

The Occult Sciences in Pre-modern Islamic Cultures

Edited by Nader El-Bizri
Eva Orthmann



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Nader El-Bizri and Eva Orthmann

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Introduction

The present edited volume is based in part on papers that were delivered at an international conference, which was held at the American University of Beirut (AUB) on 5–6 December 2013 and was organized by the Orient-Institut Beirut (OIB) in association with the Center for Arab and Middle Eastern Studies (CAMES) at the American University of Beirut (AUB). The conference carried the title that has been retained for this present volume as: *The Occult Sciences in Pre-modern Islamic Cultures*. Not all the chapters that constitute the present volume were presented at the conference, and some of the papers that were delivered at the conference have not been included in this volume. It is therefore more prudent to think of this book as a collection of studies rather than as a strict proceedings volume. It is also evident that some of the chapters are expanded and adapted versions of the papers delivered at the conference.

In pre-modern Islamic cultures, a number of arts and practices that are associated with the occult sciences were seen as epistemic expansions of the field of scientific knowledge in its various branches. The sciences of the occult dealt with what was taken to be of the order of non-observable realities that were studied by pre-modern natural scientists. This included all phenomena that could not be explained on the basis of the four classical elements. The sciences of the occult were situated between natural philosophy and metaphysics, and at times blended with these in more direct forms – as was the case with *astronomia* (*‘ilm al-nujūm*), which combined mathematical astronomy with astrology, or the bent on arithmology and numerology that accompanied the sciences of arithmetic and number theory. An examination of these pre-modern forms of knowledge can itself further enrich our modern understanding of what constitutes the limits of science and its epistemological bearings in the deliberations of philosophy of science.

In pre-modern Islamic intellectual history, knowledge and techniques that were related to the invisible world (*‘ālam al-ghayb*) were usually identified either as *kihāna* or *sihr*, the first referring to methods of divination and the second to the exercise of influence on supernatural powers. If they are subsumed into one broader category, they are referred to as *al-‘ulūm al-ghariba*, the unusual sciences, or *al-‘ulūm al-khāfiyya*, the hidden sciences, or sometimes also as *al-‘ulūm al-sirriyya*, the secret sciences.¹ Such sciences included *‘ilm al-firāsa* (physiognomy), *qiyāfa* (tracking), *khīmīyā’* (alchemy), *‘ilm aḥkām al-nujūm* (astrology), *ruqya wa-ta‘wīdh* (spells and incantations), *ta‘bīr al-ru‘ya* (oneiromancy), *sihr* (magic), *‘ilm al-ṭalāsīm* (the art of talismans), lettrism, or geomancy. These and other branches of pre-modern knowledge are investigated in the following chapters in terms of their

¹ Emilie Savage-Smith, ed., *Magic and Divination in Early Islam*, Aldershot: Ashgate, 2004, xiii; see also the chapter of Matthew Melvin-Koushki in the present volume.

applied technical aspects, their broader epistemic context with regard to other sciences of nature, and also from within their specific textual and cultural milieus. Accordingly, this volume presents contributions that examine particular occult sciences and their context within the body of scientific knowledge in pre-modern Islamic cultures, while also exploring how the relationship between the natural and the supernatural was perceived in the pre-modern Islamic milieu and how the *occult* in science was defined.

The arts and crafts of the occult spheres of speculative knowledge and practice acted within selected traditions in pre-modern Islamic cultures as frameworks that surrounded the natural and exact mathematical and physical sciences. This was especially the case with traditions that were impacted by Hermetic, Pythagorean, and Neo-Platonist influences and that assimilated ancient forms of knowledge from classical Hellenic, Babylonian, Egyptian, Persian, and Indian sources. The epistemic significance of the arts and crafts of the occult is not only restricted to the manner in which they shed light on outlooks concerning the place of humankind in the universe, the accounts on matter, minerals, plants and animals, the microcosm and macrocosm correlative analogies, the fourfold interconnections among the four elements, temperaments, bodily fluids, seasons, qualities, etc. The arts and crafts of the occult were essentially rather widening the spheres of knowledge beyond what was perceived as the limits of the natural and exact sciences. The realms of being and becoming were therefore seen as wider than what is delimited through what is knowable via the observable data of the natural and exact sciences. The arcana and mysteries of nature – human, terrestrial and cosmic – as well as the principles of reality, the essence of matter, could not be simply accounted for through classical forms of the natural and exact (mathematical and physical) sciences. These sciences had wider epistemic contexts that were framed by practices of the occult. Clearer examples of this state of affairs arise in the connections and distinctions between specific sciences, disciplines, and practices and what parallels them in terms of occultism (astronomy and astrology, arithmetic and arithmology, natural philosophy and rudimentary forms of alchemy, grammar and letterism, medicine and the rituals of healing, music as instrumental/vocal art and the mystical/cosmic harmonics, canonical acts of devotion and magic, semantics and gnostic symbolisms). The crafts of the occult pointed to what exceeds the bounds of the natural and exact sciences in a manner that highlighted the domain of meditation and practice of Gnosis, which could not simply be disclosed through metaphysics and ontology. In a more modern form of accounting for this episteme, we can perhaps evoke the world imagined as a realm containing mysteries that remain unresolved by the natural and exact sciences, and potentially eternally undiscoverable. However, the appellation ‘occult sciences’ reflects how the practitioners of its techniques viewed their inquiries as being continuous with the natural and exact sciences in potentially disclosing what remains veiled of the arcana and mysteries of reality, or that point to what is con-

cealed behind what is made manifest through the natural and exact sciences. In a sense, the occult sciences were indicative of bodies of practice and speculation about aspects of reality that they could not account for through a narrow sense of naturalism. This ultimately meant that what is conceived as being supra-natural was veiled behind the apparent face of nature, and was not instead posited outside an enlarged picturing of what nature on the whole would have been.

Since there was no scientific access to this hidden reality at the time, knowledge of it was considered a marker for spiritual superiority, and equated at times with prophetic or messianic faculties. Skilfully deployed, such knowledge thus became a source of legitimacy and power. In the course of everyday life, the desire to decipher these veiled aspects of reality induced people to use ‘auxiliary means’ as embodied by the variegated divinatory methods that flourished in pre-modern Islamic cultures.

The following section presents synopses of this volume’s chapters, which are based on the abstracts submitted by the contributing authors, as mediated by our editorial interpretation of the chapters’ content and their thematic interconnections. Rather than imposing particular perspectives in analyzing the contents of the chapters, or placing them within the broader domain of studying the occult sciences, we aimed to let them speak for themselves as scholarly studies within their own strands of inquiry in the field.

Synopses of the chapters

The first two chapters of the volume are devoted to the close relations between the natural and exact sciences on one hand and the “occult sciences” on the other. They both show the difficulties in demarking dividing lines between the natural and the supra-natural in pre-modern fields of inquiry and knowledge.

In “The Occult in Numbers: The Arithmology and Arithmetic of the *Ikbwān al-Ṣafā*”, Nader El-Bizri deals with the significance of the onto-theological, mystical, and magical properties of numbers in connection with the being of beings. The chapter focusses on the learned and anonymous adepts of the fourth/tenth-century Iraqi fraternity of the Brethren of Purity (*Ikbwān al-Ṣafā*) who gave a central structuring role to numbers in the symbolic order of their thinking. The ontological significance of numbers runs across the Brethren’s epistolary compendium and connects with remarks that are alchemical in character as well as being entangled with reflections on magic. A coherent arithmology emerges from the Brethren’s reflections on the arcana of numbers that surpassed the strictly technical aspects of the science of arithmetic (*‘ilm al-‘adad*).

Emma Gannagé’s chapter, “Between Medicine and Natural Philosophy: Avicenna on Properties (*khawāṣṣ*) and Qualities (*kayfiyyāt*)”, is devoted to an analysis of the notion of a ‘specific property’ (*khāṣṣiyya*) and its reintegration in a rational and

causal framework in medicine by Avicenna. The notion of ‘specific property’ pertains to the faculties or powers of natural substances and drugs, and it designates a power that could not be derived from its primary qualities (*kayfiyyāt*). This specific property of a drug was only known through experience. Hence, resorting to the notion of specific property in order to describe the effect of a drug reflects a failure of rational explanation. Medicine made much use of this notion, particularly in the field of pharmacotherapy, without however falling within the register of miraculous or magical recipes.

The field of medicine and its interrelation with the ‘occult sciences’ is also addressed in two further articles that deal with physiognomy (*firāsa*), which is related to the medical field insofar as it is likewise based on empirical evidence. Physiognomy has at the same time a divinatory aspect since its main function is to explore hidden properties and qualities of potential servants, ministers and spouses.

Jointly composed by Muhammad Ali Khalidi and Tarif Khalidi, the study, “Is Physiognomy a Science? Reflections on the *Kitāb al-Firāsa* of Fakhr al-Dīn al-Rāzī”, rises to the challenge of stating exactly how *firāsa* differs from medicine. Taking Fakhr al-Dīn al-Rāzī’s work on *firāsa* as a starting point, the chapter explores a number of possible responses to how physiognomy relates to the medical sciences, and suggests a composite analysis to distinguish physiognomy from medicine. Al-Rāzī’s *firāsa* appears to exemplify a view of the universe in which things resemble each other or are analogous to one another, and in which everything is ultimately a sign of the creator. At the same time, al-Rāzī emphasizes the alleged causal connection that is central to *firāsa*, between outward facial features and inward character, which is grounded in the temperament (*mizāj*) of the soul and also connects with the balance in its bodily fluids within the fourfold schema in Galenic medicine of mapping out the interconnections between the humors, the temperaments, the qualities, elements, etc.

In the chapter “A Science for Kings and Masters: *Firāsa* at the Crossroad between Natural Sciences and Power Relationships”, Antonella Gherseti examines the practical aspects of the alleged connection between appearance and character in physiognomy. *Firāsa* was often perceived as a useful phenomenon to manage social life and to select persons with whom to live, whether courtiers and the queens for kings, or slaves for kings and masters, or wives and concubines for wealthy men. This reflects the uncomfortable lack of confidence that sovereigns and well-off men experienced when confronted with the problem of choosing trustworthy individuals for their social circles. *Firāsa*, which is based on visible and tangible signs, was thus useful in reassuring powerful men when making decisions within asymmetrical relations of power.

The study “Cometary Theory and Prognostications in the Islamic World and Their Relationship to Renaissance Europe” by George Saliba explores prognostications based on astro-meteorological signs. He also discusses key cosmological

and astronomical concepts with regard to comets as they spanned the ages from earliest recorded history to Islamic times. The contribution focuses on the role of ‘Ali b. Riḍwān as the author of a treatise on comets, and resolves a number of confusions that arose with regard to the authorship of this text, both in the European Renaissance as well as in modern scholarship.

In “Predictions of Natural Disasters in the Astro-meteorological *Malḥamah* Handbooks”, Kristine Chalyan-Daffner sheds light on a specific genre of handbooks designed to predict natural calamities by observing and probing various astro-meteorological phenomena. These handbooks attributed the causation of natural disasters to the heavens, whereby natural terrestrial hazards were triggered in a causal chain from the supra-lunar spheres as origins. The author’s contribution emphasizes the interrelation between this genre of literature and social needs as exemplified by predictions related to the Nile and its annual flood in the *malḥamah* handbooks from Mamlūk Egypt.

Based on number theory, geomancy can be considered the ‘occult’ counterpart of mathematics. In “Persianate Geomancy from Ṭūsī to the Millennium”, Matthew Melvin-Koushki provides a lengthy preliminary survey of this rarely studied science. Its predictions resemble those of astrology and, incorporating many of the latter’s correspondences, it was often considered a form of ‘terrestrial astrology’ that was practiced by court astrologers. From the late 14th/early 15th century onwards, it was also associated with lettrism, especially with letter magic and letter divination.

Lettrist speculations and letter magic are also at the core of two more contributions. In “The Occult Sciences in *Hurūfī* Discourse: Science of Letters, Alchemy and Astrology in the Works of Faḍlallāh Astarābādi”, Orkhan Mir-Kasimov examines the relevance of some elements of the occult sciences in the mystical-messianic movement of the *Hurūfīyya*. As the name of this movement shows, lettrism and its association with the idea of universal and final hermeneutics was of utmost importance for its doctrine, which also incorporated astrological and alchemical ideas.

In “Lettrism and Magic in an Early Mughal Text: Muḥammad Ghawth’s *Kitāb al-Jawābir al-Khams*”, Eva Orthmann explores the magical practices and concepts that were prevalent in the early Mughal Empire in India. Her study focuses on the practices of invocation and prayer related to astral magic, and examines the specific use of the so-called ‘greatest names’ for magic purposes. Founded on lettrist concepts, such invocations were considered to provide the praying person with supernatural powers, which were drawn upon by Mughal rulers.

In the final article of this volume, “Going Egyptian in Medieval Arabic Culture: The Knowledge of Occult Alphabets by Pseudo Ibn Waḥshiyya”, Isabel Toral-Niehoff and Annette Sundermeyer examine the long list of magical alphabets at-

tributed to Ibn Waḥshiyya and discuss the authorship of this treatise, which belonged to the group of Arabic texts that have been impacted by ancient Egyptian influences.

