ibn Qurqumāṣ al-Ḥamzāwī, “Al-Durr al-Maṭlūb Fī Sīr al-Ghālīb Wa-l-Maghlūb” (Aleppo, 894/1489), Ms. Istanbul (Topkapı Sarayı Museum Library), Ahmet III 2485,6,” 68 V The last expression is quoted from the Qur’ān, surat al-Baqara/2, āyat 105: مَا يُوَدُّ الَّذِينَ كَفَرُوا مِنْ أَهْلِ الْكِتَابِ وَلَا

الْمُشْرِكِينَ أَنْ يُنَزَّلَ عَلَيْكُمْ مِنْ خَيْرٍ مِنْ رَبِّكُمْ ۗ وَاللَّهُ يَخْتَصُّ بِرَحْمَتِهِ مَنْ يَشَاءُ وَاللَّهُ ذُو الْفَضْلِ الْعَظِيمِ

<sup>447</sup> Cf. supra Chapter V section 5.2.4.

by the Aq-Quyūnlū principality which, Woods argues, under the rule of Ūzūn Ḥasan (r. 861/1457-882/1478) evolved into an empire. A second and related reason may have been the image the leader actively propagated for himself and his empire. In the first years of his reign, the principality grew so fast, that a coherent narrative was needed to hold it together. This was created through the ideology of millennial sovereignty: Ūzūn Ḥasan was represented as the sacred leader, appointed by God. Aq-Quyūnlū scholars wrote treatises on how his rule was predestined, among which lettrist treatises in which his name was analysed. In a victory proclamation following the leader's victory over the Timurid Sultan Abū Sa'īd, Ūzūn Ḥasan asserts that his reign, which started after his defeat of the Qarā Quyūnlū leader Jahānshāh ibn Qarā Yūsuf, was foretold in the Qur'ān. In *sūrat* 30, verses 3 and 4, it says: 'they shall gain victory in several years'. Several years in Arabic is written as '*bida<sup>c</sup> sinīn*'. This expression equals 872 according to the *abjad* value of the letters. The same goes for *sūrat* 48, verse 3, which says '[and] that God may bestow on you His mighty help'. Aq-Quyūnlū chroniclers too refer to Ūzūn Ḥasan's reign as predestined using lettrist readings of all sorts of verses from the Qur'ān.<sup>448</sup> One of these chroniclers, ʿAbd Allāh al-Baghdādī, also mentions that Ūzūn Ḥasan was born in the sun sign of Pisces. His birth horoscope, the scholar stated, foretold that he would defeat the king of Iraq. Moreover, al-Baghdādī interprets a fragment from the work of the Ottoman scholar ʿAbd al-Raḥmān al-Biṣṭāmī (d. 858/1454)— the Ottoman occult scholar who lived in the Sultanate of Cairo and coined the term of the *ikhwān al-ṣafā'* in this period<sup>449</sup> — as if it concerns Ūzūn Ḥasan. The passage he cites is:

'If the letter J becomes more tyrannical, he will be overcome by the letter M of the son of ʿUthmān.'<sup>450</sup>

Woods argues that al-Biṣṭāmī referred to 'Jarakisa' or the Circassian sultans of Egypt and Syria when using the jīm/J, and to Muḥammad ibn ʿUthmān or Fātiḥ Mehmet, the Ottoman sultan, when using the mīm/M, but al-Baghdādī appropriated this sentence to his own situation.<sup>451</sup>

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<sup>448</sup> Woods, *The Aqquyunlu: Clan, Confederation, Empire : A Study in 15th/9th Century Turko-Iranian Politics*, 102–3.

<sup>449</sup> Cf. supra Chapter V, section 5.2.2. and 5.2.3., where I discuss Gardiner, "The Occultist Encyclopedism of 'Abd Al-Raḥmān al-Biṣṭāmī."

<sup>450</sup> Woods, *The Aqquyunlu: Clan, Confederation, Empire*, 102.

<sup>451</sup> Woods, *The Aqquyunlu: Clan, Confederation, Empire*, 102.

Although al-Ḥamzāwī does not refer to al-Biṣṭāmī in his works, he might have known him. Al-Biṣṭāmī visited and worked in both Aleppo and Cairo and the scholars' ideological views show a significant overlap. Moreover, as recent research by Noah Gardiner has shown, al-Biṣṭāmī's encyclopedic work “*Shams al-Āfāq fī ʿIlm al-Ḥurūf wa-al Awfāq*” had the goal to make the science of letters more accessible to ‘the cosmopolitan learned class and political elites of the period’.<sup>452</sup> The early fifteenth century scholar was, as mentioned earlier, possibly the first one to refer to the interregional network of occultism scholars as the new *ikhwān al-ṣafāʾ*. If al-Ḥamzāwī did not know his work – which I deem unlikely – then he certainly was influenced by the scholar indirectly.

Both the influence of the Aq-Quyūnlū ideology of divinely predestined leadership and the work of the occultist scholar al-Biṣṭāmī are important questions to be posed in future research on the numerous manuscript sources from this period and area that remain, up until today, unstudied. All the evidence we have for now, I argue, points into the direction of a participation of al-Ḥamzāwī and Timurbāy –the latter probably among other readers of the first – in an occult intellectual network that stretched across cultural divides and incorporated important parts of the Persianate and Turkish scholarly elite.<sup>453</sup> This network has been discussed for the fourteenth and fifteenth century by Binbaṣ, who characterised it as a ‘republic of letters’, but for the late fifteenth century scholars that shared its epistemological beliefs, this network proves to have been equally a ‘republic of numbers’ and a ‘republic of stars’.<sup>454</sup>

## Conclusion

In this chapter I have discussed the work “*Al-Durr al-Maṭlūb fī Sirr al-Ghālib wa-l-Maghlūb*”, authored by Yūsuf Ibn Qurqumās al-Ḥamzāwī and copied in Cairo by Aḥmad ibn Aḥmad Timurbāy. On a first level, this work is a lettrist analysis of conflicts

<sup>452</sup> Gardiner, “The Occultist Encyclopedism of ‘Abd Al-Raḥmān al-Biṣṭāmī,” 3–4.

<sup>453</sup> Binbaṣ, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn ‘Alī Yazdī and the Islamicate Republic of Letters*; Gardiner, “The Occultist Encyclopedism of ‘Abd Al-Raḥmān al-Biṣṭāmī.”; Fleischer, “Ancient Wisdom and New Sciences: Prophecies at the Ottoman Court in the Fifteenth and Early Sixteenth Centuries”.

<sup>454</sup> Binbaṣ, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn ‘Alī Yazdī and the Islamicate Republic of Letters*. The expression ‘republic of letters’ refers to the correspondence between elite figures, among whom were many –but not exclusively– lettrist scholars. I used the ambiguity of the terminology of ‘letters’ here to claim that the late fifteenth century scholars discussed here combined a lettrist theory with a specific outlook on astrology and mathematics. It is not my intention to argue here that Binbaṣ’ work concerns lettrist scholars exclusively, nor to downplay the importance of correspondence in his use of the terminology of a ‘republic of letters’.

and battles at the Syrian frontier zone of the Sultanate of Cairo. However, on a second level, it reveals the views on the sciences held by the authors. In this chapter, I have first discussed these views on knowledge in section 6.2. There, I have argued that al-Hamzāwī's work displays a Neopythagorean view on the sciences, in accordance with the interregional network of occultist scholars referred to as the neo-*ikhwān al-ṣafā'*. On the one hand, the author considers *ʿilm al-ḥisāb* or mathematics as a superior science, using this term for both lettrism as for mathematics, since numbers are considered to be an expression of the form in the same way as letters are expressions of a being in its entirety. On the other hand, the author emphasises the superiority of the science of religion (*ʿilm al-dīn*) to that of mathematics, considering the latter nonetheless as a means to arrive at the first. The science of the stars, it is suggested, is one further derivative of these leading sciences, as the stars are of the most visible signs, the *al-lām al-ʿlām*, that God has installed in the universe for scholars to unravel the hidden meaning of the world.

In the second half of this chapter, I have discussed the principle of '*al-Ghālib wa-l-Maghlūb*' itself, in which this view provides the backbone for a lettrist analysis of conflicts and wars in the Syrian frontier zone of the Sultanate. Through the use of anecdotes, just like in ms. Cairo (DAK) MM 13, the author explains the importance of his own occult and elitist practice. Al-Ḥamzāwī himself was an *amīr* responsible for the caravan of the *ḥajj* in Aleppo, so he must have been involved in a lot of these conflicts either directly or indirectly. His preoccupation with the Aq-Quyūnlū leader Ūzūn Ḥasan, it is argued in section 6.3.3., may have been influenced by the latter's imperial ideology, which was based on a sacral lettrist interpretation of his leadership as well as by the interregional network of occult scholars that identified themselves as *ikhwān al-ṣafā'* across the early modern Persianate, Turkish and Syro-Egyptian world. As such, these texts provide insight into the role the science of the stars, and more specifically its occult counterpart *ʿilm aḥkām al-nujūm*, had for this group of scholars in the Sultanate: it provided them with the keys to unravel God's most clear and bright signs in the universe.





## Conclusion

In the third and last part of this dissertation, I have discussed the work of two scholars who, in contrast to the *muwaqqits* in part two, used the terminology of *‘ilm aḥkām al-nujūm*. These scholars held a Neopythagorean view on the universe which they shared with an interregional network of occult scholars who identified themselves as *ikhwān al-ṣafā’*. This network was known to be active in the Persianate and Turkish early modern world. The Syro-Egyptian region – and the cities of Cairo and Aleppo in particular – has always been regarded as a crossroads and meeting place for travelling scholars. These texts, I argue, attest to this network’s presence among the scholars of the late fifteenth century Sultanate of Cairo too: scholars that had a family and social backgrounds within the Sultanate itself rather than having travelled there.<sup>455</sup> In chapter five, I have first discussed manuscript ms. Cairo (DAK) MM 13, which consists of a *mukhtāṣar* of Ibn Abī l-Rijāl’s work “*Kitāb al-Bārīc fī Aḥkām al-Nujūm*” and fragmentary reports of the positions of the planets and stars at three moments in the late fifteenth century history of the Cairo Sultanate. Both the handwriting, the view and the explicit references in it show that its author and copyist were linked to an informal movement of occult scholars referring to themselves as the neo-*ikhwān al-ṣafā’* who are known from Persian and Turkish sources. Their view, as I have mentioned, was characterised by the Neoplatonist belief in an abstract world of ideas. These ideas have been instantiated in particular beings and things, which are considered inferior to the ideal world because the ideal form in them is bound to matter. On the basis of the research of Liana Saif, I have argued in the fifth chapter that al-Ḥamzāwī and Timurbāy saw the stars as the key signs for their primarily hermeneutical project to which they referred in ms. Cairo (DAK) MM 13 as *‘ilm aḥkām al-nujūm*: as interpretation of the signs of the stars with the goal of getting a glimpse of the divine truth or God, by whom they were created as efficient causes for the world below. However, as only the most intelligent scholars appear to be able to interpret these signs, al-Ḥamzāwī and Timurbāy state that a small elite of scholars should present their knowledge to a wider audience. They do this through the use of anecdotes,

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<sup>455</sup> As has been shown by İlker Evrim Binbaş for the fourteenth century Sultanate of Cairo as well as for the fifteenth century Timurid realm. Binbaş, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn ‘Alī Yazdī and the Islamicate Republic of Letters*.

in this text particularly of three events in the military history of the Syrian frontier zone of the Sultanate: The first encounter of Ūzūn Ḥasan and Yashbak Min Mahdī in 877/1472, the battle between Azbak Min Ṭuṭūkh's army and the Ottomans in Adana in 890/1485 and the battle between Yashbak Min Mahdī and Shah Suwār in 874/ 1470. Because of their commitment to spreading their views through these anecdotes, I have called these scholars elitist but post-esotericist, as they clearly did not intend to keep their works within their own, limited group.