Acknowledgements

We extend our warmest thanks to our colleagues at the German Orient-Institut Beirut (OIB) for publishing this present book in their distinguished series, *Beiruter Texte und Studien*. We are especially indebted to the former Director of the OIB, Stefan Leder, for his endorsement of this publication project. Our thanks go also to Thomas Scheffler from the OIB for his contribution to the organization of the international conference upon which this book has been established in its edited and adapted format as a proceedings volume. We are also grateful to Professor Tarif Khalidi from the American University of Beirut, who came up with the original idea of dedicating an international conference in Beirut to studying various aspects of the occult sciences in pre-modern Islamic cultures. Our thanks are also due to Torsten Wollina, Hans-Peter Pökel, and Veruschka Wagner for their help at the initial copyediting stages in terms of standardizing the style guidelines across the chapters. Finally, we are thankful to all our contributing authors for their commitment to this project and for the patience with which they responded to our editorial recommendations and helped us in bringing more coherence and unity to the chapters. We are also grateful to the anonymous referees who assisted us with their comments in improving the contents of the chapters. It has been on the whole a rewarding and stimulating experience to bring this book to publication.

(July 2017, Beirut/Bonn)

Nader El-Bizri and Eva Orthmann

Notes on Contributors

Kristine Chalyan-Daffner was born in Yerevan, Armenia, where she did her university degree at Yerevan State Institute of Foreign Languages. Later, she studied Islamic Studies, English Philology and Public Law in Kiel and Heidelberg, Germany. After doing her Master's Degree at Heidelberg University, she received a scholarship from the German Research Foundation at Karl Jaspers Centre for Advanced Transcultural Studies of Heidelberg University. There she worked as a PhD member of the Junior Research Group "Cultures of Disaster". Within the framework of this project, she researched in Saint Petersburg, Cairo, Paris and London and has recently defended her doctoral thesis, titled '*Natural Disasters in Mamluk Egypt (1250-1517): Perceptions, Interpretations and Human Responses.*'

Nader El-Bizri is a Professor of Philosophy and Chair of the Civilization Studies Program at the American University of Beirut (AUB). He also serves as the Director of the Anis Makdisi Program in Literature at AUB, and as the Coordinator of the MA in Islamic Studies at the AUB Center for Arab and Middle Eastern Studies (CAMES). Prior to joining AUB, he was a Principal Lecturer at the University of Lincoln, and he previously taught for twelve years at the University of Cambridge. He also lectured at the University of Nottingham, the London Consortium and Harvard University, in addition to holding senior research affiliations at The Institute of Ismaili Studies in London and the Centre National de la Recherche Scientifique in Paris (CNRS). His areas of research are Arabic Sciences and Philosophy, Phenomenology and Architectural Humanities. He has published and lectured widely and internationally, and has received various awards and honors in recognition with his work.

Emma Gannagé is Associate Professor in the Department of Arabic and Islamic Studies at Georgetown University. She holds a PhD (1998) in Ancient and Medieval Philosophy from the University of Paris I – Sorbonne. She is also the editor of the *Mélanges de l'Université Saint-Joseph*. Her research interests focus mainly on the transmission and reception of Greek philosophy into Arabic, Arabic and Islamic philosophy, Arabic medicine and its relationship to philosophy, and Arabic manuscripts. Her publications include several articles and a monograph on *Alexander of Aphrodisias: On Coming-to-be and Passing-Away 2.2-5* (London 2005), as well as other edited books including *The Greek Strand in Medieval Islamic Political Thought*, with P. Crone, D. Gutas, M. Aouad and P. Schuttrumpf, (Beirut 2004). Most recently she submitted a monograph-long article on al-Kindi's *On First Philosophy* for the forthcoming *Oxford Handbook on Islamic Philosophy*.

Antonella Ghersetti is Associate Professor of Arabic Language and Literature at Università Ca' Foscari, Venice. She holds a PhD in Semitic Studies (Semitic Linguistics) from the University of Florence. Her main fields of research

are the Arabic linguistic tradition, pre-modern Arabic literature, and Arabic physiognomy. She has published several articles on physiognomy in the Arab tradition and the edition of the pseudo-Aristotelian *Kitāb al-Firāsa* in the translation of Ḥunayn b. Ishāq.

Orkhan Mir-Kasimov is a Research Associate at the Institute of Ismaili Studies in London. He obtained his doctorate from the École Pratique des Hautes Études (EPHE) in Paris, and continued his research as a post-doctoral fellow at the Institut d'Études Avancées (IEA) in Nantes, France, and at the Institut für Islamwissenschaft of the Freie Universität in Berlin, Germany. His postdoctoral project focused on the doctrinal aspects of groups belonging to the *Shi'i* messianic tradition. Since 2009 Mir-Kasimov has been coordinating a collective project entitled "Reconsidering Normativity in Post-Mongol Muslim Communities: Esoteric, Syncretistic and Messianic Trends", and is currently working on a book on the original *Ḥurūfi* doctrines and their place in Islamic thought. He plans to focus further research on the *Shi'i* and crypto-*Shi'i* intellectual circles of the 14th-15th centuries, their possible connections with the doctrinal legacy of early Shi'ism and their influence on later messianic groups and movements.

Muhammad Ali Khalidi received his BS in Physics from the American University of Beirut (AUB) and his MA and PhD in Philosophy from Columbia University. He is currently Associate Professor of Philosophy at York University, and was previously Associate Professor of Philosophy and department chair at the American University of Beirut. His most recent publication is *Natural Categories and Human Kinds: Classification in the Natural and Social Sciences* (Cambridge University Press, 2013). He has also translated and edited an anthology of Islamic philosophy, *Medieval Islamic Philosophical Texts* (Cambridge University Press, 2005).

Tarif Khalidi was born in Jerusalem in 1938. He received degrees from University College, Oxford, and the University of Chicago, before teaching at the American University of Beirut as a professor in the Department of History from 1970 to 1996. In 1996, he left Beirut to become the Sir Thomas Adams' Professor of Arabic at Cambridge University, the oldest chair of Arabic in the English-speaking world. He was also Director of the Centre for Middle East and Islamic Studies and a Fellow of King's College, Cambridge. After six years, Tarif Khalidi returned to the American University of Beirut, taking on the Sheikh Zayed Chair in Islamic and Arabic Studies. He has published several books, including *Images of Muhammad* (Random House, 2009), *The Muslim Jesus* (Harvard University Press, 2001), *Arabic Historical Thought in the Classical Period* (Cambridge University Press, 1995), and *Classical Arab Islam* (Darwin Press, 1996). He has also published a translation of the *Qur'ān* (Penguin, 2008) and edited a collection of essays, titled *Land Tenure and Social Transformation in the Middle East* (Syracuse University Press, 1985).

Matthew Melvin-Koushki (PhD Yale) is a Postdoctoral Research Associate at Princeton University (Near Eastern Studies) and Assistant Professor of History at the University of South Carolina. He specializes in early modern Islamic intellectual, religious and cultural history, with a focus on the theory and practice of the occult sciences in Iran and the Persianate world. Winner of the Middle East Studies Association's Malcolm H. Kerr Award, his 2012 dissertation examined the lettrist thought of Šā'in al-Din Turka Işfahāni, the foremost occult philosopher of early Timurid Iran.

Eva Orthmann has been Professor of Islamic Studies at Bonn University since 2007. She received her MA in Islamic and Iranian Studies from the University of Tübingen in 1995 and her PhD from Halle University in 2000. After being an assistant professor at the Oriental Institute at Zurich University she became a visiting research scholar at the department of Near Eastern Languages and Civilizations at Yale University. Her work focuses mainly on the history of astrology in the Islamic world as well as on Indo-Iranian studies.

George Saliba has been Professor of Arabic and Islamic Science at the Department of Middle Eastern, South Asian, and African Studies at Columbia University since 1979. He received his BSc in mathematics in 1963 and an MA in 1965 from the American University of Beirut. He further earned an MSc degree in Semitic languages and a doctorate in Islamic sciences from the University of California, Berkeley. He received several awards and honors and was also selected as a Distinguished Kluge Chair at the Library of Congress and as a Distinguished Carnegie Scholar. George Saliba is researching the development of scientific ideas from late antiquity until early modern times, with a special focus on the various planetary theories that were developed within the Islamic civilization and the impact of such theories on early European astronomy.

Annette Sundermeyer was trained in the domain of Arabic and African studies at Freie Universität Berlin and Humboldt-Universität zu Berlin. She is at present completing her PhD dissertation through the *Topoi* inter-university research cluster in Berlin, and participates in doctoral studies at the Berlin Graduate School of Ancient Studies. Her research focuses mainly on the reception of hieroglyphs in pre-modern Arabic perspectives.

Isabel Toral-Niehoff studied History and Arabic Studies in Tübingen (PhD 1997), Habilitation 2008 (FU Berlin). Her main publishing and research fields are: Arabia and the Near East in Late Antiquity; cultural identity; cultural transfer processes; Arabic occult sciences; literature in translation; and al-Andalus. Since 2012 she has been a Marie-Curie Fellow at the Institute for the Study of Muslim Cultures at the Aga Khan University in London.

The Occult in Numbers: The Arithmology and Arithmetic of the *Iḵḵrḵwān al-Ṣafāʾ*

Nader El-Bizri

This chapter examines the arithmology of the anonymous adepts of the tenth-century CE (fourth-century *Hijrī*) Iraqi fraternity of the *Iḵḵrḵwān al-Ṣafāʾ wa-Khillān al-Wafāʾ* (the brethren of purity and the friends of loyalty)¹ as it figured in their proto-encyclopaedic compendium, the *Rasāʾil Iḵḵrḵwān al-Ṣafāʾ* (*Epistles of the Brethren of Purity*).² This line of inquiry will be situated in the context of the Platonist and Pythagorean traditions that influenced the *Iḵḵrḵwān al-Ṣafāʾ*, while also assessing the epistemic significance of such legacies in terms of a modern consideration of number theory in the philosophy of arithmetic.³ These investigations will be mainly focused on the treatment of arithmetic in the ‘Epistle on numbers’ (*Risāla fi al-ʿadad*, also known as: *al-arithmāṭiqī*)⁴ of the *Iḵḵrḵwān al-Ṣafāʾ*, which is the first in their compendium and opens the propaedeutical and mathematical sciences division (*al-ʿulūm al-riyāḍiyya al-taʿlimiyya*).

The arithmological aspects in the thought of the *Iḵḵrḵwān al-Ṣafāʾ* were linked to their meditations on what they construed as being esoteric powers in numbers that surpass the mere mathematical technicalities of the science of arithmetic. The two-fold character of their treatment of numbers, arithmological and arithmetical, was onto-theological in scope, and it rested on an intricate interpretation of the an-

¹ I discuss the ambiguities that still surround the identity of this coterie, the doctrinal affiliations of its members, and the chronology of its activities in the ‘Prologue’ of *The Iḵḵrḵwān al-Ṣafāʾ and Their Rasāʾil: An Introduction*, Nader El-Bizri, ed., Oxford: Oxford University Press, 2008.

² *Iḵḵrḵwān al-Ṣafāʾ, Rasāʾil Iḵḵrḵwān al-Ṣafāʾ*, 4 vols., Beirut: Dār Ṣādir, 1957. Unless noted otherwise, hereinafter references to this compendium figure as: *Iḵḵrḵwān al-Ṣafāʾ, Rasāʾil*, followed by the epistle and volume numbers, and then the pagination.

³ I consider some contemporary philosophical aspects in epistemology in the final two sections of this chapter. My line of philosophical inquiry resonates with that undertaken elsewhere in this volume by Muhammad Ali Khalidi and Tarif Khalidi. However, I follow a distinct trajectory in modern philosophizing by focusing specifically on number theory in the philosophy of arithmetic rather than dealing with the philosophy of science in general epistemic terms.

⁴ The references to the epistles *on arithmetic and geometry* of the *Iḵḵrḵwān al-Ṣafāʾ* will be taken from: *Epistles of the Brethren of Purity: On Arithmetic and Geometry*. Arabic Edition and English Translation of Epistles 1–2, Nader El-Bizri, ed. and transl., Oxford: Oxford University Press, 2012; hereinafter to be referred to as: *On Arithmetic and Geometry*. See also the related commentary in: Nader El-Bizri, “Epistolary Prolegomena: On Arithmetic and Geometry”, in: El-Bizri, *The Iḵḵrḵwān al-Ṣafāʾ and Their Rasāʾil*, 180–213.

tique microcosm-macrocosm analogy. The *Ikbwān al-Ṣafā'* believed that the human being is a microcosm, as argued in their *Epistle 26* in the division on the natural sciences, which was titled *al-insān 'ālam ṣaghīr*.⁵ They also affirmed that the cosmos was a macro-anthropos, as set in their *Epistle 34* in the division on the psychological sciences, which was entitled *al-'ālam insān kabīr*.⁶ This penchant in thinking was partly inspired by their philosophical adaptations of the Neo-Pythagorean number theory of Nicomachus of Gerasa (d. ca. 120 CE) as it figured in his *Introduction to Arithmetic* (*al-Madkhal ilā 'ilm al-'adad; Arithmêtikê eisagôgê; Introductio Arithmetica*).⁷ The *Ikbwān al-Ṣafā'* coterie was also influenced by selected leitmotifs from the Neo-Platonist accounts of numbers as they figured in the transmitted legacy of Plotinus' *Ennead VI.6* (fl. 3rd cent. CE).⁸ They were moreover informed by the *ars arithmetica* in Euclid's *Elements VI-IX* (*Stoikheia* [fl. 3rd cent BCE]);⁹ *Kitāb Uqlīdis fī al-uṣūl*, also known as *Kitāb al-Arkān*.¹⁰

The epistle on arithmetic (*Risāla fī al-'adad; al-arithmāṭiqī*) was seen by the *Ikbwān al-Ṣafā'* as a prelude to geometry, which was itself studied in the second epistle of their compendium (*Risāla fī al-jūmatrīyā*). These two principal branches of mathematics (arithmetic and geometry) were part of the quadrivium that also grouped *Epistle 3* on astronomy, along with the associated *Epistle 4* on geography, and *Epistle 5* on music. The two initiatory tracts on arithmetic and geometry also served as epitomes to studying the science of logic (*al-mantiqīyyāt*) that acted as a foundation to natural philosophy *qua* physics (*tabī'īyyāt; phusikê*), and the latter informed the investigations in the psychological sciences (*nafsāniyyāt; peri psukhês; De anima*). Such a line of acquired knowledge was grasped by the *Ikbwān al-Ṣafā'* as a proper didactic and epistemic pathway that prepared the apprentices to deal with the nomological and theological sciences (*ilāhiyyāt; theologikê*).