On the other hand, the view of these scholars on the stars as signs can be situated within a wider Neopythagorean framework, as I have done in the sixth chapter on the basis of their treatise “*Al-Durr al-Maṭlūb fī Sīr al-Ghālib wa-l-Maghlūb*”. On the first level, this treatise is a letterist analysis of important conflicts and battles at the Syrian frontier zone of the Sultanate of Cairo. On a second level, it expresses the authors' belief that every being and thing has a numerical value specific to his or her ideal form. We refer to this being through language: the letters we use describe these beings as the numbers describe their ideal form. As such, the science of letters and the science of mathematics, by al-Ḥamzāwī and Timurbāy simultaneously called *‘ilm al-ḥisāb*, offer the means to the highest form of knowledge, that is: *‘ilm al-dīn* or the science of religion. The stars, it seems, were one of the instances through which the divine had an influence on the created world and hence one of the most clearly visible signs to be interpreted through the means of letters and numbers. Here again, the scholars explain their view by using anecdotes of military conflicts that happened in the late fifteenth century Syrian-Anatolian area. They do however not only refer to conflicts in which the Sultanate of Cairo was involved, but show a great interest in the Turkish-Persianate world too and the Aq-Quyūnlū in particular. I have argued that this interest again shows the participation of al-Ḥamzāwī and Timurbāy — the latter probably among other readers of the first — in an occult intellectual network that stretched across cultural divides and incorporated important parts of the Persianate and Turkish scholarly elite.<sup>456</sup> This network has been discussed for the fourteenth century by Binbaş as a ‘republic of letters’, but for the late fifteenth century scholars that shared its

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<sup>456</sup> Binbaş, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn ‘Alī Yazdī and the Islamicate Republic of Letters*; Gardiner, “The Occultist Encyclopedism of ‘Abd Al-Raḥmān al-Biṣṭāmī.”; Fleischer, “Ancient Wisdom and New Sciences: Prophecies at the Ottoman Court in the Fifteenth and Early Sixteenth Centuries”.

epistemological beliefs, the network proves to have been equally a ‘republic of numbers and stars’.<sup>457</sup>

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<sup>457</sup> Binbaş, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn 'Alī Yazdī and the Islamicate Republic of Letters*, 104–13.



## Conclusion

This dissertation provided a discussion of *ʿilm al-nujūm* or the science of the stars in the late fifteenth century Sultanate of Cairo through two distinct but related practices: *taqwīm* and *ʿilm aḥkām al-nujūm*. Both of these manuscript collections circulated in the same period and –at least to some extent - in the same milieu. Moreover, the horoscopes compiled in the *ʿilm aḥkām al-nujūm* work must have been based on these or other *taqwīm* tables. A direct link between them cannot be proven, but is a promising hypothesis for further research. For now, however, I have treated al-Ḥamzāwī and Timurbāy’s work as a separate but related collection of texts on the science of the stars in this period.

The first subdiscipline discussed, that of *taqwīm*, consists in the compilation of ephemerides, and is discussed in the second part of this dissertation through the popular corpus of *taqwīm* treatises initiated by the *muwaqqit* or Islamic timekeeper Ibn al-Majdī. This collection of late fifteenth century *taqwīm* treatises, I have argued in chapter four, bears witness to a very concrete part of the science of the stars. As the sources, texts and practical tools of *muwaqqits* or Islamic timekeepers, they are nowhere referred to as *ʿilm aḥkām al-nujūm*, notwithstanding the fact that *taqwīm* tables could have been – and were in later periods in fact– used for future telling. The latter is suggested by the chapters on birth horoscopes in “*Al-Jāmiʿ al-Mufīd*”, by the focus on planetary conjunctions and aspects in several other manuscripts, and by the astrological wheel that is bound together with Ms. Cairo (DAK) MM 85,1. The terminology used in these texts is that of *ṣināʿat/ʿamal al-taqwīm* (the art/practice of compiling ephemerides) which is presented as pertaining to the discipline of *ʿilm al-nujūm* (the science of the stars), *ʿilm al hayʾa* (the science of planetary theory) or *ʿilm al-mīqāt* (the science of timekeeping).

In the third and last part of this dissertation, I have discussed the work of two scholars who, in contrast to the *muwaqqits* in part two, used the terminology of *ʿilm aḥkām al-nujūm*. These scholars held a Neopythagorean view on the universe which they shared with an interregional network of occult scholars who identified as the *ikhwān al-ṣafāʾ*, as ṣūfī scholars and as illuminationist philosophers. This network was known to be active in the Persianate and Turkish early modern world. The Syro-Egyptian region – and the cities of Cairo and Aleppo in particular – has been regarded

as a crossroad and meeting place for travelling scholars, as shown in earlier research by Binbaş and Gardiner, but a lot of questions remain when it comes to the local integration of these practices among the scholarly elite of the Sultanate. The texts discussed in the third part of this dissertation, I argue, provide a contribution to the understanding of the role of these intellectual networks and circulating traditions within the Sultanate, among local scholars hailing from the Sultanate of Cairo itself. The late fifteenth century was a period of what Gardiner has called ‘a new cosmological imaginary [...] which was emanationist, analogist and often millenarian in outlook’ and the texts discussed in part III of this dissertation bear witness to the development of this intellectual climate in the Sultanate of Cairo.<sup>458</sup> In chapter five, I have first discussed ms. Cairo (DAK) MM 13, which consists of a *mukhtaṣar* of Ibn Abī l-Rijāl’s work “*Kitāb al-Bārīc fī Aḥkām al-Nujūm*” and fragmentary reports of the positions of the planets and stars at three moments in the late fifteenth century history of the Cairo Sultanate. The handwriting, the view and the explicit references show that its author and copyist were linked to this informal movement of the neo-*ikhwān al-ṣafā*. I have argued in the fifth chapter that al-Ḥamzāwī and Timurbāy saw the stars as the key signs for their primarily hermeneutical project to which they referred in Ms. Cairo (DAK) MM 13 as *‘ilm aḥkām al-nujūm*: as an interpretation of the signs of the stars with the goal of getting a glimpse of the divine truth or God, by whom they were created as efficient causes for the world below. However, as only the most intelligent scholars were considered to be able to interpret these signs, al-Ḥamzāwī and Timurbāy state that a small elite of scholars should present their knowledge to a wider audience. They do this by using anecdotes about events in the military history of the Syrian frontier zone of the Sultanate. Because of their commitment to spread their views through these anecdotes, I have called these scholars elitist but not esotericist in Gardiner’s sense of this terminology, as they clearly wanted to spread their ideas, although in a very patronising way.<sup>459</sup>

Furthermore, I situated the view of these scholars on the stars as signs within a wider Neopythagorean framework in the sixth chapter, in my discussion of their treatise “*Al-Durr al-Maṭlūb fī Sirr al-Ghālib wa-l-Maghlūb*”. On the first level, this

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<sup>458</sup> Noah Gardiner, “Books on Occult Science,” in *Treasures of Knowledge: An Inventory of the Ottoman Palace Library (1502/3-1503/4)*, ed. Cornell Fleischer, Gülru Necipoğlu, and Cemal Kafadar (Leiden/Boston: Brill, 2019), 736.

<sup>459</sup> Noah Gardiner, “The Occultist Encyclopedism of ‘Abd Al-Raḥmān al-Biṣṭāmī,” *Mamluk Studies Review* 20 (2017): 3–38.

treatise is a alphanumerical analysis of important conflicts and battles at the Syrian frontier zone of the Sultanate of Cairo. On a second level, it expresses the authors' lettrist belief that every being and thing has a numerical value specific to its ideal form. The lettrist theory discussed in chapter six is strongly influenced by the work of al-Būnī and shows that the author and copyist were involved in reading groups on al-Būnī's texts. As such, they provide interesting products of the highly eclectic climate of the late fifteenth century. The science of letters and the science of mathematics, by al-Ḥamzāwī and Timurbāy simultaneously called *ʿilm al-ḥisāb*, are presented as the means to the highest form of knowledge, that is: *ʿilm al-dīn* or the science of religion. The stars and planets, it seems, were one of the instances through which the divine had an influence on the created world and hence one of the most clearly visible signs to be interpreted through the means of letters and numbers. Here again, the scholars explain their view by using anecdotes of military conflicts that happened in the late fifteenth century Syrian-Anatolian area. They do however not only refer to conflicts in which the Sultanate of Cairo was involved, but also show a great interest in the Turkish-Persianate world and in the history of Turkmen Aq-Quyūnlū leadership in particular. I have argued that this interest again shows the participation of al-Ḥamzāwī and Timurbāy in an occult intellectual network that stretched across cultural divides and incorporated important parts of the Persianate and Turkish scholarly elite, a network that was not only a 'republic of letters', but, for these late fifteenth century scholars that shared its epistemological beliefs, proved to have been equally a republic of numbers and stars.<sup>460</sup>

This dissertation's study of the science of the stars, both as *taqwīm* or *ʿilm al-mīqāt* and as *ʿilm aḥkām al-nujūm* was based on a material approach to texts, as indicated in the last chapter of the first part of this dissertation. I have approached the manuscripts discussed throughout this dissertation as artefacts of the period in which they were produced, reproduced and circulated, rather than as material containers of a presumed immaterial content that was fixed at the moment of their production. When we 'return to the manuscripts' in a material sense instead of a humanist one, the discipline of the science of the stars in the Cairo Sultanate shows itself rather differently from how it has been presented in earlier research. Rather than an elevated mathematical science distinct from astrology, the science of timekeeping – and *taqwīm*

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<sup>460</sup> Binbaş, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn 'Alī Yazdī and the Islamicate Republic of Letters*.

in particular – proved to have been a very practical science practiced by a wide diversity of scholars and artisans. Moreover, the networks in which *taqwīm* treatises circulated show that the late fifteenth century witnessed a tendency of the use of specifically Ibn al-Majdī’s method for compiling *taqwīm* for future-telling. The appropriation of both the authoritative name and method of Ibn al-Majdī in the Ottoman period seems to be a continuation of this tendency. While Ibn al-Majdī’s treatises were popular in the late fifteenth century Sultanate of Cairo, they became even more widespread in the Ottoman Sultanate. In this period, for example, a work in which Ibn al-Majdī is said to have compiled birth horoscopes for *amīrs* starts circulating, along with several Ottoman works of *taqwīm* that explicitly aim at fortune telling.<sup>461</sup> Up until today, no earlier ‘original’ has been found of these texts though, despite the fact that the writers ascribe their texts to Ibn al-Majdī. It seems like this scholar was regarded as an authority for this genre of texts in the Ottoman period, and his reputation as an exception amidst other *muwaqqits* in the Sultanate of Cairo might well be a product of that. However, this remains an interesting question for further research in Ottoman studies. Another promising question for future research is that of the contextualisation of the *taqwīm* tables. Whereas the scholars who used and copied Ibn al-Majdī’s tables could not be contextualised by the use of contemporary historiographical material, I suspect that this will be possible for other tables. The amount of sources in the libraries is vast, so I consider it almost impossible that we do not have information on any of the historical actors mentioned in their marginal notes in the contemporary historiographical sources.