⁵ *Ikbwān al-Ṣafā'*, "Epistle 26", in: *Rasā'il*, vol. 2, 456–479.

⁶ *Ikbwān al-Ṣafā'*, "Epistle 34", in: *Rasā'il*, vol. 3, 212–230.

⁷ The Pythagorean influence was also mediated by figures such as Theon of Smyrna and Moderatus of Gades, who are near contemporaries of Nicomachus in the first century CE, adding to this what also figured later in the emendations of the Syrian Iamblichus Chalcidensis of Apameia (d. ca. 325 CE), and in Boethius' *De institutione arithmetica* (libri duo), as a 6th century CE Latinate version of Nicomachus' *Introductio Arithmetica*. See also: Nicomachus of Gerasa, *Introduction to Arithmetic*, Martin Luther D'Ooge, transl., with studies in Greek arithmetic by Frank Eggleston Robbins and Louis Charles Karpinski, (University of Michigan Studies. Humanistic Series, 26), New York, London: Macmillan, 1926, [repr. in London in 1972 by Johnson Repr. Corp.].

⁸ Plotinus, *Ennead*, vol. 6, 6–9, A. H. Armstrong, ed. and transl., (Loeb Classical Library, 468), Cambridge, Mass.: Harvard University Press, 1988.

⁹ Euclid, *The Thirteen Books of Euclid's Elements*, T. L. Heath, transl., vols. 1-3, New York: Dover Publications, 1956, 2nd ed.; *Euclides opera omnia*, I. L. Heiberg and H. Menge, eds., 8 vols., Lipsiae: Teubner, 1883–1916.

¹⁰ Carmela Baffioni, "Euclides in the *Rasā'il* by *Ikbwān al-Ṣafā'*", in: *Études Orientales* 5/6 (1990), 58–68; Gregg de Young, "The Arabic Textual Traditions of Euclid's *Elements*", in: *Historia Mathematica* 11 (1984), 147–160.

Arithmetic and geometry assist in developing demonstrative reasoning that leads to the study of logic. As the *Iḵḵwān al-Ṣafāʾ* noted in *Epistle 14*: “the one who desires to study logic should first practice geometrical demonstration”,¹¹ for the reason that the latter method is less complex, given that its examples are usually perceivable by the sense of sight and can be imagined.¹²

II

In order to contextualize the account of the *Iḵḵwān al-Ṣafāʾ* on numbers, we need to situate their views within the context of inherited Platonist and Pythagorean traditions. To begin with, we consider Plotinus’ *Ennead* VI.6 which, in the endeavour to grasp the ultimate reality in the intelligible realm, imparted an ontological significance to numbers. Plotinus’ reflections focused on eidetic form-numbers¹³, without exploring their symbolic order in arithmology. The ideal (*ideai*) numbers (covering the sequence from the unit 1 to number 10) were taken to be a real eternal essence, or akin to the thoughts of the Godhead (*dēmiourgos*, or *theós*) as held by Nicomachus (*Introductio Arithmetica* I.4.2, I.6.1).

Two principal themes of inquiry emerge from Plotinus’ *Ennead* VI.6. The first focuses on infinite (*apeiria*) numbers (*Ennead* VI.6, chs. 1–4, 17–18), whilst the second ponders the status of numbers in the intelligible (*noēto* [*Ennead* VI.6, chs. 4–16]). Plotinus wondered if an innumerable multiplicity (*plēthos*) falls away from the One, and whether in being infinite is “evil”. Plotinus reflected herein on the noetic reality of how numbers happen to be in the intelligible, and he did not proceed in this regard in the manner of the Pythagoreans by way of arithmology, but equally, he did not present initiatory accounts of the technical aspects of arithmetic as a distinct science from logic.

Though the *Iḵḵwān al-Ṣafāʾ* were leaning toward a Plotinian approach in ontological thinking (namely in thinking about the question of being *qua* existence), they remained closer to the Pythagoreans in dealing with number-mysticism and

¹¹ *Epistles of the Brethren of Purity. On Logic: An Arabic Critical Edition and Annotated English Translation of Epistles 10–14*, Carmela Baffioni, ed. and transl., Oxford: Oxford University Press, 2010, Epistle 14, esp. 146–147.

¹² The *Iḵḵwān al-Ṣafāʾ* appealed herein to Euclid’s *Elements Book I* propositions 32 and 47. Proposition 32 in Book I of Euclid’s *Elements* states that: “in any triangle, if one of the sides be produced, the interior angle is equal to the two interior and opposite angles and the three interior angles of the triangle are equal to two right angles”. As for Proposition 47 in Book I of Euclid’s *Elements*, it reads as follows: “in right-angled triangles, the square on the side subtending the right angle is equal to the squares on the sides containing the right angle”. Proposition 47 is commonly associated with what is known as Pythagoras’ theorem regarding the square on the hypotenuse. This theorem is known in populist expressions as “the theorem of the nymph [or bride]” (*theorem tēs numphês*) or “the two-horned” (*dhū-l-qarnayn*), on account of its geometric shape in the course of demonstration. See Euclid, *The Thirteen Books*, vol. 1, 417f.

¹³ The notion of ‘form’ is understood herein in its Platonic sense as *eidós*.

with the relatable discipline that necessitated the exactitude of arithmetic in studying the properties of numbers. The *Ikhwān al-Ṣafā'* were aware that eschewing the Pythagorean pathway in favour of strict Neo-Platonism carries its own epistemic risks in mathematics, given that Plotinus' ontology of numbers lacked the technical aspects of arithmetic as practiced by the Pythagoreans.

The Pythagoreans found it hard to express first forms and principles in words, so they turned to numbers in order to set an intelligible mode of instruction and reasoning. For Plotinus, not only the One, but also the reality of the intelligible realm is beyond discursive thought. If the language articulated in words does not deliver a reasoned medium for explicating the ultimate principles of reality, then another form of communication, which is akin to language, and conducted through the symbolic order of numbers, would be clearer. Numbers assist in grasping the multiplicity that issues ontologically from the One. However, the infinity of numbers poses a problem for thought in terms of thinking about its actualization in the sense-world.

The *Ikhwān al-Ṣafā'* did not grasp the art of reckoning (*'ilm al-ḥisāb, logistikê tekhnê*) as being the same as arithmetic, since they took the latter to be a nobler science of number (*'ilm al-ʿadad, arithmêtikê tekhnê*).¹⁴ In their view, numbers are not generated by the one who counts; numbers do not simply occur in the mind of the person who does the calculation or counts objects, such as cattle. The procedure of dealing with numbers is also approached via logic.

A metaphysical difficulty arises in thinking about numbers in terms of how they relate to the Platonic forms (*eidôî*), whether they are coordinate, prior, or posterior to them. Plotinus reckons that numbers are not simply incidental to the forms, but that they rather have an independent mode of being, which is perhaps prior to that of the forms, or correlative with it. Quantitative numbers are images of real numbers (*Ennead* VI.6, chs. 8–9), since they are secondary to them in being dependent on the intellect. Numbers are also indicative of the unity in diversity of the intellect, which gathers all realities in thinking, whereby, being is prior to intellect, and intellect is prior to beings that are endowed with soul. Numbers have a reality and are not simply the result of how the soul is affected when it encounters things that are numerable and readied to be counted.

As we shall discuss in the final two sections of this chapter, one of the main facets of a treatment of numbers from the standpoint of the modern philosophy of arithmetic is the epistemic and ontological presupposition of the simple process of counting.¹⁵ A philosophical analysis of the concept of “number” takes it to be

¹⁴ El-Bizri, *On Arithmetic and Geometry*, 66–68.

¹⁵ For instance, Edmund Husserl studied the concepts of multiplicity, unity and amount in his philosophy of arithmetic (“Die eigentlichen Begriffe von Vielheit, Einheit und Anzahl”) and also examined the symbolic amount-concepts along with the logical sources of amount-arithmetic (“Die symbolischen Anzahlbegriffe und die logischen Quellen der Anzahlen-Arithmetik”). See: Edmund Husserl, *Husserliana. Gesammelte Werke*, vol. 12, Philosophie der

a multiplicity of units that constitutes a connection of a series of things, which in abstract terms are grasped as single ones (as in the numeral 1). A group of objects becomes countable when the particularities of its individual components are abstracted. A number-statement refers to the totality of counted things (for example 10 is a number-statement that refers to the totality of ten counted things). To arrive at such a statement, something is predicated on a concept that allows for ten things to be counted as calculable abstract units in a totality that constitutes the number 10. This entails an abstraction of the particulars of the counted things while retaining the sole attribute that allows their collective connection under a given implied sameness in order to be counted as a totality that yields a number-statement. A given concept is hence affirmed and contained within a number-statement. If multiple objects were counted via the unit 1, then an attribute that gathers them under sameness allows the same sign to be given to each of them, rendering them countable by answering the question: “how many?”. We have here a symbolic presentation of things in such a way that they can be assigned the same sign that amounts to their being countable. By this they have logically equivalent concepts. This line of analysis is not only ontological and psychological but is also logical.¹⁶

III

The *Iklwān al-Ṣafā'* echoed Plotinus' *Ennead* VI.6 by stating that numbers generate beings. However, they did not follow his line of thought, which affirmed that such a process is limited in the intelligible, since number is the measure and is not measurable by anything other than itself. The generation of number is not in the power of the numberer who counts; it rather already stands fast in itself. We move herein from the ontology of eidetic/substantial form-numbers to the arithmetic of mathematical-numbers (*mathêmatikon*), with the former being prior to existents as the potentialities for their existence.

The *Iklwān al-Ṣafā'* noted that arithmetic points to the positing of a computing person, whereby numbers are grasped as being the quantity of the forms (*eidôti*) of things in the soul of the one who performs the numbering (*kammiyyat ṣurwar al-ashyā' fī nafs al-ʿādd*).¹⁷ This is reminiscent of what Aristotle indicated in this regard

Arithmetik. Mit ergänzenden Texten (1890-1901), Lothar Eley, ed., Dordrecht: Springer, 1970, refer esp. 43, 85, 185.

¹⁶ Gottlob Frege responded critically to Husserl's *Philosophy of Arithmetic* in a review essay that was translated from German into English by E. W. Kluge, and that was published in: *Mind* 81/323 (1972), 321–337. In his essay Frege resists the way psychology impinges on logic in thinking about numbers, and in how this is manifested in the phenomenology of mathematics of Husserl. See also: Burt Hopkins, “Authentic and Symbolic Numbers in Husserl's *Philosophy of Arithmetic*”, in: *The New Yearbook for Phenomenology and Phenomenological Philosophy* 2 (2002), 39–71.

¹⁷ El-Bizri, *On Arithmetic and Geometry*, 63.

in book delta of his *Physics*, namely that no numbering or counting takes place unless a soul or intellect undertakes it (*Physics*, IV, 223a 21–28).¹⁸

As the *Iḵḵwān al-Ṣafā'* affirmed, the generation of the 'soul' (*nafs*, *psukhê*, *anima*) is constituted out of numerical series (multiples of 2 and of 3) as we find in Plato's *Timaeus* (35b–36c),¹⁹ with its schemata of portions set in reference to seven numbers as follows:²⁰

	1	
	2	3
	4	9
	8	27
(Multiples of 2)		(Multiples of 3)

To explain this complex schema in shaping the soul by the Demiurges artisan-godhead as noted in detail in Plato's *Timaeus*, we encounter three stages: (I) the first consists of generating a unified mixture out of three beings: 1. the indivisible and changeless, 2. the divisible that comes to be in the corporeal realm, and 3. an intermediate that is derived from the first two thereof (*Timaeus* 35a); (II) the single whole that results from this mixture is then divided into seven portions (as shown in the schema above, i.e. 1, 2, 3, 4, 8, 9, 27); then (III) the divisions between the seven portions are filled with intervals as the middle terms of harmonic and arithmetic means as such:

In the doubles series of 1, 2, 4, 8, the intervals are:

$$1 \rightarrow 4/3 \rightarrow 3/2 \rightarrow 2 \rightarrow 8/3 \rightarrow 3 \rightarrow 4 \rightarrow 16/3 \rightarrow 6 \rightarrow 8$$

In the triples series of 1, 3, 9, 27, the intervals are:

$$1 \rightarrow 3/2 \rightarrow 2 \rightarrow 3 \rightarrow 9/2 \rightarrow 6 \rightarrow 9 \rightarrow 27/2 \rightarrow 18 \rightarrow 27$$

Combining the above two series while omitting duplication we obtain:

$$1 \rightarrow 4/3 \rightarrow 3/2 \rightarrow 2 \rightarrow 8/3 \rightarrow 3 \rightarrow 4 \rightarrow 9/2 \rightarrow 16/3 \rightarrow 8 \rightarrow 9 \rightarrow 27/2 \rightarrow 18 \rightarrow 27$$

¹⁸ Aristotle, *Physics*, W. David Ross, ed., Oxford: Clarendon Press, 1936.