Moreover, whereas the practice of *taqwīm* was very common in the Sultanate of Cairo, *‘ilm aḥkām al-nujūm*, which was discussed in the sixth chapter through the work of al-Hamzāwī and Timurbāy, was a lot more elitist. By questioning these categories and dichotomies on the basis of a material approach, this dissertation aims at opening up new avenues for research on the early modern history of science in Islamicate societies without falling prey to either orientalism or triviality. These pitfalls, I have argued, lie in the rigid distinctions between the material bearer and the ideal content of a text, between an East and a West, between science and religion, and in this case particularly also between astrology and astronomy. To make this distinction for the knowledge practices of the Sultanate of Cairo is to enforce a

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<sup>461</sup> For the birth horoscopes, see Ms. Cairo (DAK) MM 141 written ca. 1175 / 1762. King, *A Survey of the Scientific Manuscripts Available in the Egyptian National Library*, 73.



categorisation on them that the historical actors themselves did not use. It is an interpretation from hindsight, forcing practices in a framework that is not only anachronistic, but that also stems from nineteenth century narratives that deliberately “irrationalised” the Islamicate world. This dissertation argues that instead of listening to these narratives, we should in fact – to use Hirschler’s words - start listening to the manuscripts’ story<sup>462</sup>. As shown in Gardiner’s work, the circulation of texts – whether they have already been studied before or not at all – sheds a whole new light on practices that have up until today been neglected, because they have only been studied in as far as they confirm a narrative we have already told. That narrative, as Melvin-Koushki and Saif have shown, was not an innocent one, but instead one that excluded the Islamicate world from ‘Westernness’, and thus from rationality itself, hence creating ‘a disappearing act within a disappearing act. Islam as the Occult west; occultism as oriental science’.<sup>463</sup> This does not mean that research on the history of science in Islamicate societies can no longer use these categories. But it should be aware of its own situatedness and apply the historiographical reflexivity needed to actively fight orientalism. We need to acknowledge its remnants as the forms of structural racism they are, and instead start working on a new narrative about ‘us’, about who we are. We need a new history that does not proclaim the perspective of a small percentage of us as being universally human. In that sense, this dissertation hopes to provide an act of boundary work itself, one that expresses the hope that the ‘oriental’ label it gets – while still highly relevant to point things out today – will sooner or later become a redundant qualifier.

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<sup>462</sup> Konrad Hirschler, *A Monument to Medieval Syrian Book Culture: The Library of Ibn ʿAbd al-Hādī* (Edinburgh: Edinburgh University Press, 2019), 13.

<sup>463</sup> Melvin-Koushki, “Is (Islamic) Occult Science Science?,” 5.



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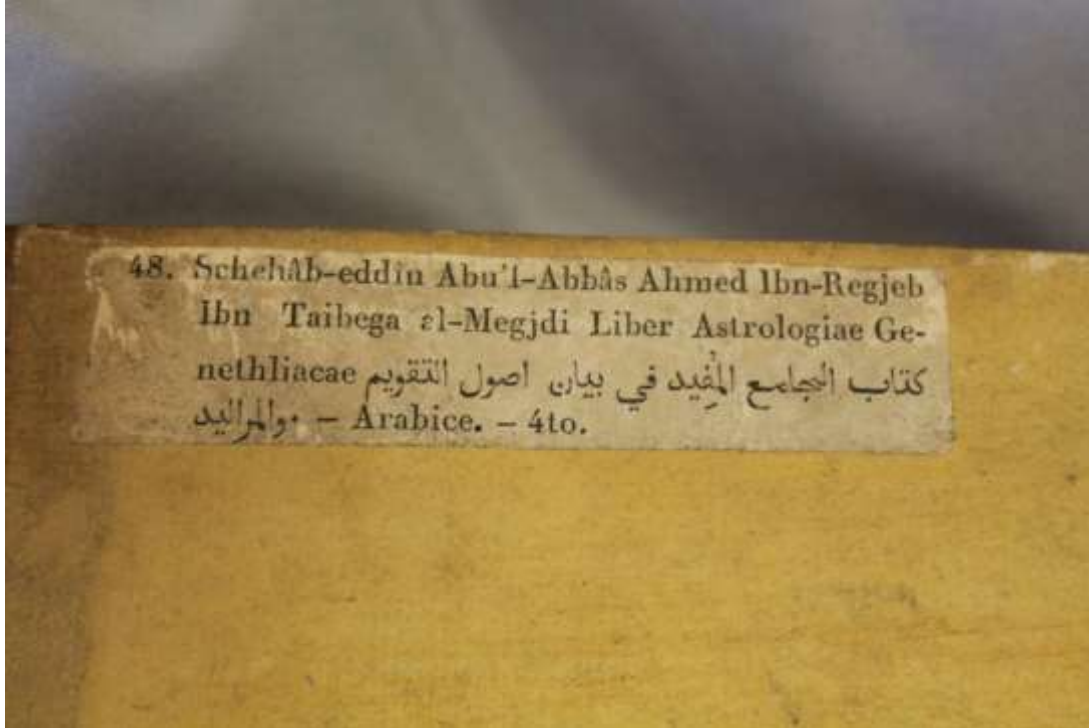


## Appendix 1: Facsimile Fragments of *Taqwīm* Treatises

### Ms. Leiden (University Library) Acad. 48 – “Al-Jāmiʿ al-Mufīd fī Bayān Uṣūl al-Taqwīm wa-l-Mawālīd”

(My own pictures)

Description and of the manuscript in the collection and picture of entire ms:



Fol. 1 R

هذا الكتاب بخط العلامة أبو الطاهر بن محمد بن عباد استوفى الحاسب الوضوح رحمه الله

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# كتاب الجامع المفيد

- في بيان اصول التقويم والموازين
- بالفيلسوف الامام العالم
- العلامة سهاب الدين
- احمد بن رجب بن
- طيفنا المجددي
- الشافعي
- رحمه الله
- امس

من ذمير كاتبة العبد  
الشفقة ابو الطاهر بن محمد بن عباد

من راعى على عهده  
العلامة المصطفى بن محمد بن عباد

في بيان اصول التقويم والموازين  
بالفيلسوف الامام العالم

معلم في فضل الله

بايعم لوكي السلام  
المهوريني

من راعى على عهده  
العلامة المصطفى بن محمد بن عباد

من راعى على عهده  
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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ وَصَلَّى اللَّهُ وَسَلَّمَ عَلَى سَيِّدِنَا مُحَمَّدٍ وَآلِهِ  
**قَالَ** الشَّيْخُ الْأَمَامُ الْعَالِمُ الْعَلَامَةُ بِقِيَّةِ الْمُجْتَمِعِينَ أَوْ حَذَرِيًّا  
 وَفَرِيدِ عَصَمٍ وَأَوَانَةِ شَهَابِ الدِّينِ أَبُو الْعَبَّاسِ أَحْمَدُ بْنُ الْمُجْتَمِعِ الشَّافِعِيِّ  
 رَحِمَهُ اللَّهُ تَعَالَى **الْمُجْتَمِعُ** بَارِي النَّسَمِ، وَخَالِقُ الْأَمْرِ، وَمَوْلَى الْأَنْوَارِ  
 فِي الظُّلْمِ، وَمُخْرِجُ الْوُجُودِ مِنَ الْعَدَمِ، الْجَوَادُ عَلَى الْخَلْقِ بِسَوَابِغِ النِّعَمِ،  
 الْكَرِيمُ الَّذِي لَا يَعْزُزُهُ كَثْرَةُ الْأَنْفَاقِ، وَلَا يَعْسِكُهُ خَشْيَةُ الْأَمْلَاقِ،  
 وَلَا يَنْقُصُهُ إِدْرَارُ الرِّزَاقِ، وَلَا تَدْرِكُهُ النُّوَظِرُ وَالْأَحْدَاقِ، الْقَادِرُ  
 الَّذِي نَفَذَتْ قُدْرَتُهُ فِي جَمِيعِ الْأَكْوَانِ، الْعَظِيمُ الَّذِي شَمِدَتْ بِغُطْنَتِهِ  
 أَوْضَاحُ الدَّلَائِلِ وَالْبُرْهَانِ، أَحْمَدُهُ عَلَى جَزَائِلِ إِحْسَانِهِ، وَأَعُوذُ بِهِ مِنْ  
 حُلُولِ خِذْلَانِهِ، وَأَسْتَهْدِيهِ بِنُورِ بَرَهَانِهِ، وَأَمِنُ بِهِ حَقَّ إِيمَانِهِ  
 وَأَشْتَدُّ إِذَا لَأَ إِلَهَ إِلَّا اللَّهُ وَحْدَهُ لَا شَرِيكَ لَهُ الَّذِي عَمَّ الْخَلَائِقِ  
 جَدْوَاهُ، وَتَمَّ حِكْمَهُ فِيهِمْ أَضْلُهُ وَهَدَاؤُهُ، وَأَحَاطَ عِلْمُهُ بِمَرَاتِعِهِ  
 مِنْهُمْ وَعَصَاهُ، وَأَشْتَدُّ إِذَا مَجَّدَ أَعْبَادَهُ الْمُتَخَيَّبِ، وَرَسُولُهُ الْمُتَخَيَّبِ  
 بَعَثَهُ وَالنَّاسِ فِي غَمِّهِ الْجَهْمَالَةَ سَاهُونَ فِي غَثَرَةِ الضَّلَالَةِ، فَقَامَ  
 صَلَّى اللَّهُ وَعَلَى آلِهِ مَجْدًا فِي إِندَارِهِ، مَرشِدًا الْأَنْوَارِ، بِغَزْمِ تَائِبِ  
 وَحُكْمِ وَاجِبِ، حَتَّى تَأَلَّقَ شَبَابُ الْإِيمَانِ، وَتَفَرَّقَ حَزْبُ الشَّيْطَانِ  
 صَلَّى اللَّهُ عَلَيْهِ وَعَلَى آلِهِ وَصَحْبِهِ وَأَقْرَبِيهِ، وَذَوِي رَحْمَةٍ وَمَوَالِيهِ صَلَاةً  
 جَزْبَلَهُ، مَوْصُولَةً مَقُولَهُ، لَا انْقِطَاعَ لِمَزِيدِهَا، وَلَا انْتِضَاعَ لِمَشِيدِهَا،  
 وَلَا مُنْضَاعَ لِمَعُودِهَا، وَسَلْمٌ تَسْلِيمًا كَثِيرًا **وَرَعْدٌ** فَإِنَّ اللَّهَ تَعَالَى

شرف

تشترك في علامته فتوضع في بيت واحد اختيارا وهذا هو الجدول

جدول مدخل السنن والشهور الفارسية في أيام الاسبوع

الاسابيع	١	٢	٣	٤	٥	٦	٧
مرداد ماه	د	هـ	و	ز	ح	ط	ي
شهربر ماه	و	ز	ح	ط	ي	ك	ل
مهر ماه	ا	ب	ج	د	هـ	و	ز
فروردین ماه آبان ماه	ب	ج	د	هـ	و	ز	ح
اردیبهشت ماه	ج	د	هـ	و	ز	ح	ط
خرداد ماه	د	هـ	و	ز	ح	ط	ي
بهمن ماه	هـ	و	ز	ح	ط	ي	ك
تیر ماه	و	ز	ح	ط	ي	ك	ل
اسفند ماه	ز	ح	ط	ي	ك	ل	م

**الباب السادس** في استخراج التواريخ التي تقدمت  
بعضها من بعض وقمة ثلاثة فصول **الفصل الاول** في تقدم  
ما يجب معرفته اعلم انك اذا اردت ان تستخرج تاريخ  
مجهول من معلوم فلا بد وان يكون ما بين التواريخ من

السنن



من ايام الشهر العزى الذى انت فيه **واما** معرفة او ابل السنين  
 والشهور فخذ ما زاد على **٦٥٢** للهجرة التامة وزد عليه ريعه  
 من غير كسر واستقط المجمع **٧٧** وابد ابالباقي من يوم الاحد تحت  
 انتميت فهو اول القبطية وان بقى كسر فالسنة تسمى باسمه والا فليس  
 واما الشهر فعد من اول نوت بالشهر الذى تريد اوله ثم اضعف  
 ذلك واستقط منه واحدا واستقط الباقي سباعا وافن الباقي  
 من يوم دخلت السنة يحصل بعد ذلك الشهر ولسه اعلم  
**وجه اخر** خذ ما زاد على **٨٣٩** بالمطلوبه وزد عليه ريعه  
 من غير كسر واستقط المجمع اسباعا وما بقى عد به من يوم الاربعاء  
 تحت انتميت فهو اول نوت الداخل في السنة العربية  
 المفروضة ثم زد على الكسر سباعا فان تكمل واحدا فهي كسر والا  
 فسمها باسم ذلك الكسر ولسه اعلم **وجه اخر** في معرفة  
 ابطى الشمس هو ان تعلم تاريخ السنة التى تريد معرفة اولها  
 من شئ التهنيد واستقط منها **١٥١٢** اما وزد على الباقي ريعه من  
 غير كسر واستقط المجمع **٧٧** حتى يعى **٧** او دونها فهو ابطى الشمس  
 لملك السنة فافنه من يوم الاربعاء تحت انتميت فهو اول  
 السنة القبطية ولسه اعلم وصل الله على سيدنا محمد واله وصحبه