¹⁹ Plato, *Timaeus*, *Critias*, *Cleitophon*, *Menexenus*, *Epistles*, R. G. Bury, ed. and transl., (Loeb Classical Library, 234), Cambridge, Mass.: Harvard University Press, 1929.

²⁰ El-Bizri, *On Arithmetic and Geometry*, 30.

The value of each term in this combined series, except the first, is either $\frac{4}{3}$ or $\frac{3}{2}$ or $\frac{9}{8}$ of the value of its predecessor. Intervals of $\frac{4}{3}$ are filled by those of $\frac{9}{8}$ etc., with a small portion left over every time that is a numerical ratio of $\frac{256}{243}$ (*Timaeus* 36c).

To describe the relationships between the means, if a and b were positive integers, then their arithmetic, geometric, and harmonic means would be set in the following respective natural order:

$$\frac{a+b}{2} > \sqrt{ab} > \frac{2ab}{a+b}$$

These means underpin the proportionality with which the soul is generated, and these are placed on two bands that cross over each other in the shape “+”, and then interlock as two circular bands:



As this figure describes the basic form of an armillary sphere, the outer circular band revolves clockwise as a motion of the same *qua* identity, and the inner circular band revolves counter-clockwise as a motion of the other *qua* difference (*Timaeus* 36d-37b).

The *Ikbwān al-Ṣafāʾ* dedicated the whole of *Epistle 6* in their compendium to a treatment of these arithmetic, geometric, and harmonic proportions. They considered proportionate ratios to be part of noble forms of knowledge that lead to truth, and that underpin aesthetic experiences in connection with music, prosody, colour combination, the design of shapes, as well as being useful in the preparation of composite medications and in monitoring the equipoise in humours, in addition to the use of balances and weights in mechanics and mercantile trading.²¹

IV

The *Ikbwān al-Ṣafāʾ* concluded their epistle on arithmetic with an affirmation of the existence of the soul (*al-nafs*). After all, this was integral to their goals in studying the propaedeutic sciences (*al-ʿulūm al-riyāḍiyya*). As noted earlier, mathematics gave them a pathway to logic and the natural sciences, and these, in turn, informed their meditation on the soul as a prerequisite for studying the theological sciences. A critical step toward theology is that of acquiring knowledge about the essence of the soul (*jawbar al-nafs*), which leads to an inquiry about the return to

²¹ *Ikbwān al-Ṣafāʾ*, *Epistle 6*, in: *Rasāʾil*, vol. 1, 242–257; esp. 251 cf.

the source (*al-ma'ād*, i.e., in the after-life) following the separation from the body in corporeal death.

Humans are recommended to acquire knowledge of their Lord, and there can be no means of knowing God except by way of knowing one's own self. The maxim of mystics in Islam echoed the Socratic oracular enunciation: "He who knoweth himself knoweth his Lord" (*man 'arifa nafsahu 'arifa rabbahu*). Every scholar is bound to study the psychological sciences and to ponder the nature of the soul with its eternity and indestructibility as entailed by its essence as the source of motion of worldly beings.²² The *Ikbwān al-Ṣafā'* see the soul as being akin to the self-moving number since it is made out of ratios and is a transformer of physical bodies in the manner it communicates proportions to the Platonic receptacle (*khōra*, [*Timaeus* 35b–36c]), which configures the appearance of forms in the physical universe. The soul is a conduit of forms that organizes numbers in an orderable fashion (*intizām al-'adad*), and by no longer being chaotic or perturbed, it underpins the configuration of an ordered universe. This line of interpretation develops into an expression of a theurgy of numbers in connection with the way the soul is awakened to the divinity of its source – akin to how reminiscence is facilitated by the Platonic forms in revealing the divine order. The numbers serve as immaterial '*noetic sunthēmata*' that help the soul in divinizing its own noetic powers and serve as analogical or mimetic signs of cosmogony.²³

V

Like the Pythagoreans, the *Ikbwān al-Ṣafā'* co-entangled the linguistic account of generative processes in cosmology and ontology with the use of numbers as a mode of explicating them. The ontological form-numbers differ from the mathematical-numbers of arithmetic, in the way the objects of mathematics are distinct from the number-based principles and elements (*arkhai kai stoikheia*) that ground the forms as figurate numbers (*eidētikos arithmos*).

The series of numbers from the unit 1 (monad) to the number 10 constituted a set of ideal form-numbers. This may have to do with the use of a decimal system from one side, and the mystical significance attributed to the number 10 as entailed by the *tetraktys* (the figurate number with ten-parts) in the Pythagorean fraternities, including the *Ikbwān al-Ṣafā'*. This 'sacred' (*hierós*) *tetraktys* is triangular and comprised of ten points (*muthallath min 'asbarat ajzā'*),²⁴ which describe the procession of all numbers in an existential hierarchy emanating from "the One".

²² El-Bizri, *On Arithmetic and Geometry*, 97–98.

²³ This Neo-Platonist account of numbers as immaterial *noetic sunthēmata* is analyzed in: Gregory Shaw, *Theurgy and the Soul: The Neoplatonism of Iamblichus*, Pennsylvania: Pennsylvania University Press, 1971, 161–164.

²⁴ El-Bizri, *On Arithmetic and Geometry*, 75–83, 120.

While the *Ikbwān al-Ṣafāʾ* marvelled at the sacral character of numbers, they did not go so far as to make “divinities out of numbers” (*arithmos theopoiēsē*) like the Pythagoreans tended to do, though the monad (unit 1) was a clear theosophic signifier for them.

The number 10 results from the addition of the first four numbers (1 + 2 + 3 + 4), which respectively corresponded, in terms of geometric entities, to the point, the straight line, the plane, and the solid. The point (*nuqta*; *sêmeion*) is akin to the monad unit (the 1 as principle of the all). The straight line (*al-khatt*; *grammê*) is a dyad (akin to the first number as 2, and as the first even number) with two point-extremities (in which a dyadic power in the rise of otherness from sameness becomes manifest through a single dimension, namely that of length [*tūl*]). The surface (*al-sath*; *epiphaneia*), as the rectilinear plane of a trilateral figure with three determining points is a triad (namely as the first odd number 3, formed by uniting monad and dyad in a marriage of male and female, or in a unification of two opposites); as a surface, it carries the two properties of length and width. The tetrahedron, as a pyramidal first solid (*al-jism*; *stereos*) in geometry, carries the three properties of length, width, and depth, and has four vertices that correlate with the tetrad, and is also a basis of quadripartition and tetradic schema. This view of the number 4 evokes the way in which the *Ikbwān al-Ṣafāʾ* considered most things in nature to be arranged in a fourfold order (*al-murabbaʿāt*), such as the four elements, four humours, four natures, four temperaments, four seasons, four winds, four cardinal points, four directions, four sub-lunar kinds of worldly beings, and the harmonics issued through the four strings of the lute.²⁵

As a simplex polyhedron, the tetrahedron is also an elemental fiery corpuscle as noted in Plato’s *Timaeus* (53a–55c6) in an analytic take on the corporeal-elemental constitution of primary bodies. It is the form of the molecular solid out of which the aggregates of fire are constituted. Each face of this solid consists of a half-equilateral right-angled scalene triangle (*al-qāʾim al-zāwiya al-mukhtalif al-adlāʾ*) with its sides having values $1 : \sqrt{3} : 2$. This trilateral figure acts as the basis for the constitution of primary bodies and is the geometric origin of shapes (*al-muthallath aṣl kull al-ashkāl*).²⁶ The lesser the number of faces, the sharper a primary body corpuscular solid would be, since higher numbers of faces tend closer to approximating the smoothness of the sphere.

In reflecting on the first four in the series of numbers (starting with the unit 1, then 2, 3 and 4), which all constitute the tetraktys, the *Ikbwān al-Ṣafāʾ* also argued in ontological-cosmological terms that the relationship of the Creator to all existents is like that of the unit 1 to all numbers, while the active intellect (*al-ʿaql al-*

²⁵ El-Bizri, *On Arithmetic and Geometry*, 70–71. This aspect is also discussed by the *Ikbwān al-Ṣafāʾ* in their epistle on music: *On Music. An Arabic Edition and English Translation of Epistle 5*, (Epistles of the Brethren of Purity), Owen Wright, ed. and trans., Oxford: Oxford University Press, 2010.

²⁶ El-Bizri, *On Arithmetic and Geometry*, Epistle 2 ‘On Geometry’, 122–124.

fā^cāl) is like the number 2, the cosmic universal soul (*al-nafs al-kullīyya al-falakiyya*) like the number 3, and prime matter (*al-hayūlā al-ūlā*) like the number 4.²⁷ Consequently, all creatures (*al-khalā'iq*) were fashioned from the first four numbers that let the tetraktys appear, and with it the ten form-numbers that underpin the existence of existents through a process of generation by way of emanation.

VI

Euclid's *Elements* Book VII, Def. 1 states that: "A unit is that by virtue of which each of the things that exist (*qua* beings [*ontón*]) is called one (*bén*)"; and Def. 2 notes that: "A number is a multitude (*pléthos*) composed of units". The unit (*monad*) is like a boundary between number and parts, and is akin to a seed and eternal root from which ratios increase reciprocally on either side. A monad is a limiting quantity when a multitude of integers is diminished by continued subtraction. When deprived of generating number, whether by progression or retrogression, the monad abides at rest, like a point in no position (*athetos*),²⁸ since it potentially apprehends all numbers, and can be called the "Form of forms" (*eidón eidós*). The appeal of the *Iklwān al-Şafā'* to Euclid and to Nicomachus in this regard does not distinguish between their respective *ars arithmetica* methods. While Euclid supports his propositions on numbers with demonstrative proof, Nicomachus treats them descriptively.

In accounting for the onto-theological properties of numbers, proportionality points to how a given thing relates to something else, like x is to y, or how a certain set relates to another. This can help in better grasping how a worldly realm relates to the otherworldly, or how the visible universe is in relation to the invisible (*al-ghayb*). This also offers a mode by which the real underpins the apparent, the latent grounds the manifest, or the veiled hints at the unveiled (this is the classic form of inference from the present to the absent, which is known as: *al-istidlāl bi-l-shāhid 'alā-l-ghā'ib*). Proportion statements also establish commensurability and relation between two distinct domains, such as the microcosm and macrocosm analogy.

The *Iklwān al-Şafā'* endeavoured to demonstrate analogically how numbers are combined from the unit 1 in arithmetic, like the line, surface, and solid are generated from the point in geometry, or the way the Sun is amongst the heavenly bodies in astronomy, or the rhythmic cycles are compounded in music, or how in logic, substance (*al-jawhar*) is with nine categories (with substance, quality, quantity, and relation given primacy over place, time, position, state, action, and affection/passivity).

²⁷ El-Bizri, *On Arithmetic and Geometry*, Epistle 2 'On Geometry', 71–72.

²⁸ See Aristotle's *Metaphysics*, 1084b 26.

The *Iḵbrwān al-Ṣafāʾ* focused on monism, while Nicomachus stressed dualism in the interplay between identity *qua* sameness (the unit 1) and difference *qua* otherness (the number 2). The *Iḵbrwān al-Ṣafāʾ* did not appeal to Nicomachus' distinction between what he designated as a *noētos arithmos* (intelligible number; ʿadad ʿaqli) and *epistēmonikos arithmos* (as a mathematical number; ʿadad ʿilmi). The *noētos arithmos* relates to numbers as they pertain to the workings of the Divine Artisan, and are ontologically distinguished from sensible beings, as highlighted in reference to the intelligible in Plato's *Timaeus* (27d–28a). As for the *epistēmonikos arithmos*, it designates numbers abstractly as mathematical objects that regulate all beings and sustain the conditions for the sound acquisition of rational knowledge.

Based on an onto-theosophic assessment of the merits of arithmetic, the *Iḵbrwān al-Ṣafāʾ* asserted that the unit 1 (*al-wāḥid* that precedes the first number, i.e. 2) was changeless and indivisible, and that it was the beginning and the end of numbers, similar to the way the Immutable Divine is related to all beings as the origin from which they issue forth and as the destiny towards which they return. Moreover, they believed that the propositions of arithmetic supported the unfolding of metaphysical interrogations regarding the Plotinian question (*Ennead* VI.6): “How does an infinite multitude begin with the One?” In response to this, they explicitly affirmed that the generation of numbers *ad infinitum* proceeds from the unit 1 (*al-wāḥid*), and grasped this a lucid evidence (*dalīl*) of God's Unity (*waḥdāniyya*).