Ms. Cairo (Dār al-Kutub) TM 82,1 – “Ghunyat al-Fahīm wa-l-Ṭarīq ilā Ḥall al-Taqwīm”

Fol. 1 R. (Photographs Courtesy of DK)



بسم الله الرحمن الرحيم رب يسر **الجدول** على فاتحه ما نبتدي به من الاعمال  
 البكور في كل الاحوال والافعال، الدائم بغير انتقال، الثابت في ملكه فليس له نظير ولا  
 مثال، الخالق ما حارت فيه الافكار وجات كل مجال، احمدده اجلا لا لعظمته، اخلاصا  
 لربوبيته، وتواضعا لكبراه، حمدا دائما موبدا، **فقد** تعد رساله مختصم في عمل  
 التقويم سميتها بعنقه الفهيم والطريق الي حل التقويم وهي تشتمل على ثلاث ابواب  
**الباب الاول** في التواريخ وما يتعلق بها فاول ذلك معرفة مدخل السنه العربيه  
 في ايام الاسبوع وطريقه ان تسقط سني التارخ العربي بالسنه التي تزيد **٢٠ ٢١**  
 الي ان يبقى **٢١** فادونها وتدخل به الي الجدول المجدد للتارخ العربي وتنظر في السطر  
 الاعلى مثل الذي فضل او اقرب ما تجد ما هو اقل والباقى بعد ذلك تنظر مثله في سطر  
 الجدول فالتاريخ في البيت المشترك فهو علامه اول المحرم فان كان الحرف الذي دخلت به  
 من سطر الطول ملتوب باسود فالسنه كبيسه والافلا فالتاريخ في التقويم عدد ايام  
 الشهور العربيه **شهر** وشهر **كيط** فتكون دي الحجه في الكبيس **ب** ايضا **شهر**  
**ادخل** تحت علامه اول السنه تجد علامه اول كل شهر فاكتب جدول الاسبوع تانسما  
 باول كل شهر كما عرفت **شهر** جدول التواريخ الاربعه واستخرج ما يوافق ذلك اليوم  
 من التواريخ الثلاث وطريقه ان تدخل في سطر مجموع العربيه بعد السنين التامات  
 التي معك او بما هو اقرب منه ما هو اقل وخذ ما يقابله من مجموع القبطي وايامه ودقايقه  
 ثم ادخل في مبسوطه العربيه ايضا بعد السنين التي فضلت معك وخذ ما يقابلها من مبسوطه  
 القبطي من السنين والايام والدقايق بعد ان تزيد على الايام واحدا ابدا واجمع كل  
 جنس الي جنسه وكلما ارتفع اجتمع من الدقايق **س** ارفعها بيوم وكلما ارتفع من الايام  
**٣٦٥** و **٣٦٥** دقيقه ارفعها لسنه فما اجتمع من السنين وهي السنين التامه الماصيه **د**  
 فاطرحها **ع** ان كانت سريانيه او قبطيه فان كان الفاضل واحدا فاحفظ **هـ** او اثنتان  
 فاحفظ **ل** وزده على الدقايق التي معك وان فضل ثلاثه فانقص من الدقايق التي معك  
**هـ** فان لم يمكن الاستقاطه فحل يوما من السنه الناقصه بستين دقيقه واستقط من

الجلد

قائده عظيمة

في معرفة مدس الاتصال والاسمال اما البعد فانه فضل بين المعوس او الفضل من المقوم والرجح المفروضه واما الهب  
المعدل فانه الفضل من الهب ان كان اراجح لو سدهن وكجوعها ان كان احد ما راجحا ولعت السبر ان كان احد هالما  
او بوطه من النكلا اذ العور وكعوس البعد في جد والرهت المعدل وطرفينه ان ماخذ ما يستوي ما بازا ما يساوي كيب  
البعد من العدد الطولي فيكون هو الحاصل من السوس ان وجدت الطولي مثل البعد سوي وان سدهن بعضا فبها ربه  
ثم قوسها وض ما بازاها من العدد كما كان وجدت مثل تلك المعدسوا فالعدد الطولي مضافا الي الاول هو الحاصل  
من التقويس فاصغف على الخارج ان صفة البعد هل الهب المعدل فان لردت ان تعرف وقت الاتصال  
ان جعلت ساعات فاصرب خارج القسمة في ك تحصد ساعات وكسورها ما ضينه من الزوال وان لردت  
ان جعلت وقت الاتصال بها فاصرب خارج القسمة في م مرفوع درج محصلا درجها وكسورها ما ضينه من الزوال  
سها الاول متى رجعت السعه ربه ولم تجد سها واكبه وانكسرت في خارج السوس من ارفع البقية مره  
اوي الثانيه متى لم يجد ما لساوي الهب المعدل فخذ ما هو اقرب اليه ما هو لقل منه او ما هو اكثر وقوس  
حده البعد ثم البعت الذي بعد ذلك الهب او ما هو اقرب اليه ما هو اكثر منه وقوس منه البعد ثم هذا الفضل من السوسين  
واضرب في الحاصل ضرب الفضل من الهب وما هو اقرب اليه ما هو اقرب اليه ما هو اكثر منه وقوس منه البعد ثم هذا الفضل من السوسين  
على الاكثر ان كان المضروب في جمنه هو الفضل منه من الهب المزوج في الاقاطع الخاص من الاقل واعلم ان الحاصل  
من سوس الاكثر من الحاصل من سوس الاكثر الاول متى انت صفت الهب المعدل فقامه كان الخارج  
من السوس هو الخارج القسمة وقد وضعه صدها اذا قطعت بجزء البعد كجزء البعد او ما حد ما حد له فراوي  
صده كصده اذا صده من الحاصل من السوس محصلا الحاصل من القسمة ووضع البعد في الطول والهب المعدل في النوس في السوس

**فصل** اذا اردت ان تعرف سنة معروضه اي سنه هي من اي قران هو في اي سنه  
وقم من الملمات فطرقه ان تستط وسط المشتري للوقت المفروض من وسط رطل  
للوقت وتقسيم الفاضل على فضل حركتي اللوكبر ليوم وهو ب ن ح ل ط م ح خامسه  
بحر ك ما بين سنك والقران الاي من السن والشهور والايام وكسورها ان كاف  
ثم زد ذلك على سنك واستخرج الوسط او لاحدها لتعرف بذلك السنه الواقع في القران  
الاي ثم اطرح ربه ح ك رطل في مدة ما بين القرانين من بعد اخري الي ان تراه قد  
اسدل الي منبته جزئ تلك السنه فعلى الطرح الاوله ا معمله القرانات الماضيه  
قبل سنك في تلك السنه واستوط ما خرج لكن بالقسمة او لا من مدة ما بين القرانين  
تعرف عدد السنين الماضيه من القران السابق وتعلم علمه في سنه الاول

في معرفة مدس الاتصال والاسمال اما البعد فانه فضل بين المعوس او الفضل من المقوم والرجح المفروضه واما الهب المعدل فانه الفضل من الهب ان كان اراجح لو سدهن وكجوعها ان كان احد ما راجحا ولعت السبر ان كان احد هالما او بوطه من النكلا اذ العور وكعوس البعد في جد والرهت المعدل وطرفينه ان ماخذ ما يستوي ما بازا ما يساوي كيب البعد من العدد الطولي فيكون هو الحاصل من السوس ان وجدت الطولي مثل البعد سوي وان سدهن بعضا فبها ربه ثم قوسها وض ما بازاها من العدد كما كان وجدت مثل تلك المعدسوا فالعدد الطولي مضافا الي الاول هو الحاصل من التقويس فاصغف على الخارج ان صفة البعد هل الهب المعدل فان لردت ان تعرف وقت الاتصال ان جعلت ساعات فاصرب خارج القسمة في ك تحصد ساعات وكسورها ما ضينه من الزوال وان لردت ان جعلت وقت الاتصال بها فاصرب خارج القسمة في م مرفوع درج محصلا درجها وكسورها ما ضينه من الزوال سها الاول متى رجعت السعه ربه ولم تجد سها واكبه وانكسرت في خارج السوس من ارفع البقية مره اوي الثانيه متى لم يجد ما لساوي الهب المعدل فخذ ما هو اقرب اليه ما هو لقل منه او ما هو اكثر وقوس حده البعد ثم البعت الذي بعد ذلك الهب او ما هو اقرب اليه ما هو اكثر منه وقوس منه البعد ثم هذا الفضل من السوسين واضرب في الحاصل ضرب الفضل من الهب وما هو اقرب اليه ما هو اقرب اليه ما هو اكثر منه وقوس منه البعد ثم هذا الفضل من السوسين على الاكثر ان كان المضروب في جمنه هو الفضل منه من الهب المزوج في الاقاطع الخاص من الاقل واعلم ان الحاصل من سوس الاكثر من الحاصل من سوس الاكثر الاول متى انت صفت الهب المعدل فقامه كان الخارج من السوس هو الخارج القسمة وقد وضعه صدها اذا قطعت بجزء البعد كجزء البعد او ما حد ما حد له فراوي صده كصده اذا صده من الحاصل من السوس محصلا الحاصل من القسمة ووضع البعد في الطول والهب المعدل في النوس في السوس

الحمد في معرفة الطول

وطريقه ان تقوم الشمس لنصف نهار يوم ثم تصد ارتفاعها لنصف نهار ذلك اليوم باله صحيحه دقيقه فان كانت  
 الشمس في البروج الشماليه نصفنا تمام عرض بلدنا من الارتفاع المرحون وان كانت الشمس في البروج  
 الجنوبيه نصفنا الارتفاع من تمام عرض البلد فماتى لوزيل الشمس فنقوسه في جدول الميل من الربع الذي فيه  
 الشمس فان كان موضع الشمس في بلدنا فحد الفضل بينه وبين السوم الاول وادخل في وسط ساعات  
 الشمس وماخذ ما بارايه من اساعات في كانت في ساعات ماسر الطول فيخرجها في خمس عشر ملون درجات  
 مايز الطول فان كان موضع الشمس في بلدنا اقل من موضعها الاول فبلدنا سور عن طول سبعين وتزيد ما بين  
 الطول على صرته وان كان موضعها وبلدنا ابر فبلدنا محرم عن طول صرته فمقص ماسر الطول من صرته  
 فبلغ او بقى له طول بلدنا هكذا كانت الشمس اقرب من سطر الاعداد البركان اصح لار ماصلا الميل هناك