VII

The *Iḵbrwān al-Ṣafāʾ* described the unit 1 (*waḥda, monad*) in general terms as a thing (*shayʾ, ōn*),²⁹ while emphasizing that arithmetic studies the attributes of numbers (*ḵḥawāṣṣ al-ʿadad*) with a view to elucidating the properties of correlative existents (*maʿānī al-marwūdāt*) that are gathered collectively into a multitude (*jumla, plēthos*). Ultimately, as the first of the abstract sciences, arithmetic investigates numbers for the purpose of grasping the reality of worldly beings (*al-marwūdāt allatī fī-l-ʿālam*).

A whole number integer (ʿadad ṣaḥīb) X is made up of units, which, as a countable totality, refer to a quantitative iteration-unit-number (based on the unit 1) that is needed many times in order to produce this given whole number X. The unit 1 remains unaltered if it is multiplied by itself any number of times, or if it is separated from the multitude of numbers. It is solitary (*monôtatē*). As regards the attributes of integers that emerge from this iteration-unit 1, the *Iḵbrwān al-Ṣafāʾ* took the number 2 to be the first of all numbers, as well as being the original numerical quantity initiating the series of even numbers (*azwāj, arithmos artios*) and the basis of their generation (potentially producing half of all numbers).³⁰ The

²⁹ El-Bizri, *On Arithmetic and Geometry*, 66f.

³⁰ For the discussion by the *Iḵbrwān al-Ṣafāʾ* of the mathematical properties of numbers in their epistle on arithmetic refer to: El-Bizri, *On Arithmetic and Geometry*, 75–83.

number 2 was construed as the first of the numbers, given that 1 is a unit (*wah̄da*, *monad*) used in counting numbers but is not itself a number (*ʿadad*) per se.

The number 3 is the first odd number (*fard*, *arithmos perissos*) that acts as the basis for the generation of one third of all numbers. The number 4 is the first perfect square number (*awwal ʿadad majdhūr*), since $4 = 2 + 2$ (in other words, 4 being the first number that results from the multiplication of another number by itself). As for 5, it is the first automorphic number (*ʿadad dāʿir*; it is also referred to as a “round”, “circular”, “cyclical”, or “spherical” number), since in its exponentiation 5 reappears at the end of the resulting quantity (as in 25, 125, 625, 3125, 18625, 93125, etc.; or such as 5, 25, 625, 390625). Like 5, the number 6 is the first perfect number (*tāmm*, *teleios*), and it recurs in multiples of 6 as 36, 216, 1296, 7776, etc. The number 7 is the first complete number (*ʿadad kāmil*), since, arguably, it carries the properties of all the numbers preceding it, and is equal to the first odd number added to the second even number (i.e., $3 + 4$), and is also equal to the first even number added to the second odd number (i.e., $2 + 5$), and is furthermore equal to the unit 1 added to the first perfect number (i.e., $1 + 6$).

The number 8 is the first cubic number (*mukāʿab*, cube or perfect cube), since it results from the multiplication of a *majdhūr* (i.e., a perfect square, like 4) with its *jadhr* (i.e., its square root like 2). The *Ikbwān al-Ṣafāʾ* also considered it to be the first figurate solid number (*ʿadad mujassam*). The number 8 is a product of the base 2 raised to an exponent 3, i.e., $8 = 2^3$. This describes in a basic form what came to be known in later epochs as a logarithm, in the sense that it refers to the power (exponent) to which a fixed number (the base) must be raised in order to equal a given number.

The number 8 is said to be noble (*sharīf*) since it is the basis of the constitution of human embodiment as described by the *Ikbwān al-Ṣafāʾ* in *Epistle 5* on music in terms of a drawn circle that has its centre at the navel of the human body, and its diameter given the value of 8 hand-spans (*shibr*) that stretch across the height of the human body and are equal to the span between the fingertips when the arms are stretched in either direction horizontally. The proportions based on the hand-span as a unit were: height 8, fingertip to fingertip 8, soles of feet to kneecaps 2, knees to groins 2, groins to top of the heart 2, fingertip to elbow 2, elbow to clavicle 2. The number 8 also figures in facial proportions and in the ratios of the concentric order of orbiting planets.³¹

This diagram resembles the famous “Vitruvian Man” (Fig. 1 as shown below) that was described by the Roman architect Marcus Vitruvius Pollio (1st century BCE) in paragraphs 2-3 of chapter 1 of Book III of his *De architectura*. This figure was then elaborately depicted in the high Italian Renaissance by Leonardo da Vinci in a drawing that is entitled: *Le proporzioni del corpo umano secondo Vitruvio*,

³¹ Refer to Owen Wright’s commentary on the epistle ‘On Music’ of the *Ikbwān al-Ṣafāʾ*, 20–23.

and that is kept in the *Gabinetto dei disegni e stampe*, catalogue code 228, at the Gallerie dell'Accademia in Venice. It was conceived by Leonardo as a representation of the geometric proportions of a *cosmografia del minor mondo* (namely as a cosmography of the microcosm).³²

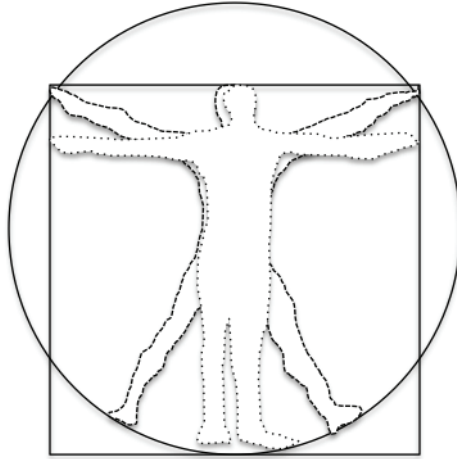


Fig. 1 'Vitruvian Man'

As for the number 9, it is the first odd perfect square (*fard majdhūr*). Regarding number 10, the *Ikhwān al-Ṣafāʾ* noted that it is the first in *al-ʿasharāt* (the series of numbers 10, 20, 30, ... 90) and its power appears through its foundation in the number 10 as tetraktys. The number 11 is the first deaf number (*ʿadad aṣamm, alogos, surdus*) because it does not have a fractional part that carries a name of its own;³³ and this applies to other deaf numbers such as: 13, 17, 19, 23, 29, 31, 37 etc.

As for the number 12, it enumerates the signs of the zodiac, and it is noble in being the first abundant/excessive number (*ʿadad zāʾid, hupertelēs arithmos*), given that the sum of its divisors (*ajzāʾuh, qua* its factors) results in a quantity larger than

³² See Vitruvius, *On Architecture*. Books 1–5, Frank Granger, ed. and trans., (Loeb Classical Library, 251), vol. 1, Cambridge, Mass.: Harvard University Press, 1931. For the discussion of this figure by the *Ikhwān al-Ṣafāʾ* in their epistle on music, see *Epistles of the Brethren of Purity. On Music*, 21–22, 145–146. For a consideration of this theme in terms of its architectural significance, refer to Joseph Rykwert, *The Dancing Column: On Order in Architecture*, Cambridge, Mass.: The MIT Press, 1999, 2nd ed., esp. 409, 415.

³³ For instance, numbers 3, 5, and 7 are not listed as deaf numbers, given that they are respectively assigned alternative appellations as: 3 the first odd number, 5 the automorphic/circular number, and 7 the complete number. Moreover, when mentioning the fractions of 3, 5, and 7, each has its own name as third (*thullī*), fifth (*kbums*), and seventh (*subʾ*), whilst in Arabic, the fraction (let us say *X*) of the number 11 does not have its own name and rather mentions the number 11 when uttered, such as: *X min ihdā ʿashar*.

the number itself: i.e. $6 + 4 + 3 + 2 + 1 = 16 > 12$ (*kul 'adad idbā jumi'at ajzā'ub wa-kānat akthar minh, summiya 'adad zā'id*). In contrast, the deficient/defective number (*'adad nāqis, ellipēs arithmos*), such as 4, 8, and 10, the sum of its divisors (*ajzā'ub*) produces a quantity that is less than it (*al-'adad al-nāqis idbā jumi'āt ajzā'ub kānat aqall minh*), such as 4, 8, or 10 (i.e., $2 + 1 = 3 < 4$; $4 + 2 + 1 = 7 < 8$; $5 + 2 + 1 = 8 < 10$).³⁴

The prime number (*'adad awwal, prōtos arithmos*), like 13 (and the set 3, 5, 7, 11, 13, 17, 19, 23, etc.), is only divisible (without fractions) by itself and by the unit 1. As for the associated numbers (*'adad mushtarak*), like 9, 15, 21, each of these is counted by the unit 1 and a common denominator between them; in the case of 9, 15, 21, that would be number 3 (namely, that 9, 15 and 21 are all divisible by 3).

As for the perfect number, it is equal to the sum of its proper divisors; and it can be expressed in the form: $2^{p-1} (2^p - 1)$ where $p > 1$ is a prime number and $(2^p - 1)$ is a prime (with 6, 28, 496, 8128 as perfect numbers). The number 28 is given special significance as indicative of the Houses of the Moon and in being the sum of the unit 1 with the numbers leading to 7 as a complete number ($1 + 2 + 3 + 4 + 5 + 6 + 7 = 28$).³⁵

Moreover, two given distinct integers are amicable numbers (*mutahābān*) if the sum of the aliquot parts (i.e., proper divisors) of one is equal to the other number, and vice versa, hence: 220 and 284 constitute the smallest pair of amicable numbers. The *Ikbwān al-Ṣafā'* added that these are respectively abundant and deficient (*aḥadabumā zā'id wa-l-ākbar nāqis*), and that such pairs are rare (*nādirat al-wujūd*).³⁶

The *Ikbwān al-Ṣafā'* also commented on the characteristics of multiplication, roots, and cubes (*ḍarb, jadhr, and muka'abāt* respectively), and their disciplines rested on Def. 16–19 of Book VII of Euclid's *Elements*. Two numbers multiplied by one another produce a plane number (*'adad musattaḥ, epipedos arithmos*); whereas, three numbers multiplied by each other result in a solid number (*'adad mujassam, stereou arithmou*); and a cube (*muka'ab*) is the result of a number multiplied by itself and then multiplied by itself again: x^3 (Def. 19).³⁷

VIII

The *Ikbwān al-Ṣafā'* attempted to establish a synthesis between geometrical knowledge and arithmetic in the context of setting numbers in figurate shapes

³⁴ If $p < (2n - 1)$, and $(2n - 1)$ is a prime number, then $p(2n - 1)$ is an abundant number, while if $p > (2n - 1)$, and $(2n - 1)$ is a prime number, then $p(2n - 1)$ is a deficient number.

³⁵ El-Bizri, *On Arithmetic and Geometry*, 84f.

³⁶ If we take S_n to be the sum of the aliquot parts of the dividend number n (in other words, the sum of the positive integer divisors of n , excluding n itself) then, $\sum_{220} = 1 + 2 + 4 + 5 + 10 + 11 + 20 + 22 + 44 + 55 + 110 = 284$ (and 220 is also an abundant number), and $\sum_{284} = 1 + 2 + 4 + 71 + 142 = 220$ (and 284 is also a deficient number).

³⁷ El-Bizri, *On Arithmetic and Geometry*, 20–22, 89–92.

(*numeri figurati*, figured numbers), in order to reveal properties that cannot be derived otherwise. These are embodied in various tables, as magic-squares, with cells grouped in sets of 9, 16, 25, 36, 49, 64, and 81, and respectively involving the multiples of 3, 4, 5, 6, 7, 8, and 9.³⁸ These numeric-geometric configurations carry a talismanic (*talismāt*) significance that befits the art of magic (*siḥr*) as laid down in the 52nd, and final, *Epistle* of the proto-encyclopaedic compendium of the *Iḵbrwān al-Ṣafāʾ*,³⁹ without a clear indication therein of turning arithmology into arithmancy as a practice of divination (*pars fortunae* [*ṣabm al-saʿāda*] and *pars futurorum* [*ṣabm al-ghayb*]). Arithmancy is hinted at in *Epistle 52* (on magic) in the context of evoking the merits of the occult arts of the Sabians (*al-ṣābiʿūn*) and the Harranians (*al-ḥarāniyyūn*) and the *ḥanīf* (*al-ḥanafiyyūn*; as pious [pagan] monotheists, such as the ancient *Yazīdī* [*Azīdī*]) communities of Mesopotamia. The *Iḵbrwān al-Ṣafāʾ* surveyed the opinions of various practitioners of magic in *Epistle 52* rather than presenting themselves as masters of this craft of the occult or as ones who exercise it. They refer to the sage and lord of talismans (*al-ḥakīm ṣāhib al-ṭalimāt*) Apollonius of Tyana in their natural sciences (also naming him ‘Balinās’ [or Balinūs] in a rendition of Abūlūniyūs) in the context of evoking the influence of spiritual beings on worldly composite entities (perhaps in reference to magical prophecies, or *thespismata*).⁴⁰

The *Iḵbrwān al-Ṣafāʾ* made use of a magic-square in the case of a nine-fold table (*al-muttasiʿāt*) in their epistle on geometry.⁴¹ They noted that if it were drawn on two pieces of ceramic (*ḵbazaḥayn*) that are untouched by water, and if these were hung on a woman in labour (*ḍarababā al-ṭalaq*), then, if the moon happens to be in Sagittarius, as the ninth astrological house, and its lord Jupiter falls in it, the birthing (*wilāda*) would be eased.⁴² Such pronouncements were used by Abū Ḥāmid al-Ghazālī as a reason for loathing the *Iḵbrwān al-Ṣafāʾ*. In his *al-Munqidh min al-ḍalāl*,⁴³ for instance, he attacked them for mingling pseudo-science with philosophy, hence demonstrating how philosophical thinking can corrupt knowledge.⁴⁴

³⁸ El-Bizri, *On Arithmetic and Geometry*, 92–95.