الشمس والبروج

٢٨  
البروج

مطبخه  
 رويح  
 ك

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ وَصَلَّى اللَّهُ عَلَى سَيِّدِنَا مُحَمَّدٍ  
تَالِ كَيْفَ الْأَمَامِ الْعَالِمِ الْعَلَامَةِ أَبِي الْعَبَّاسِ شَهَابِ الدِّينِ أَحْمَدَ بْنِ مُحَمَّدِ بْنِ رَجْمَةِ اللَّهِ  
الْحَدِيثِ عَلَى فَاتِحَةٍ مَا يَنْبَغُ فِي بَعْضِ الْأَعْمَالِ الْمَشْكُورَةِ فِي كُلِّ الْأَحْوَالِ وَالْأَنْفَالِ  
الدَّائِمِ بِغَيْرِ انْتِفَالٍ وَلَا زَوَالٍ الثَّابِتِ فِي مَا كَفَهُ فَلَيْسَ لَهُ نَظِيرٌ وَلَا مِثَالٌ الْخَالِقِ  
مَاحِرَاتٍ فِيهِ الْأَفْكَارِ وَجَالَتْ كُلُّ مَجَالٍ أَحْمَدَ أَجْلَالًا لِعَظَمَتِهِ وَأَخْلَصَا لِرَبِّوَيْتِهِ  
وَتَوَاضَعَا لِكِبْرِيَايِهِ حَمْدًا دَائِمًا مَوْجِبًا وَبَعْدَ فَضْلِهِ رِسَالَهُ مَخْتَصَرَةً فِي عِلْمِ التَّوْقِيمِ  
سَمِيحًا بِغَنِيَّةِ الْفَهْمِ وَالطَّرِيقِ لِلْإِحْلَاقِ التَّقْوِيمِ وَهِيَ تَشْتَمِلُ عَلَى ثَلَاثَةِ أَبْوَابٍ ⑤  
البَابُ الْأَوَّلُ فِي التَّوَارِيخِ وَمَا يَطَّلِقُ بِهَا قَوْلٌ ذَلِكَ مَدْخُلُ السِّنِينَ  
العَرَبِيَّةِ فِي أَيَّامِ الْأَسْبُوعِ وَطَرِيقُهُ أَنْ تَسْتَطِيعَ سَنَى التَّارِيخِ الْعَرَبِيَّةِ بِالسَّنَةِ الَّتِي تَرِيدُ  
مَائِينَ عَشْرًا وَمَائِينَ وَعَشْرًا إِلَى أَنْ يَبْقِيَ مَائِينَ عَشْرًا فَمَا دُونَهَا وَتَدْخُلُ بِهِ إِلَى الْحَدُولِ  
الْمُجْرَدِ لِلتَّارِيخِ الْعَرَبِيَّةِ وَتَنْظُرُ فِي السُّطْرِ الْأَعْلَى مِثْلَ الَّذِي فَضَّلْتُ أَوْ قَرِيبَ مَا جَدَّ مَا هُوَ  
أَقْلُ وَالْبَاقِي بَعْدَ ذَلِكَ تَنْظُرُ مِثْلَهُ فِي سَطْرِ الطُّولِ فَمَا جَدَّ فِي الْبَيْتِ الْمَشْرُوكِ هُوَ عِلْمُهُ  
أَوَّلُ الْحُرُوفِ فَإِنْ كَانَ الْحُرُوفُ الَّذِي دَخَلَتْ بِهِ مِنْ سَطْرِ الطُّولِ مَكْتُوبًا بِأَسْوَدٍ فَالْسَّنَةُ  
كَبِيرَةٌ وَالْأَفْلَاقُ كَتَبَتْ فِي التَّقْوِيمِ عِدَّةَ أَيَّامِ الشُّهُورِ الْعَرَبِيَّةِ شَهْرًا ثَلَاثِينَ وَشَهْرًا سَعَةً وَعَشْرِينَ  
فَيَكُونُ شَهْرًا فِي الْحِجْرِ فِي الْكَبِيرِ ثَلَاثِينَ أَيْضًا ثُمَّ ادْخُلْ عَنَّا عِلْمَهُ أَوَّلَ السَّنَةِ عَجْدَ عِلْمَهُ  
كُلِّ شَهْرٍ فَانْكِتَبْ حَدُولَ الْأَسْبُوعِ مِثْلًا نَاوِلَ كُلِّ شَهْرٍ كَمَا عَرَفْتَ ثُمَّ اطَّلِعْ عَلَى  
التَّوَارِيخِ الْأَرْبَعَةِ وَاسْتَمْرَجْ مَا يُوَافِقُ ذَلِكَ الْيَوْمَ مِنَ التَّوَارِيخِ الثَّلَاثِ طَرِيقُهُ  
أَنْ تَدْخُلَ فِي سَطْرِ مَجْمُوعَةِ الْعَرَبِيَّةِ بِقَدْرِ السِّنِّ الثَّامَاتِ الَّتِي مَعَكَ أَوْ بِمَا هُوَ قَرِيبٌ  
مِنْهَا مَوَاقِلَ وَخِذْ مَا يَبَالِغُ مِنْ مَجْمُوعَةِ الْعَبْطِيِّ وَأَيَّامَهُ وَدَقَائِقَهُ ثُمَّ ادْخُلْ فِي  
مَبْسُوطَةِ الْعَرَبِيَّةِ أَيْضًا بِقَدْرِ السِّنِّ الَّتِي قَضَيْتَ مَعَكَ وَخِذْ مَا يَبَالِغُ مِنْ مَبْسُوطَةِ

السطح



وينقل في حرم النير بن اشقالا لا يخلط به لكثرة اعراف فلك البروج وتغير سعة مشرق  
 الطالع وتغير عرض القمر واخلاف منظره في كل زمن من ازمان الكسوف واما الوان  
 الكسوفات فانها ايضا تختلف بحسب تنادير العالم لمقادير المعنى ولا يكون بين  
 ارتفاعه واخطاطه سبب المتوسطات التي تعظم وتصبي والذبي يتفق من قيام  
 غيم او دخان ونحوها مما يغير بلون المنتظر وان كان لون القمر له كما ذكرنا في الكسوف  
 النامر اشبهت فليس يدرك فيه في كسوف الشمس لان ضياءها تخفيها لما تخفيه في كسوفه  
 غير النامر وقد يوجد حول الشمس المنكسرة ذوات ادناب وهي دخانيات لترتفع في الارض  
 يهب في الهواء الحار الجوار للنار ويمكن ان يحض بانوار الدخانيات منهوي اليه كما اخض القمر بهتيج  
 الرطوبات عن مسامته ايامها واقترانها منها بما هو مشهور في الجوار والنبات والحيوان والاعلم  
 بما يقرب ذلك واما معرفة مقدار كسوف الشمس بالهندسه وكسوف الشمس في البسيط فعلى ما اصف  
 وهو ان تخط خطا مستقيما وتسمه بعدد قايق نصف القطرين وتخرج قطريا متقاطعا على زوايا  
 قائمه وتكتب على اطراف الاقطار الجهات الاربع ثم تاخذ من الخط مثل نصف قطر الشمس وتديره اربع  
 على نصفه القطرين وهي اربع السبع ثم تاخذ بالبركان من الخط جيبه دقايق مثل عرض المري وتضع  
 احدي ساقيه في مركز الدائرتين والاخرى حيث وقعت من خط الشمال او الجنوب بحسب جهة العرض المري  
 وتاخذ علامه ثم تاخذ من اقسام الخط مثل نصف قطر الشمس وتجعل العلامة مركزا وتدير عليه دايق  
 القمر فتا وقع من دائرة الشمس في دائرة القمر فهو مقدار ما ينكس من الشمس في وسط زمان الكسوف على ما تراه  
 ولا يحتاج الى منا ديرانه مرسوم على اهل المعادير ولا يظن ان انا قد اهلنا القول في هذه الاربع اصول اعني روين  
 الاصله والاجماع والاستنبال والكسوفين دون غيرها من غير فائدة اذ يحتاج في هذه المذكورات من التدقيق ما لا  
 يحتاج في غيرها لان عمل التعميل يظهر الخطا عيانا وهذا ظاهر وليكن هذا الخوما ذكرنا في هذا الكتاب من مسائل  
 التعويم اذ هي اعمال مجردة عن البراهين موديه ليلا تحصيل المطلوب على طريق الصانع فمن اراد الوقوف  
 على صحة مسائلها و اصول طرقه وكيفية تركيب جداوله والبرهان على ذلك جميعه فعليه ان يتا المسمى كما مع المعيند لاصول مسائل التعويم والمواليد

والرابع





بسم الله الرحمن الرحيم

**الحمد لله** رب العالمين وصلى الله على سيدنا محمد وآله وصحبه وسلم تسليمًا كثيرًا إلى يوم الدين **وبعد** فهذا  
رسالة وصفتها في العمل بكتابي **السي بالدر المتبحر** في تسهيل صناعة التقويم جرت بنيت على الطريق الصناعي  
**فصل** في تقويم الشمس **وطريقه** ان تدخل في جدول ايام المسير في التناجح المفروض باليوم الذي يريد ان  
كان الجدول مرتبًا على اليوم المفروض والافادخل بالنام فقط وتأخذ ما يخصه من الايام من المجموعة والمبسوطة وتريد  
شيء الحاصل واحد ان اردت اول السنة ان كنت دخلت اليوم بالناقص او بالسنة النامة فقط والاعجب ما تريد  
من الشهور والايام راجع كل جنس إلى جنسه فما حصل بعد ذلك فهو ايام المسير فاحفظه لتقوم به بقية الكواكب  
السبعة ان اردت ذلك نو ادخل بالمسير الجدول المجموعة للشمس واطلب في المجموعة مثل ما يمكن او ما هو  
الاقرب منه مما هو اقل منه فاذا وجدت ذلك فاطرح ايام ذلك السطر من المسير واحفظ الباقي وخذ ما بازا  
ذلك السطر من الوسط والخاصة والعلامة كل على جنسه وسميه الاصل ثم ادخل بما في الايام الى  
جدول المبسوطة واصنع فيه كما صنعت في المجموعة واحفظ فاصل تلك الايام وخذ ما بازا  
ذلك السطر من الوسط والخاصة والعلامة واجمع ذلك الى سطر الاصل كل جنس إلى جنسه بعد  
حذف تقاوى الخاصة وجبرها إلى الدقيق واطرح العلامة بالسبعة وسم ذلك سطر  
ثم زد على الاصل سطر المبسوطة التي اقبل المبسوطة التي اخذتها او لا واجمع كل جنس إلى  
جنسه كما عرفت وسمه سطر التمام فهذا ان السطر ان عني سطر الابتداء وسطر التمام هما  
دستور تقويم الشمس إلى سنة لا يحتاج إلى أكثر من ذلك **تنبيه** متى كان عملك  
لتقويم سنة عربية كاملة وكان فاضل الايام **يوم** ما فادونها فلا يحتاج في الدستور  
الى سطر التمام ايضا فاذا حصلت الدستور فادخل بفاضل الايام الى جدول تقادير الشمس  
واطلب مثل ذلك في سطر الايام فان ساوى عقدا منها فذاك وتخرج لك بالعمل الايام المقوم اليوم  
المطلوب بعينه وان وقعت الايام بين عقدين فيقسم العقد الناقص بالعقد السابق والزيادة بالعقد  
الاول ومتى كان فاضل الايام دون عشرة فلا عقد سابق وتكون كمي الزيادة ايضا ثم اجمع علامة  
العقد السابق مع الايام الزيادة إلى العلامة سطر الابتداء يحصل علامة اليوم المفروض وان جمعت  
علامة العقد الاول فقط إلى علامة سطر الابتداء حصل علامة المقوم الحاصل بالعمل وان طرقت الايام  
الزيادة عن العقد السابق من ايد حصل بعد اليوم المقوم الحاصل بالعمل عن اليوم المفروض وهو بعد  
يوم العقد الاول عن اليوم المفروض ثم خذ ما بازا العقد الاول من البروج والدرج ومر في ذلك السطر إلى

تدبر

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تدخل

تقريب

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ، وصلى الله على منتهى  
قال الشيخ الامام العلامة شهناش الدين احمد ابن الجوزي  
رحمه الله، الحمد لله رب العالمين هذه ورقات في  
كيفية رسم الدستور ووضع ما يحتاج اليه القوم  
سنة كاملة وطريقه ان تسطر جداولها مستطيلة  
حيث يكون عرضه خمسة اثمان طوله بان تقسم طوله  
ثمانية اقسام واجعل مقدار عرضه خمسة اقسام منها  
ثم اقسم العرض باثني عشر قسمًا متساوية بالبركار  
واعرف مقدار القسم الواحد منها وبلغ ان تقسم  
العرض بخمسة اقسام غير متساوية بحيث يكون اليمين  
الطولى ثلاثة منها ثم الباقى الطولى اربعة منها والثالث  
انان والرابع انان والخامس واحد وقد تم رسمه  
ولما كيفية ما يوضع فيه فهو ان تكسب في السطر الاعلى  
عرضا من اليمين الى اليسار الشهيرة الوسط الخاصة  
المركز، العلامات ثم تعمر تلك السطور طولا واولها  
سطر العلامات وطريقه ان تنقل علامات الاسبوع