³⁹ *Epistles of the Brethren of Purity. On Magic*. Arabic Edition and English Translation of *Epistle 52a*, Godefroid de Callatāy and Bruno Halflants, eds. and transl., Oxford: Oxford University Press, 2011.

⁴⁰ The *Iḵbrwān al-Ṣafāʾ* were also impressed by alchemy, and their connection with the *Kitāb al-Aḥjār* (Book of Stones) from the corpus of *Jābir ibn Ḥayyān* (Geber) has been examined by Yves Marquet in *La Philosophie des alchimistes et l'alchimie des philosophes*, Paris: Maisonneuve et Larose, 1988. See also: Syed Nomanul Haq, *Names, Natures and Things: The Alchemist Jābir ibn Ḥayyān and his Kitāb al-Aḥjār*, Dordrecht: Kluwer Academic Publishers, 1994.

⁴¹ El-Bizri, *On Arithmetic and Geometry*, 154–159.

⁴² El-Bizri, *On Arithmetic and Geometry*, 158–159.

⁴³ Abū Ḥāmid al-Ghazālī, *al-Munqidh min al-ḍalāl*, M. Bijū, ed., revised by Sheikh M.-S. R. al-Būṭī and Sheikh ‘A.-Q. Arnāʿūt, Damascus: Dār al-Taqwā, 1992, 2nd ed., esp. 53–55.

⁴⁴ The critical reaction of al-Ghazālī to the arithmology of the *Iḵbrwān al-Ṣafāʾ* is perhaps akin to the critique that was levelled against the Pythagoreans in the Codex 187 of the *Bibliotheca (Myriobiblon)* of Photius, the 9th-century ecumenical patriarch of Constantinople (who served the Byzantine embassy in ‘Abbāsīd Baghdad; ca. 855 CE), wherein he said: “it is

To consider the way the *Iḳḳwān al-Ṣafā'* dealt with the magic-square of 9 cells, we can refer to how they correlated the *abjad* system with letters that designate numbers (*ḥurūf al-jumal*),⁴⁵ as follows:

ي	ط	ح	ز	و	هـ	د	ج	ب	ا
10	9	8	7	6	5	4	3	2	1

د	ج	ح
ط	هـ	ا
ب	ز	و

4	3	8
9	5	1
2	7	6

necessary, it would seem, to spend and expend a whole life for the sake of the theological juggling with numbers, and to be a sober philosopher in mathematics in order to be able to talk consummate nonsense". See: Photius, *Bibliothèque*, René Henry, ed., tome 3, ("Codices" 186-222), Paris: Les Belles Lettres, 1962, codices 186-222. Aristotle already critiqued such Pythagorean pathways in reflecting on eidetic substantial (*ousiôdês*) numbers in his *Metaphysics*; he took this thinking to be arbitrary, if not even considering it to be absurd (*Metaphysics* Mu, VIII, 1084a 25--27); see: Aristotle, *Metaphysics*, W. David Ross, ed., 2 vols., Oxford: Clarendon Press, 1924.

⁴⁵ A discussion of lettrism (*ilm al-ḥurūf*, *ilm al-asmā'*) figures in the present edited volume within the chapters of Eva Orthmann and Matthew Melvin-Koushki, with the latter focusing particularly on geomancy (*ilm al-raml*).

The addition of three numbers in each of the cells (*bayt*) of this nine-unit table, in any direction, horizontal, vertical, diagonal, each yields the number 15.⁴⁶ This magic-square has a basis 3, which gives an additive magic-constant $M = 15$, as the sum of every row, every column, or every diagonal, and has a value $n = 3$, which designates the number of rows and columns, and $n^2 = 9$, as the number of cells, hence: $M = \frac{n(n^2+1)}{2}$.

IX

We now turn to the modern philosophy of arithmetic in assessing the epistemic significance of the classical number theory we have considered so far. The reliance on symbolism and pictography in arithmetic and geometry carried potential signs for developing a formal language in logic that is not dependent on the idiomatic uses of linguistics, and in the aim of ordering thought to arrive at universal truths that are akin to those associated with mathematics. Thinking about the properties of numbers from the standpoint of an analytic philosophy of mathematics, we can generally state that simple elementary figures and numbers are posited as symbols that are subordinate to the expression of thought while being grasped as fundamental principles of things and concepts. This approach rests on the method of representing the universal contents of thought and observation by means of signs from arithmetic and geometry. Such attempts to apprehend the universe by way of numbers is a first step toward metaphysics. Natural phenomena are seen as being underpinned by definite numbers and geometric proportions. Yet thought cannot be simply characterized as being numerical by way of the association of definite numbers with specific thoughts, which can be construed as a sign of deficiency in intellectual resources, veiled by the claim that numbers conceal a profound meaning and do not constitute symbols that have been selected arbitrarily. The character of concealment in the occult arts that proclaims profundity may be contrasted with the clarity and distinctness that is expected from thought; namely to aim at having clear and distinct ideas. The Pythagoreans, including the *Ikbwān al-Safāʾ*, represented rational relationships by way of numbers and through the forms of their numerical relations. They did this with a view to regulating thoughts and the communicative modes of expressing them. Numbers have been regarded as the most suitable objects of inner intuition, and arithmetical operations have been held to be the mental activities in which the mind brings to view its most characteristic nature. Number is the absolute determinateness of quantity, and arithmetic is an analytical science. In number, sense is brought closest to thought and its externalization. In an initial epistemic step, the mind rises above the realm of the senses and contemplates its own essence in order to determine an element for its pure representation and the expression of its essential nature. It may therefore happen to

⁴⁶ El-Bizri, *On Arithmetic and Geometry*, 154–155.

hook on to the phenomenon of number when contemplating the universal as it is manifested through sensible particulars and mixed with them. Number stands therefore midway between the intelligible and the sensible, between ideas and the senses. The Pythagoreans would have imitated the geometers, who could not adequately express what is corporeal via linguistic idioms and resorted to the use of figures. Yet, the number-forms are not adequate for thought-determinations even in terms of a mathematical formalism as a method that employs mathematical categories for determining the positive cum concrete philosophical sciences. However, philosophy must also take its rationalistic character from logic, and not simply from mathematics. In seeking this logical element in view of underpinning the philosophical sciences, the mathematical disciplines would constitute initial steps towards logic, which ultimately procures justification, meaning and value for the figures of geometry and the numbers of arithmetic.

Number is a non-sensuous object, and preoccupation with it and its combinations is a non-sensuous inner abstract labour that can be mechanical and need not necessarily reveal substantial content of a moral and spiritual life, let alone a metaphysical outlook on the ultimate principles of reality. Calculation and arithmetical operation are external to such ethical matters, though they can be instrumental in educating the mind. As the epistles of the *Ikbwān al-Ṣafā'* show, the mathematical disciplines become vital in didactic and pedagogic terms when they pave the way to logic, which in turn aids inquiry into the sciences of nature, reflection upon the psyche, and meditation on divinities.⁴⁷

The project of developing a symbolic and pictographic language that aimed at capturing the essence of mathematics and synthesizing it in isomorphism with the empirical and exact sciences, as well as metaphysics, found an early-modern expression in Leibniz's *ars combinatoria* and *characteristica universalis*. Leibniz argued that all concepts are nothing but combinations of a relatively small number of simple notions, just as words are aggregations of letters. Truths are expressed as sound and valid combinations of concepts that are reducible to simpler notions. Leibniz aimed at establishing a universal, formal and pictographic language of mathematics and the exact sciences that can order ideas in a way that mimics how arithmetical signs serve for numbers, and how algebraic signs stand for quantities.⁴⁸

⁴⁷ For a philosophical analysis of symbolism in mathematics and its roots in Pythagorean teachings as assessed from the viewpoint of logic, see Georg Wilhelm Friedrich Hegel, *Logic: Being Part One of the Encyclopaedia of the Philosophical Sciences*, W. Wallace, transl., with a foreword by J. N. Findlay, Oxford: Clarendon Press, 1975, chap. VII, section 104, 154f., 212–217. Refer also to Hegel's *Lectures on the History of Philosophy*, E. S. Haldane, transl., introduction to the Bison Book Edition by F. C. Beiser, vol. 1, Lincoln: University of Nebraska Press, 1995, section B2, 88f., 194–239.

⁴⁸ See Gottfried Wilhelm von Leibniz, *Dissertatio de arte combinatoria. In qua ex arithmeticae fundamentis vmplicationum ac transpositionum doctrina novis praeceptis extruitur, & usus ambarum per univversum scientiarum orbem ostenditur; nova etiam Artis Meditandi, seu Logicae Inventionis semina sparguntur. Praefixa synopsis totius Tractatus, & additamenti loco demonstratio existentiae Die, ad mathematicam certitudinem exacta*, Lipsiae: Seuboldus 1666, and Id., *Sämtliche*

X

The narrow connection between arithmetic, geometry, and logic (which figured in the *Epistles* of the *Iḵḵrḵwān al-Ṣafāʾ*) is itself a central theme of reflection in modern philosophy of mathematics. Even if a number is a property belonging to everyday physical objects, it is still essential to make reference to concepts in order to count. A statement of number contains an objective assertion about a given concept,⁴⁹ since number-words are grammatically substantive and adjectival. The arithmetician cannot generate the properties of numbers at will but rather discloses what is there *a priori* as what is given to consciousness and reason without the mediation of the senses. Number-words are used in the context of a proposition not simply as predicates. Rather they are logical consequences of the connection between concepts, and they refer to the objectivity of inferences and judgments with respect to them. The objective determinateness of numbers is a logical consequence of how they are disclosed within consistent judgments and inferences. Numbers are logical objects, though in their correspondence with things in the world they stand in space and time. All this presupposes objectivity in the law governing the system of statements of judgment and inference, in which number-words gain their character as objects and concepts. I note here that it is unclear how far we could proceed in arithmetic by means of inferences alone or with the sole support of laws of thought that transcend particulars. The initial step is to reduce the concept of ordering in a sequence to that of a logical consequence in order to proceed to the notion of numbers, and to prevent intuitive input from interfering in this procedure while retaining the chain of inference free of gaps. The simple idiomatic reliance on language in this process is inadequate and poses epistemic obstacles. It also brings about complexities that seem inelegant from the standpoint of the procedural clarity and precision of logic. However, arithmetic and geometry may have developed from one and the same basis that is essentially geometrical. Consequently we have to think of mathematics in its entirety as being underpinned purely by geometry, which would also suggest that it is completely homogenous.⁵⁰

Schriften und Briefe, vol. 1, 1668-1676, Berlin: Akademie Verlag, 1923, A. VI. 1. Refer also to Gottfried Wilhelm von Leibniz, *Philosophische Werke, vol. 1, Zur allgemeinen Charakteristik. Hauptschriften zur Grundlegung der Philosophie*, A. Buchenau, transl., reviewed with introduction and notes by E. Cassirer, Hamburg: Felix Meiner, 1966.

⁴⁹ Frege construed numbers as second-level concepts and held that a statement about them asserts something objective of a given concept. Frege elaborates this in his *Grundlagen and Begriffsschrift* in 1879. See Gottlob Frege, *Die Grundlagen der Arithmetik*, Breslau: Köbner, 1884, figuring in an English translation by J. L. Austin as: *The Foundations of Arithmetic*, Evanston: Northwestern University Press, 1950. Jean van Heijenoort, *From Frege to Gödel: A Source Book in Mathematical Logic, 1879–1931*, Cambridge, Mass.: Harvard University Press, 1976, 3rd print, which includes Frege's *Begriffsschrift* with notes and commentary.

⁵⁰ This account is summarized in Frege's "Numbers and Arithmetic", which is a study that he composed in 1924 that is included in an annotated English translation in: Gottlob Frege,

This view contrasts with the logicism thesis that aims at demonstrating how the fundamental laws of classical mathematics, especially those governing natural and real numbers, can be derived from purely logical principles.⁵¹ Taking these views into account, I advocate the thesis that arithmetic would be based on geometry and not on logic *per se*.⁵² The same holds with respect to arithmology and its reliance on pictography and symbolism.

The *Ikbwān al-Ṣafā'* started their *Rasā'il* proto-encyclopaedic compendium with the affirmation that the sciences which study worldly existent beings (*al-mawjūdāt*), and that inquire into their principles, the quantity of their species, and their order, all rely in their demonstrations on numerical analogies and geometric proofs, similar to what the Pythagoreans used to do. Scientific knowledge is therefore grounded in arithmetic and geometry.⁵³ Nature as the spatial-temporal world of physics was ultimately idealized as a mathematized manifold.⁵⁴ Just in a single generation after the era of the *Ikbwān al-Ṣafā'*, the first systematic endeavour to mathematize physics is witnessed in the isomorphic composition of geometry with physics (*qua* natural philosophy) in the context of experimental controlled testing (*al-i'tibār*) as practiced by the polymath al-Ḥasan ibn al-Haytham (known in Latin renderings of his name as Alhazen, born ca. 354/965 in Basra, and died ca. 430/1041 in Cairo), and especially in the context of his redaction of his *Book of Optics* (*Kitāb al-manāzīr; De aspectibus*).⁵⁵ Ibn al-Haytham's research marked a culminating chapter in the unfolding of the Archimedean-Apollonian mathematical 'school of Baghdad' within the exact sciences of the 9th and 10th centuries CE (namely by building his investigations on expanding and synthesizing the oeuvre of figures such as the Banū Mūsā, Thābit ibn Qurra, Ibrāhīm ibn Sinān, Abū Ja'far al-Khāzin, Abū Sahl Wayjan ibn Rustām al-Qūhī, and Abū al-'Alā' ibn Sahl).⁵⁶

Posthumous Writings, P. Long and R. White, transl., Chicago: Chicago University Press, 1979; see esp. cf. 277.