علامة

من جد اول البسوطه مبتديا من علامة سطر اول  
البسوطه نراد على كل واحد ابدا وابتد ذلك في سطر  
العلامات على ان تضع في كل بيت سطرين فيكون ذلك  
اربعة عشر سطرًا وكذا جميع السطور الطوليه ثم  
عمر سطر الشهور **وطريقه** ان تنقص من الايام الفاصله  
واحد ابدا والباقي اسقطه من **ل** ان كانت السنه  
الحاليه كبلس والافن **كط** وما بقى هو اليوم الذي  
تدخل به من ذي الحجه من السنه الحاليه فاحفظه  
فابنت ذلك في حدوده في السطر الاول **وطريق** محرنه  
السنه هل هي كبلسه او لسيطه بان تطرح ما ربح المحرم  
بالسنه التي تريد **ل** الى ان يبقى **ل** ما دونها  
المطروح **٨١٠** فان بقي مثل احد هذه الحروف  
هي كبلس والافلا وهي هذه **هـ ر ط ح ح ع ح ما ك ك و ك ط**  
فادا عرفت ذلك فانظر ان كانت علامه السطر الثاني  
مثل الاول فزد على تلك الايام **ح** وكل ما دون المحم  
**ل** يوما ان كانت كبلسه والافن **كط** والباقي يكون من المحرم



انه في معرفة دستور القمر من الدر البشير هو ان يجمع الاصل و  
 مجموعة القمر فيسقط ما دخلت به الاصل يحصل الفتحل اذ دخل به او يما  
 في المبسوطة ثم اتيت ما ياد ايه تحت الاول ثم اجمع السقطين يحصل الق  
 والخاصه والمركز للقمر والعلامه لذلك الشهر فان اردت تيات ذلك اذ  
 ايضا في المبسوطة تحت السطر الاى اخذته او في اجمعه على سطر ال  
 الاول تحت الوسط والخاصه والمركز لذلك الشهر وعلى هذا الخط يقع  
 الستة اذ دخل بكل شهر الاخر واجمعه على سطر اجمعه الا  
 يحصل المقصود ثم انظر العلامة فان تكررت فلا تد على الفاضل وان  
 قد على الايام كمر فان كانت السنه كليس فاسقط لذي الحجه ان يوما  
 كانت بسبب فاسقط كما واعمل لكل شهر بعدها شهرا وشهرين وشهرين  
 معرفة السنه كليس امر بسيطه فاسقط التاريخ القرمي من الهجره  
 وبها فضلا انظر في مثلهم في هذه الاحرف فان كانت ما فيها مثلها والاف  
 وان كان شهر الفاضل مثلا  
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٥٠٥٠  
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 ميعات  
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 ٤٠٥٠

و طريقا الوضع في الدستور  
 منذ ان كانت السنه الحاله كليس والاقص كما وما يقع هو اليوم الا  
 به مبدى الحجه من السنه والاقص كما وما يقع هو اليوم الا  
 عرفنا ذلك فانظر ان كانت علامه السطر الثاني مثلا الاول  
 على ذلك الامر وكما بهادى الحجه ان كانت السنه الحاله كليس  
 والاقص يوما والباقي يطون من الحجه ان كانت السنه المظلوبه فانتقدت  
 السطر الثاني وان اختلفت العلامة فلا هنا كمر يوما من اعلم  
 عرفت ومطد الى اخر الجدول بان تخط كل شهر ما يخصه اما ان  
 وذلك الشهور من افرادها ومن ازواجها ط ان يخرج لك  
 دى الحجه الاقيه وقلنا العمل والمده وحده

...  
 ...  
 ...

حدود السمرقند على القنطرة		حدود السمرقند على القنطرة		حدود السمرقند على القنطرة	
البلاد	البلاد	البلاد	البلاد	البلاد	البلاد
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36
37	38	39	40	41	42
43	44	45	46	47	48
49	50	51	52	53	54
55	56	57	58	59	60
61	62	63	64	65	66
67	68	69	70	71	72
73	74	75	76	77	78
79	80	81	82	83	84
85	86	87	88	89	90
91	92	93	94	95	96
97	98	99	100		



ملخص في الفلك الجليلي في الفلك في عهد الامام المصطفى عليه السلام

جدول في معرفة الشمس بارتفاعها في الارض			مسطرة الشمس		حدود
الارتفاع	السمت	الوقت	الخاصة	الوسط	الاناء
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9
10	10	10	10	10	10
11	11	11	11	11	11
12	12	12	12	12	12
13	13	13	13	13	13
14	14	14	14	14	14
15	15	15	15	15	15
16	16	16	16	16	16
17	17	17	17	17	17
18	18	18	18	18	18
19	19	19	19	19	19
20	20	20	20	20	20
21	21	21	21	21	21
22	22	22	22	22	22
23	23	23	23	23	23
24	24	24	24	24	24
25	25	25	25	25	25
26	26	26	26	26	26
27	27	27	27	27	27
28	28	28	28	28	28
29	29	29	29	29	29
30	30	30	30	30	30
31	31	31	31	31	31
32	32	32	32	32	32
33	33	33	33	33	33
34	34	34	34	34	34
35	35	35	35	35	35
36	36	36	36	36	36
37	37	37	37	37	37
38	38	38	38	38	38
39	39	39	39	39	39
40	40	40	40	40	40
41	41	41	41	41	41
42	42	42	42	42	42
43	43	43	43	43	43
44	44	44	44	44	44
45	45	45	45	45	45
46	46	46	46	46	46
47	47	47	47	47	47
48	48	48	48	48	48
49	49	49	49	49	49
50	50	50	50	50	50
51	51	51	51	51	51
52	52	52	52	52	52
53	53	53	53	53	53
54	54	54	54	54	54
55	55	55	55	55	55
56	56	56	56	56	56
57	57	57	57	57	57
58	58	58	58	58	58
59	59	59	59	59	59
60	60	60	60	60	60
61	61	61	61	61	61
62	62	62	62	62	62
63	63	63	63	63	63
64	64	64	64	64	64
65	65	65	65	65	65
66	66	66	66	66	66
67	67	67	67	67	67
68	68	68	68	68	68
69	69	69	69	69	69
70	70	70	70	70	70
71	71	71	71	71	71
72	72	72	72	72	72
73	73	73	73	73	73
74	74	74	74	74	74
75	75	75	75	75	75
76	76	76	76	76	76
77	77	77	77	77	77
78	78	78	78	78	78
79	79	79	79	79	79
80	80	80	80	80	80
81	81	81	81	81	81
82	82	82	82	82	82
83	83	83	83	83	83
84	84	84	84	84	84
85	85	85	85	85	85
86	86	86	86	86	86
87	87	87	87	87	87
88	88	88	88	88	88
89	89	89	89	89	89
90	90	90	90	90	90

فانطس	الامار	الملاطج	المروج	ز	ح	و	ط	ب	ه	ح
١٦	٦	٦	٦	لا	لا	لا	لا	لا	لا	لا
٢٦	و	٦	٦	لا	لا	لا	لا	لا	لا	لا
٣٦	س	٦	٦	لو	لو	لو	لو	لو	لو	لو
٤٦	ه	٦	٦	لا	لا	لا	لا	لا	لا	لا
٥٦	ا	٦	٦	مر	مر	مر	مر	مر	مر	مر
٦٦	د	٦	٦	كو	كو	كو	كو	كو	كو	كو
٧٦	و	٦	٦	لا	لا	لا	لا	لا	لا	لا
٨٦	ح	٦	٦	لا	لا	لا	لا	لا	لا	لا
٩٦	و	٦	٦	مس	مس	مس	مس	مس	مس	مس
١٠٦	س	٦	٦	لد	لد	لد	لد	لد	لد	لد
١١٦	ه	٦	٦	كط	كط	كط	كط	كط	كط	كط
١٢٦	ا	٦	٦	لا	لا	لا	لا	لا	لا	لا
١٣٦	د	٦	٦	لو	لو	لو	لو	لو	لو	لو
١٤٦	ر	٦	٦	مد	مد	مد	مد	مد	مد	مد
١٥٦	ح	٦	٦	ند	ند	ند	ند	ند	ند	ند
١٦٦	و	٦	٦	ون	ون	ون	ون	ون	ون	ون
١٧٦	س	٦	٦	طل	طل	طل	طل	طل	طل	طل
١٨٦	ه	٦	٦	لد	لد	لد	لد	لد	لد	لد
١٩٦	ا	٦	٦	مد	مد	مد	مد	مد	مد	مد
٢٠٦	د	٦	٦	مد	مد	مد	مد	مد	مد	مد

Ms. Cairo (Dār al-Kutub) MM 85, 1 Solar Tables from “Kitāb al-Durr al-Yatīm fī Tashīl Ṣināʿat al-Taqwīm”  
Fol. 1 R (Photographs Courtesy of DK)









جدول فتح عهد متوفی من شرقی جنوب لرضول شمال

مدار السرطان	مدار الجمل	مدار الجدی	
الظلمة	الظلمة	الظلمة	الظلمة
محمو >	محمو >	فونط >	ه ر
مدر سونا >	مدر سونا >	عطا >	ه بنو
کهناء عر >	کهناء عر >	باط عمخ نس ونا	ه
کول عوله >	کول عوله >	مدر سونا نس رنه	ه
کلنا فاج >	کلنا فاج >	مدر سونا نس طه	ه
لوت فطانت >	لوت فطانت >	مدلح خ لو نس ے که	ه
لری فونف >	لری فونف >	بور ندخ نس نامد	ه
محلد فوج >	محلد فوج >	محلد فوج نس محلر	ه
نمط عرب نس >	نمط عرب نس >	کنو مرخ نس بهلح	ه