⁵¹ Frege's logicism was further elaborated in his *Grundgesetze der Arithmetik*, 2 vols., Jena: Pohle, 1893-1903, the text is partly translated into English with notes by M. Furth in *The Basic Laws of Arithmetic*, Berkeley: University of California Press, 1964.

⁵² I am in agreement here with the analysis in: Kevin C. Klement, "Frege's Changing Conception of Number", in: *Theoria* 78 (2012), 146-167.

⁵³ El-Bizri, *On Arithmetic and Geometry*, 65.

⁵⁴ In a phenomenological analysis of mathematics, Husserl attributes the development of the mathematization of physics in the modelling of natural phenomena to the longstanding lineage of Platonism-Pythagoreanism that inspired Galileo's mathematizing of nature, see: Edmund Husserl, *Die Krisis der europäischen Wissenschaften und die transzendente Phänomenologie*, Walter Biemel, ed., The Hague: Martinus Nijhoff, 1954, Part II, §9.

⁵⁵ Ibn al-Haytham, *Kitāb al-Manāzīr fī l-ibṣār 'alā l-istiqāma. Haqqaqabā wa-rāja' abā 'alā al-lātinīyya 'Abd al-Ḥamid Sabra, (Al-Silsila al-turāthīyya, 4)*, Kuwait: Qism al-Turāth al-'Arabī, 1983.

⁵⁶ For instance, I discuss Ibn al-Haytham's geometrical conception of place and his refutation of Aristotle's definition of *topos* in: Nader El-Bizri, "In Defence of the Sovereignty of Philosophy: al-Baghdādī's Critique of Ibn al-Haytham's Geometrisation of Place", in: *Arabic Sciences and Philosophy* 17 (2007), 57-80. For thorough analyses of the corpus of the mathematical 'school of Baghdad' see: Roshdi Rashed, *Founding Figures and Commentators in Arabic*

The power of mathematical physics to reveal structures of isomorphism among natural phenomena that appear otherwise unrelated reinforces the sense of coherence in what it discloses as logically governed natural laws.

The use of arithmetic to study beings and natural phenomena, and to inform discussions in psychology and theology, which rested on pre-modern number-mysticism, constituted initial epistemic steps that resulted in the adoption of symbols in the logical ordering of thoughts and the determination of the veracity of the propositions of language in science and philosophy. The occult in numbers was the distant forebear of the development of a formal symbolic language in logic and the reliance on mathematics in studying nature. The pre-modern Pythagorean outlook on being that opened the *Iḵḵwān al-Ṣafāʾ*'s epistle on arithmetic, setting the tone of their *Epistles* compendium, became itself a truism in the scientific method of modern science.

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Between Medicine and Natural Philosophy

Avicenna on Properties (*khawāṣṣ*) and Qualities (*kayfiyyāt*)

Emma Gannagé

In the introduction to his *Kitāb Khawāṣṣ al-asḥyāʾ*, the physician Abū Bakr al-Rāzī noted that, though we cannot always understand nature, it would be dangerous to deny the existence of phenomena we do not understand because then we run the risk of losing their benefits.¹ With this recommendation he acknowledged two things: first the limit of our knowledge; second the pre-eminence of practice, and in this case of experience, in the exercise of medicine – that is repeatedly observing the beneficial effect of a natural phenomenon without being able to determine its cause. The remark draws the contours of a medical and pharmacological epistemology as much as it bears upon the, still debatable, relationship between theory and practice in medieval Arabic medicine. It concerns in the first place the *khawāṣṣ* (pl. of *khāṣṣiyya* or *khāṣṣa*), or the specific properties of minerals, plants and animals, that have been described as “the unaccountable, esoteric forces in animate and inanimate Nature”.² The important word here is “unaccountable” which stresses “renouncing a rational explanation of phenomena”.³ In short, a specific property or *khāṣṣa* would be the observable physical manifestation of a specific power proper to a mineral, an animal or a plant, whose cause remains unknown, as is evident, for example, in the mysterious forces of attraction the magnet exercises on iron only. The science of properties (*ʿilm al-khawāṣṣ*) deals thus with the relationship between all natural things through sympathy and antipathy – and with the use of such properties or powers in different fields, ranging from magic to pharmacology and medicine, passing by alchemy.⁴

A huge literature on the *khawāṣṣ* flourished during the Arabic Middle Ages. It has often been confined to the domain of the occult. It is undeniable that there is a Greco-Roman tradition of the *phusikai dunameis* (natural powers) which is re-

¹ See M. Ullmann, *Die Natur - und Geheimwissenschaften im Islam*, Leiden: Brill, 1972 407, quoted by H. Paavilainen, *Medieval Pharmacotherapy, Continuity and Change. Case Studies from Ibn Sīnā and Some of his Late Medieval Commentators*, Leiden: Brill, 2009, 56. Ullmann provides the title listed by the bio-bibliographers, particularly Ibn al-Nadīm’s *Fihrist* and Ibn Abi Uṣaybiʿa (ref. *ad loc*). Compare with Kraus (below n. 6) and C. Brockelmann, *Geschichte der arabischen Litteratur*, Leiden: Brill, 1937, Suppl. 1, 420: both refer to the same book as *K. al-Khawāṣṣ*.

² According to the definition provided by M. Ullmann, “*Khāṣṣa*”, in: *Encyclopaedia of Islam*, 2nd ed. vol. 4, Leiden: Brill, 1978, 1097-98.

³ Ullmann, “*Khāṣṣa*”, 1097.

⁴ See P. Kraus, *Jābir b. Ḥayyān, Contribution à l’histoire des idées scientifiques dans l’Islam. Jābir et la science grecque, rééd.*, Paris: Belles-Lettres, 1986, chap. II, “La science des propriétés”, 61-95.

lated to magic and which had a great impact on the Arabic as well as the Latin Middle Ages,⁵ as evidenced by dozens of books describing all sorts of recipes. It is, however, equally undeniable that medicine used the same notion extensively, especially in pharmacotherapy, without falling into the register of miraculous or esoteric recipes. Next to the example of the magnet, the purging of yellow bile by scammony was one of the topoi of the medical literature, quoted for example by Abū Bakr al-Rāzī in his *Kitāb al-Khawāṣṣ*: “So far nobody was able to explain the reason why scammony draws yellow bile” (*fa-mā min aḥadin ilā yarwminā bādihā khabbara bi-l-‘illati fi jadbbi al-saqamūniyā li-l-ṣafrā’i*).⁶

Al-Rāzī’s remark has to be understood within the framework of Galenic drug therapy, where the pharmacological action of the drugs was the result of the alteration and transmutation of certain bodily qualities by certain qualities of the drugs in order to restore the balance of the complexion of the body.⁷ According to Galen, the power (*dunamis*) of a particular drug to produce a certain effect in a particular body derives ultimately from the substance’s elementary qualities.⁸ Indeed, ‘Alī ibn al-‘Abbās al-Majāṣī’s *Kitāb Kāmil al-ṣinā’a al-ṭibbiyya*,⁹ which had a considerable influence in the medical milieu, classifies the powers of the constitutive qualities of simple drugs in three categories:

- 1) “The primary qualities which were the complexions of the drugs (for example cold-moist, cold-dry)”;
- 2) The secondary qualities which were derived from the primary ones. In principle they could be deduced intellectually from the primary ones, but were also recognizable through the general effect they had in all parts of the body, such as softening, painkilling.

⁵ Kraus, *Jābir b. Ḥayyān*, 61-65. See also C. Álvarez Millán, “The Case History in Medieval Islamic Medical Literature: *Tajārib* and *Mujarrabāt* as a Source”, in: *Medical History* 54 (2010), 195-214, here: 196-201.

⁶ Quoted by Kraus, *Jābir b. Ḥayyān*, 95. Al-Rāzī’s “confession of ignorance” echoes an earlier statement by the physician ‘Alī b. Sahl Rabbān al-Ṭabarī (d. after 864) who devotes a chapter of his medical encyclopaedia, *Firdaws al-Ḥikma*, to the “Properties of Things” (*fi khawāṣṣ al-ashyā’*) where he states that: “Each thing has a power of which we are informed by its taste (*bi-madhāqatihā*) and a specific property (*khāṣṣa*) the cause of which is unknown and the extent (*ghawrubā*, lit. depth) of which is only grasped through experiences (*tajārib*), because these are obscure properties hidden in the things like for example the property with which the magnet attracts the iron and the amber the wheat’s bran” (Abū al-Ḥasan ‘Alī b. Sahl Rabbān al-Ṭabarī, *Firdaws al-Ḥikma fi al-ṭibb*, M. Z. Siddiqi, ed., Berlin, 1928, 356).

⁷ Paavilainen, *Medieval Pharmacotherapy*, 48 ff., on which the rest of the paragraph depends.

⁸ See S. Vogt, “Drugs and Pharmacology”, in: *The Cambridge Companion to Galen*, J. Hankinson, ed., Cambridge: Cambridge Univ. Press, 2008, 304-322, here: 307.

⁹ Abū ‘Alī ibn al-‘Abbās al-Majāṣī, *Kāmil al-ṣinā’a al-ṭibbiyya*, vol. 1/2, al-Maṭba‘a al-kubrā al-‘āmira, al-Qāhira: Būlāq 1294/1877, 84-152, quoted by M. Ullmann, *Islamic Medicine*, Edinburgh: Edinburgh Univ. Press, 1978, 104-106 and Paavilainen, *Medieval Pharmacotherapy*, 53-56 who also provides references to Avicenna’s *Canon*.

- 3) The tertiary qualities “exercised their effect through the secondary qualities by means of the primary ones, but these effects were limited to a certain location in the body (for example diuretics or drugs to dissolve gallstones).”¹⁰

A fourth kind of power was not seen as deriving from the primary qualities. In that case, the drug was considered as acting in a way that cannot be explained by any of its constitutive qualities. This is precisely the *kbāṣṣa* or *kbāṣṣiyya*: “the unknown cause of a known effect” according to the definition of Lane.¹¹ As Paavilainen further specifies: “The effects of these qualities were in themselves by no means strange or unexpected: they were – at least in most cases – the same secondary and tertiary qualities, with the difference that there was no physiological basis in the primary qualities for their action.”¹²

The attraction force of magnets or the purgative effects of scammony are non-sensible powers that cannot be explained solely as a consequence of the mixture of the primary qualities. As it stands, the notion of *kbāṣṣa* is thus at the heart of the relationship between theoretical knowledge and perceptible reality insofar as it reflects the limitation of the theory when confronted with experience.

The phenomenon is already acknowledged by Galen in his book *On the Powers [and Mixtures] of Simple Drugs* (Book. V 1), where he distinguishes between the drugs that act through their elementary qualities and those that act “through the peculiar property of their entire substance” (*kata tēn idiotēta tēs holēs ousias*).¹³ There, under the category of the drugs that work through the totality of their substance, he included all purgatives and several drawing drugs in addition to poisons and antidotes, as he reminds us in his book *On my Own Opinions*:

In my book *On the Properties of Simple Drugs* it was demonstrated that some [of them] act by heating or cooling or moistening or drying, and others by a joint action, by heating and moistening or by cooling and drying at the same time; but there is another group of drugs which work by *the peculiar property of their entire substance (kata tēn idiotēta tēs holēs ousias)*. I showed that such (drugs) include the purgatives and the so-called destructive drugs which differ from those simply called deadly in that destructive drugs never benefit us, unlike the deadly ones which are occasionally of some slight use when taken from time to time with an admixture of beneficial drugs. For example we make often use of poppy juice in this way. Among beneficial drugs some act through one or two qualities, others *through the peculiarity of the whole of their substance*. [...].¹⁴

¹⁰ Paavilainen, *Medieval Pharmacotherapy*, 53.

¹¹ Paavilainen, *Medieval Pharmacotherapy*, 55.

¹² Paavilainen, *Medieval Pharmacotherapy*, 55.

¹³ See Galen, *Opera omnia*, vol. 11, *De Simplicium medicamentorum [temperamentis ac] facultatibus*. Liber I-VI, Carolus G. Kühn, Hildesheim: Olms, 1965 [repr. Lipsiae 1826], lib. V 1 f., 705,11 - 706,17 and lib. V 18, 761,6 - 764,9; references provided by V. Nutton in Galen, *On my Own Opinions*, V. Nutton, ed., transl. and comm., (*Corpus Medicorum Graecorum*, 5, 3, 2), Berlin: Akademie-Verlag, 1999, 84.

¹⁴ Galen, *On my Own Opinions*, transl. Nutton, 85-87 (my emphasis).