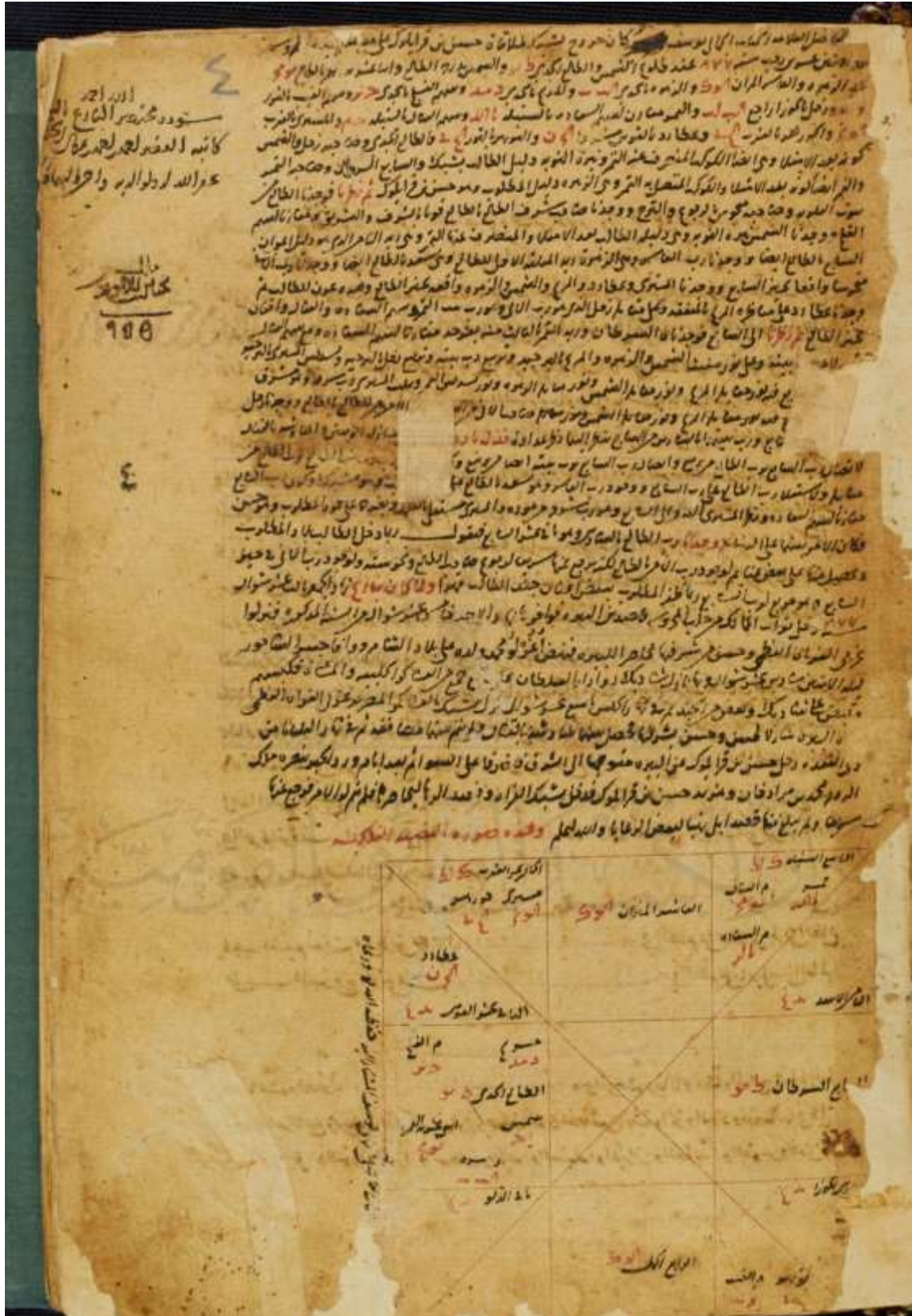








Appendix 2: Facsimile Ms. Cairo (Dār al-Kutub) MM 13: fol. 4R – 49RV – 99V  
 (Photographs Courtesy of DAK)







Handwritten marginal notes on the right side of the top page, written in Arabic script. The text is dense and appears to be a commentary or additional data related to the main diagram.

Handwritten text in Arabic script, likely a continuation of the astronomical or mathematical treatise. The text is written in a cursive style and covers most of the page area below the diagram.

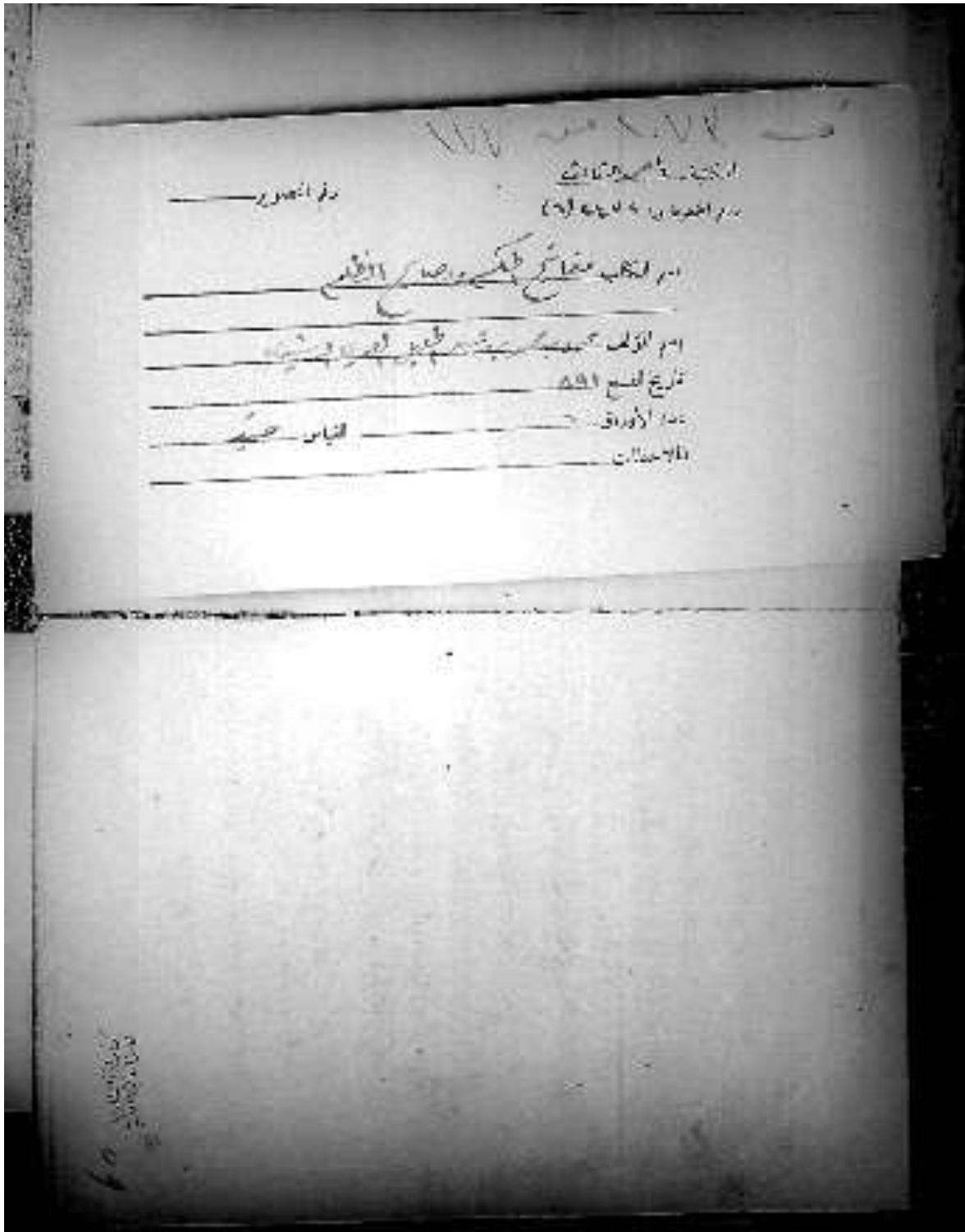
<p>الطلع السنته المران</p>	<p>الطلع السنته المران</p>	<p>الطلع السنته المران</p>
<p>الطلع السنته المران</p>	<p>الطلع السنته المران</p>	<p>الطلع السنته المران</p>
<p>الطلع السنته المران</p>	<p>الطلع السنته المران</p>	<p>الطلع السنته المران</p>



# Appendix 3: Facsimile “Durr al-Maṭlūb fī Sirr al-Ghālib wa-l-Maghlūb”

Ms. Istanbul ( Topkapı Sarayı Museum Library ) Ahmet III 2485,6

(Photographs courtesy of the Institute of Arabic Manuscripts in Cairo)







ثم ان التوراة والكتب التي كتبت من انصوتوا انصافا بما ذكرناه في غير ان الله  
 اخرج فيها اسمنا ثم خذوا ما نزل عليه من الامور وما انزل عليه  
 وما انزلوا عليه من الامور حتى نرى ما بهما من انصوتوا انصافا  
 انما هما بهما العلم و جهلنا العلم الامثالهم و اسرارنا انهم  
 كيف وصيوا ولا وجه العلم انهم انما انزلوا ما انزلوا في الامور  
 ان انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 فخذوا عننا فخذوا من انصوتوا انصافا انهم انزلوا ما انزلوا في الامور  
 و انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 ثم وجهوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا

خصصوا في كتاب السماوات التي فيها اسمنا من انصوتوا انصافا  
 الا انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا  
 انهم انزلوا ما انزلوا في الامور حتى نرى ما بهما من انصوتوا انصافا

خاتمة

خاتمة













جود	الأعداد	الألفاظ	المتعارفات
الأصغر	ألف	خمس	سبعة
المتوسط	واحد	اربعه	سبعة
الأكبر	واحد	اربعه	سبعة
الأصغر	ألف	خمس	سبعة
المتوسط	واحد	اربعه	سبعة
الأكبر	واحد	اربعه	سبعة
الأصغر	ألف	خمس	سبعة
المتوسط	واحد	اربعه	سبعة
الأكبر	واحد	اربعه	سبعة

وحتى كراهية اذنه وان كان مضمون الورد اعم من مضمون  
 و مضمون الصكر المسمى بالانكى اذ لك فلو علم ان كراهية  
 على جهة الجواز انما مضمونه تحت الورد مضمون الصكر  
 فمما سئل اذ يكلف ربا حلالا حلالا يذره فاحل في ربا حلالا  
 في الامانة على الورد كسره في وجه الورد والصدق في الورد  
 والصدق على الورد مضمون صكر فمضمونه فكيف هذا سئل  
 فمضمون الورد على ما لو تحت حمله انما مضمونه عند الصدق وورد  
 الشك في ما حلت اليه السهم وانما في بعضه وهو كراهية  
 واعم انما حلالا من اسرار الكافر في الحب الكفر في الكافر  
 من فريضة كراهية ووردت ذلك لظن ان مضمون الورد انما سئل  
 فمما وورد الورد الشك في الصكر من ربا حلالا حلالا حلالا

الورد في بعضه  
 مضمون الصكر





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 ...  
 ...  
 ...

...  
 ...

فان السجدة لا تكسر على يده ولا ينقع وصبغ نقي لا يزيلها

- في الثوب رجع الكسوت والدراسة لسبب الكثرة ويزيد في الخاتم في

رجع الخطا والخطا في عن ايجد وينقع الماء ما حلت به اجفان

الثوب والاصوات وقد تكلم ارباب العلوم في الصبغ في وقت

في ذلك وقاوا ان الماء في الثوب يستعمل الى صبغ الخبز في وقت

في صبغ الماء كان يستعمل الى صبغ الثوب في وقت

وكان عام بقطره فيمكن ان يورد له على كبريتك وان يظفر

يتولد من صبغ في السبيل في سماء على المصير

والوجه في صبغ العالمين

تاريخ الخط

المصير

١١١١

اسم الله الرحمن الرحيم الحمد لله المنة انت نور الانوار وكاشف الغمور وواهب الامم وخالقنا يوم الازفة ان  
الطلب لذي الكفا جركا طيب - لما رينا بوعا الخضر واحد ذابا لما بكه التهر ونبه افدا خنا بزم النظر بربنا  
ان من الكنى بكلماته ويطلع دابر الكافرون - هذا تعبير نابع من غمنا اذ اوتب وعد واذا رقب وعاسدا اذ ارتقت  
سلام على فوج في العالمين انما قد كثر جزى المحسنين - اسوع نزل رطبتك الشد بد واصعد جلوه قهرك المجد بكل  
جبار عبيد فاستقمنا من الغيب اجرونا وكان حقا علبت لغوا لمومنين - قدام حزننا بالصلوة والسلام على خاتم المرسلين  
ونامح الاسوار ومدن الاضياء محمد بن عبد الله بن عبد المطلب رسول الله صلى الله عليه واله وسلم والصلوة والسلام  
وعلى آله واصحابك وازواجك بمن اتزل عليه وان بريء وان كنه حوكنا نحبك الله موالدي اذكر بضره والمؤمنين  
ما تزل صنف وشهر سيف واخذ سيف وقيل قوله تعالى ولم من قبله فلهذا علبت فيه كثيرة ما ن الله واهب الصابرين  
وحده بقول المشعوم بالكلية الفنى - بعد - يوسف ن قرنا من الكراوى الشبهه - امير الكاج بكنه عاظمه بلطفه الكفى لا رايه  
رايه بايز اننا كثر من اسوار انما به من الملوكة لما قهرهم المحن وخلبتهم الفتنة والاكتر عنهم لا يقف فيه على العصور ايرتحت  
لم هذا الكتاب ليستحق من قد الفاعم ونوره الصاطع وسعد الطامخ خادما لا تكاوة الا لافاق ودللت بوعا الهامة انما  
لسطوره با جنة على واصعد متوجها وابرسطور كما نام السيد الشريف امير اسماق ثم وصحبه بالذرا المطلبية سنة الف الف  
والطلب اذ هو اصل عظيم وضعه السما وكلمه الضحا وبرين على عبقريته الكفا خصوصا كتاب السياسة الذي وضعه  
ارسطوفا ليس للاسكندر ذي القرنين اليونانية بل من الفضل ارشيد من وقتنا هو من من جعل فواصل الاعداد وطيابها  
والكو اولا انما كلف وقد نشأ من الدنيا طيس بعب الكعبه بها كعبه كعبه ن ان الصدور المتغيره والمظلمة انوار  
الصدق انما بذا الصنيع برسمه من كوني لنا حامد من الاله الحكيم وهو اسوع الكا صيبر والاسوع كعبت بلذ الضلال في العوالم البه  
والطبيعة بعد العوالم منه فانه كسليم يتدج سمانه بالكره فكلوا من الصور التفسيرية الا انها اوسيه في بله كمال الاعداد بالتحافظ  
الطوار بالالتوصل المنطق كما ان الكسماج اوسيه في بله كمال الارواح بالتوصل الضملي - فاذا ن الاعداد والوجود كالعقول الارواح  
واكروا فلكا كون كالأرواح الكسماج وكرته ثلاثة اقوات العنفا جميع العليم كالأرواح وعلم كعبت كالملكة خلقه انما علم العنفا  
ثم انما كره وان انما الصور التفسيرية كرها قران الله اودع فيها اسوارا شبيهة بما راا الطبيعة في مواد حاله التركيبية الا انوار  
نظيرها واما الوردانية بواسطة صورها كسماينة اوجد الله بها العالم وجها به اعلام الالهام واسوارا الاكام كعبه في عالمه لا يسم  
العظيم الا فكل لان اعماه الخيرة الكفوة لا تتك ان تكون ضرة رجة تحت طين جميل اكره وان كانت خيبة منا عند ربنا سبحانه لما  
اراد ان يور الورد من عالم العلم ان يكون باحلاف اطراة وعا قبة او دارا بنة جيل ادم وخلقنا في المشو مشا في رة الروح المعاني  
في المشو صور رة العلب تقريبا رة اللسان فمة ناشقة ونة السبع تشكلا سويها فلها اذ انظرنا في الورد وجدنا انما انما  
في النفس قبل وجودها في الشكل بمركة في كسماين ونهيم به المتاف في هامة اكان في الحروف في عالم البسوا اسوارا وانما بمركة في صور الله بعبه  
بنورا كية فينبس حشكا ان الامور انما بنة قبل وجودها يستوجب حرا لاسا انما بنة حروفها فانها في حروفهم برسم او اسم التي اوجعها  
وبطهره من عند ارباب الكشف والسمود لانه لا يتطيق الا طيق ولا يتفق باحق ولا يصح صياح ولا يترا في شبح الا تحت ذلك المرام

ت  
اصلا ت



وكان من الكسوف ما يشي من خير كذا حرب فاضل في شي من اسنان وفاضل خير كذا ربيعة فاعده وان زوجان قالوا  
 غالب واما ما يشي واما كان في راننا من الاذرب من ملكها التواهي فذل كان من الكسوف من علي بن عثمان قرا بلوك وغيره  
 جمان كبره حب احمد وديار كجرب فاضل حسن واحد وفاضل جمان كبره حب احمد واحد فاعده ان ينساويان  
 والاعده في نساي الزوان يكون الطالب غالباً وارضاً العبد من السرو والاسفحة وكان الكسوف احضر سنا حريمه  
 جمان كبره وكان ابنا شجاعاً وارضاً جيسف وكان جمان كبره من سنا وادري منه بالقرائة والكتابة  
 وارضاً احب فاعده وكان الكسوف غالباً عليه في جميع امورهم واخذ من نبتة احمد من عتوه وجرى منها جاري ثم فاضل رستم  
 من فرخان محارب حسن بن قرا بلوك سبيل حريمه كبره وفاضل رستم سبعة فيما ابنا احمد ومن حسن واحد لكنها مختلفان  
 والاعده في مخالفة الزوان يكون الطالب غالباً وكان الكسوف غالباً ومكدا وقع ثم فاضل جمان شاه ان قرا يوسف محاربة  
 ولده لعديه بربطاني ففاضل جمان شاه خمسة وفاضل حريمه اربعة اخلاف الاعدان والاكبر غالب وهو جمان شاه  
 فكانت منبه بربطاني عليه ثم فاضل جمان شاه ان قرا يوسف محاربة حسن بن قرا بلوك بحسب عظيم من عتوه وفاضل  
 جمان شاه خمسة وفاضل حسن واحد فيما ابنا حريمه واحد لكنها مختلفان في الاصل غالب وهو الكسوف وكان وقع وكانت  
 منبه عليه حسن بن قرا بلوك ثم فاضل حسن بن قرا بلوك بحسب عظيم من جمان شاه وفاضل حسن واحد وفاضل حريمه اربعة  
 وفاضل حريمه اربعة مختلفان في الاصل غالب وهو حسن بن قرا بلوك وكذا وقع ثم فاضل ابو سعيد ابن محمود صاحب سمرقند لحسن بن قرا بلوك  
 بحسب عظيم وفاضل ابو سعيد تسعة وفاضل حريمه واحد لكنها مختلفان في الاصل غالب وهو حسن بن قرا بلوك وكذا وقع وكانت  
 منبه عليه الكسوف ثم فاضل حسن بن قرا بلوك ثمانية من الروم ومنها الاعد من مطيعة وكان بلطية وروست اي الكازم اربابها  
 بها وفاضل عاتق وفاضل حريمه واحد لكنها مختلفان في الاصل غالب وهو الكسوف فاضل حريمه قبض على اربابها وفاضل حريمه  
 الاعد من عاتق وفاضل حريمه اربعة وفاضل حريمه اربعة في الاصل حريمه من والاعده في الاصل الكسوف ان يكون الكسوف غالباً  
 وكان جمان غالباً وكذا وقع ثم فاضل حسن بن قرا بلوك حريمه حلبة الخور من سنا سبع وفاضل حريمه اربعة وفاضل حريمه اربعة  
 وكان اليب كلس الخور فاضل حريمه اربعة وفاضل حسن واحد فيما مختلفان جنسا بعد ذلك الاكبر غالب فخرج حسن بن عثمان  
 حريمه حلبة وروست وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة  
 ففاضل حسن واحد فاعده ان مختلفان وقد تكرر ان الاعد في الاصل حريمه الاعدون ان يكون الكسوف غالباً فلم يبق حسن بن قرا بلوك  
 على اذنه ثم فاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة  
 مختلفان في الكسوف ففاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة  
 حتى دوج الاعد الى حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة  
 المعزبه من حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة  
 غالباً فانهم شهداق والفق الماشق الى ان ارادوا اجلاء ففاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة  
 وحريمه واخذ حريمه بالهد وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة وفاضل حريمه اربعة

قال العبد في حال  
 بطون العبد في حال

ومو يشكها وكذا قد وقع **وايضا خروج** النار ابر السام فعمس وشق العصا على لباد السام عاقرق منه بنسب من  
 وجعل له في كل واحد من البرسكين فنهض اليه فافضوا اليها وناس حلبه ووصلوا الى الشقيين له بالطلب فلما تراء  
 من الكمين فساها او قدت الكرب منهم يراها واشتد بالترز والكوتطعانا ثم وضعت على خنقته اوزارها  
 فاستد من قبل النار فضاها **وايضا** فاضل فاضوا ابعده وفضل النار در ثمانيه واكلم للافل **مقصود** يشك من محمد  
 لباد السوف نمره من العساكر المحرره والشاخييه ضلعه بانيد رجليه من يد الربا محمود المشوق وقا خيل يشك ثمانيه  
 وقد فضل بانيد رسته واكلم للافل فكانت حنيفة يشك على يد بانيد رواله خال على امره ولكن اكثر الناس لا يعلمون كيف  
 وقد قال الله في حكم كتابه العزيز وفضل اود جالوت وان الله الملك الحكيم وعلمه ما يشاء ولو ادعى الله الناس ضنهم  
 بعضهم ضد بعض الا ارض لكل الله ذو فضل على العالمين **فحينئذ** لا تخجل في ضد ركنا نهما عن غير اصل بل اقمه بكلمه  
 الله حيث قبل اود جالوت والمكذ طالوت وقهقهه بمود وعاد وابرجهم ومسرود وهو مسمى وقعون والله  
 يويد نصره من يشاء ان في ذلك لعبرة لاولي الابصار **تدبير** هو ان قد صحت الموافقة اكتاب اجبت  
 الخافيا بالكتاب وذلك انه خرج على اولا دلفا رجليه من صدره في سنة ثمان وثمانين وثمانه وكان ذلك في حلب  
 الجوزيه ورد بشر السام فمارس قدر العزير الكليل ان يكون في امره طول ونميل لضعف في خلعت امره ثم يوبه مرشاه  
 فجهت اليه العساكر المحرره وايضا فيها الشاجيه وقادهم فقامت اب السام وقاضلته سنة وفضل على اوله اسان وما من  
 جنس واحد واكلم للافل فانفق سائر الرزق بالترس ولم يهض احد مما على الا في قصرت في اواخر صفر سنة تسع مائة  
 فراكه وقاضله ثمانيه وقاضل على دوله اسان فلما التقيا اخذ فراكه وقاضل ومرجه والفضه فيها شهره **ثم جهت**  
 الدهر من المحرره وفاذا نماز فلما وصل الى حلب ضم العساكر المحرره والشاخييه اليه اذ هو المعقد في الامر على فنهض  
 بهم الى البستان سنة تسع مائة رفقان فسرى ورد بشر ثمانيه بالعساكر الكلبيه والجالا والضم اليه ثمانيه مائة  
 وكذا ثمانيه صند وورد بشر ضدها وقاضله ثمانيه وقاضل على دوله اسان فاكلم ايضا للافل لكونها في العدم في حرق واحد  
 فلما التقيا لهما على ملعة قران فرت العساكر الكلبيه وايضا فيها وقاضل منها ورد بشر ثمانيه صند ونوازت في ذلك  
 التقيا على نماز يحيى الاضار بوضوئهم في مرجع ورد بشر سببا الى المدينة الابستينج واهم المحررون عرايا وعرفوا  
 نماز ومرجه باحصل لهم الموت نراهم سوادون اليك نظر الغشي عليه الموت فحلوا الى البستان فاصدوا من خطيبه فرارا  
 لما شرب قلوبهم حرق على دوله حوارا فاهم الا وقد اثنى اثم على دوله بالطلاع بخبر حذر منهم لشوه نفسه بالكتاب  
 والمطاح فلما عاينهم نماز رد وجوه فرسانه باكله فلا هذا على دوله يريد قتلهم اوقده فاصطدم الرزبان بالخراب  
 والكر واشتل نار الكرب بينهم العطن والخذ فاجي الاسامة مره وحمل على دوله الاربار وحمل بجهد البوار وقاضل  
 شادوله اسان واكلم للاكله اخذ لاف العدم من الكلم والكلم **وايضا** **فحينئذ** ان بين جمع الروم وحسكوا حذانه  
 وكان منهم الروم احمد بن موسك و منهم العساكر المحرره والاباكي اريك فلما علم اريك انه مغلوب مع امره في البراز اثم مع  
 حث العلم يوم التقيا نماز من فضل زك نماز تسعة مائة اذ الله ما اراد حركه مجموع الروم التسلل والاسو فيهم والتبعض

في سنة ١١٠٠ هـ  
 في سنة ١١٠٠ هـ  
 في سنة ١١٠٠ هـ

في سنة ١١٠٠ هـ

على الله

على الله