This being said, nowhere does Galen explain clearly what he means by a drug “acting through its whole substance” as opposed to acting through the primary qualities. The description is all the more unsettling in that, in the wake of the commentators, Galen seems also to adopt the standard Peripatetic view that considers the primary qualities as constitutive, with the matter, of the substance of the body.¹⁵ Accordingly, the passage above emphasizes that the only qualities responsible for any change are the four primary ones, i.e. hot, cold, moist and dry. Galen seems thus to be aware of the problem and yet, as already noticed by scholars, he remains committed to the Peripatetic view that the activity of a drug is ultimately subordinated to the complexion of its primary ingredients. In that sense, the specific property appears to reflect a temporary moment of ignorance meant to be overcome.¹⁶ Hence the category of drugs that work *through the totality of their substance* has sounded to many commentators as a “catch-all for anything or everything that could not be included in his other categories”,¹⁷ especially when it comes to compound drugs, combining several substances like the theriac or any antidote. Moreover, the concept of *dunamis*, borrowed from philosophy, encompasses several overlapping meanings and as many usages. It is the same term that is used to designate the power or property of a drug or food-stuffs, natural faculties, capacity etc. characterized by their “potential causal powers,” though Galen himself acknowledges at the beginning of *On Natural Faculties* that “so long as we do not know the essence of the activating cause we call it a *dunamis*”.¹⁸

¹⁵ See the excellent article by A. Stone, “Avicenna's Theory of Primary Mixture”, in: *Arabic Sciences and Philosophy* 18 (2008), 99-119, here: 103-104 and references *ad loc.*, to which this paper is indebted in more than one place. Along the same lines, it is worth noting that in his commentary *On Generation and Corruption*, Alexander of Aphrodisias often calls the primary qualities ‘differences’ (as opposed to Aristotle’s overwhelming use of ‘contraries’) and describes them as “the differences through which the form of the body is affected by a nature (*yanṭabi’u*)”, or again, as “the sensible contraries by which bodies are given a form and affected by a nature (*tanṭabi’u šūratu al-jismi*)” and in his commentary *On Meteorologica*, he mentions several times the “four causes that inform (*eidopoietai*) the elements”; see Alexander of Aphrodisias, *On Aristotle On Coming-to-Be and Perishing* 2.2-5, E. Gannagé, transl., London: Duckworth, 2005, 69 and id., *On Aristotle's Meteorology* 4, E. Lewis, transl., London: Duckworth, 1996, 65 ff. (*In Meteor.* 4, 179, 14 ff.).

¹⁶ See Stone, “Avicenna's Theory of Primary Mixture”, 108 and n. 51 and 53; M. McVaugh's introduction to his edition of *Arnald de Villanova, Aphorismi de Gradibus*, (*Arnaldi de Villanova Opera Medica Omnia, vol. 2: Aphorismi de Gradibus*, M. R. McVaugh, ed., praef. et comm., Barcelona, 1975, 19, n. 11) and Nutton's commentary in Galen, *On my Own Opinions*, 149 and esp. 170-173, who underscores that “Galen follows the Aristotelian line that, although there are many qualities, only the hot, cold, wet and dry are fundamental, responsible for change and for influencing an essentially quality-less matter” (170).

¹⁷ Nutton's commentary in Galen, *On my Own Opinions*, 171, 13-14.

¹⁸ Quoted by R. J. Hankinson, “Philosophy of Nature,” in: *The Cambridge Companion to Galen*, R. J. Hankinson, ed., Cambridge: Cambridge Univ. Press, 2008, 210-241, here: 224. See also A. Debru, “Physiology”, in: *The Cambridge Companion to Galen*, 263-282, here: 266 and Nutton's commentary in Galen, *On my Own Opinions*, 149.

The problem is precisely how to account for the properties of a drug that apparently do not seem to result from a mixture of the primary qualities, as shown by the examples mentioned above of the purgative power of scammony, or the phenomenon of magnetic attraction. The doctrine that a compound drug acquires a specific property arising from its overall combination but different from the properties derived from its ingredients was mentioned by Galen, as we have just seen. It will however receive much greater prominence in Avicenna's medico-pharmacology,¹⁹ and the developments it will undergo will impact significantly his natural philosophy. The issue at stake stands at the borders between both fields and will bear tremendous implications for each of them, given the intimate relationship between natural philosophy and medicine in Avicenna's work. M. McVaugh has already noted that the doctrine of the specific form, which Avicenna adopts in the *Canon*, along with its corollary on the specific property, shifted the emphasis of medical pharmacology towards an empirical, non-predictable model, relying solely on experience.²⁰ This chapter intends to show that it is the necessity to account for a range of "normal" complexions, varying between two extremities without altering the substantial form of the sensible compound, that led Avicenna to abandon the Peripatetic model of a substantial form produced by the mixture of primary qualities in favor of a model where all qualities alike, primary sensible ones and properties, are deemed equally accidental²¹ and hence could vary without altering the substantial form of the compound. Ultimately this chapter aims to show that Avicenna's theory of mixture caters to, or is dictated by, the demands of his medical pharmacology.

I

Curiously enough, Avicenna does not provide any theoretical account of the specific property in the *Canon*, where he nevertheless makes great usage of it in his *Materia Medica*, as well as in his *Pharmacopoeia*, namely Book II and V, where he respectively lists about 800 simple drugs and some 650 compounded prescriptions – theriacs, electuaries, potions, syrups, etc – and discusses the nature and thus the properties of each one as well as their preparation.²² Having said that, in

¹⁹ See M. McVaugh's introduction to his edition of *Arnaldi de Villanova, Epistola de dosi tyriacalium medicinarium*, (*Arnaldi de Villanova, Opera Medica Omnia*, vol. 3, *Tractatus de amore heroico. Epistola de dosi tyriacalium medicinarium*, M. R. McVaugh, ed. praef. et comm., Barcelona: Univ. de Santander, 1985, 61) as well as his introduction to the *Aphorismi de Gradibus*, 19, n. 11 where he states that the doctrine of the *forma specifica* has been considered by a number of 13th century Western medical writers as the contribution of Avicenna.

²⁰ See McVaugh's introduction to his edition of *Arnaldi de Villanova, Aphorismi de Gradibus*, 17 ff.

²¹ This model was brought to light by Stone, "Avicenna's Theory of Primary Mixture".

²² See B. Musallam, "Avicenna, x. Medicine and Biology", in: *Encyclopaedia Iranica*, vol. 3, 1987, 94-99 (<http://www.iranicaonline.org/articles/avicenna-x>).

the introductory chapter of Book V, intended to provide the principles of the science of drug composition (*uṣūl 'ilm al-tarkīb*), Avicenna stresses that each compound drug has powers deriving from the simple qualities of its ingredients and a power arising out of its *forma complexionalis* (*ṣūratubu al-mizājiyya*), that is from its overall combination and not out of the ingredients taken separately. While the first ones can be rationally deduced, the overall medicinal power can be learned only by experience:

And you should know that the tested [drug] (*al-mujarrab*) is better than the non tested one [...]. As for the reason why the tested [drug] is better, it is because each compound drug has a decree (*ḥukm*) deriving from its simples (*min basā'itibi*) and a decree (*ḥukm*) deriving from the totality of its form (*min jumlat ṣūratibi*). The non tested drug benefits through the consideration (*i'tibār*) of its simples only, but we don't know what does its complexion, which is produced out of these [simple ingredients], necessitate: does it add [anything] to its *intentio* [?] (*ma'nā*) or does it not, but [rather] contradicts [it] (*wa-ḥuwa munāqid*)? [In the case of] the tested drug, both matters would be verified, and maybe the benefit (*al-fā'ida*)²³ of its *forma complexionalis* (*fi ṣūratibi al-mizājiyya*) would be more than what is expected from its simples.²⁴

The passage clearly puts the emphasis on the pre-eminence of experience over the rational analysis of the ingredients of a compound medicine, though Avicenna does not explain what he means by the effect of a drug that stems from “the totality of its form”. However, few lines after that, he describes the “successful compound medicine like the theriac” as having “effects (*āthār*) and powers (*quwwan*) according to its simples and [other] effects and powers according to its form that ferments (*takhtamir*) for a period of time in order to attract the complexion towards it”.²⁵ Similarly, when listing the countless beneficial effects of the best theriac, namely the all-purpose and life-saving one (*al-tiryāq al-fārūq*), Avicenna concludes that “it produces all these effects through the specific property of its form (*bi-khāṣṣiyat ṣūratibi*), which is consequent to the complexion of its simples.”²⁶ Such property is extracted by the experience (*mā akbrajat al-tajriba min al-khāṣṣa*) only and may be determined by the exact weight of this complexion (*dhālīka l-mizāj bi-dhālīka l-waẓn*), which if altered will not yield such property. That is why, Avicenna underscores, we should not try to tamper with the original copy of Andromachus, as some physicians, Galen among them, did. By the same token, he could not refrain from targeting the alchemists whose ultimate aim is to produce the “supreme elixir” that is able to bring about all transmutations and hence affect metals:

When one of them claims that he knows the reason why such quantities necessitate such specific property (*ijāb tilka l-awẓān tilka l-khāṣṣiyya*), his claim is fallacious and rejected,

²³ Instead of *'ā'ida* in the text, see Ibn Sinā, *al-Qānūn fi al-ṭibb*, 3 vols., Beirut: Dār Ṣādir, [ca. 1970] [repr. of the Būlāq edition], Book V, “*al-maqāla al-'ilmiyya fi al-ḥāja ilā al-adwīya al-murakkaba*”, vol. 3, 310, 7.

²⁴ Ibn Sinā, *al-Qānūn*, vol. 3, 310, 2-8.

²⁵ Ibn Sinā, *al-Qānūn*, vol. 3, 310, 15-17.

²⁶ Ibn Sinā, *al-Qānūn*, vol. 3, 311, 4.

like he who claims that he knows the weights of the elements in the horse, the human being and others.²⁷

The allusion seems to be to the balance theory, best represented by the Jābirian corpus, which seeks to reduce all natural phenomena to a system of quantity and measure. For by measuring the exact proportions of elementary qualities in a body, the alchemists can change the constitution of any body through the alteration of the quantities of the natures and even create new ones.²⁸

Having said that, it is actually in the first book of the *Canon* that Avicenna explains what he meant by a drug that acts “through the totality of its substance”. In a lengthy passage which, according to M. McVaugh,²⁹ was “cited by Western pharmacists more frequently than any Galenic passage,” Avicenna shows that he is obviously aware of bringing new concepts into the field. Indeed, he warned his reader from the outset that he was using words “whose acceptations (*maḥbūmāt*) may have gotten closer to each other according to the linguistic usage, yet we posit (*naṣṭaliḥu*) that we will use them according to the meanings we indicate”.³⁰ He went on to distinguish three ways by which anything ingested or absorbed can act in the human body: 1) Through its quality alone (*bi-kayfiyyatibi faqat*), a medicine heats the human body through its own heat and cools it through its own coldness without becoming assimilated to it. 2) Through its matter (*bi-’unṣuribi*), food “becomes assimilated to the body, nourishing it as it takes on its form, while simultaneously affecting the complexion of the nourished part through its primary qualities: thus lettuce cools the blood to which it is converted when eaten.”³¹ Finally 3) an ingested food or medicine can “act through the totality of its substance”:

As for that which acts through its substance (*al-fā’il bi-jawbaribi*), it is that which acts through its specific form (*bi-ṣūratibi al-naw’iyya*), by which it is what it is and not through its quality (*lā bi-kayfiyyatibi*), whether the latter becomes assimilated to the body or not. What I mean by “quality” is one of these four qualities. The matter does not intervene (*lā madkhal*) in the action of that which acts through its quality. [...] That which acts through the substance is that which acts through the form of its species (*bi-ṣūratī naw’īhi*) which occurs after the complexion. When the simples of the complexion are mixed (*imtazajat*) and give rise to one thing, [the complexion] is prepared (*ista’adda*) to receive a species and a form, in addition to the simples of this form, which is not the primary qualities that belong to the matter, neither the complexion produced out of them, but a perfection (*kamāl*) that occurs to the matter (*yahṣulu li-l-’unṣur*) according to the preparedness (*isti’dād*) it got from the complexion; like the attractive power of the magnet and like the nature of each one of the species of animal and vegetal, that benefited after the complex-

²⁷ Ibn Sinā, *al-Qānūn*, vol. 3, 311, 10-12.

²⁸ See Kraus, *Jābir ibn Ḥayyān*, 4-5.

²⁹ See McVaugh in *Arnaldi de Villanova, Aphorismi de Gradibus*, 17.

³⁰ Ibn Sinā, *al-Qānūn*, Bk. 1, *fann* 2, *ta’līm* 2, *jumla* 1, *faṣl* 15, “*fi mā’jibāt mā yu’kal wa-yuṣhrab*,” vol. 1, 95, 15-17.

³¹ I reproduce here McVaugh’s handy summary, in: *Arnaldi de Villanova, Aphorismi de Gradibus*, 17-18.

ion (*al-mustafāda ba'da l-mizā*) from the preparation (*i'dād*) of the complexion, though [this perfection] does not come from the simples of the complexion, neither from the complexion itself, since it is not heat, nor coldness, nor humidity nor dryness, whether [taken] simply or mixed, but it is like a color, or an odor or a soul or another form which does not belong to the sensible things. It can happen that the perfection of this form that arises after the complexion (*al-ḥāditha ba'da l-mizā*) is to undergo an effect (*infi'āl*) from something else, when this form is a passive power (*quwwa infi'āliyya*), or it can happen that its perfection is to act in something else (*fi'lan fi l-ghayr*) when this form has the power to act in something else. When [this perfection] is active (*fa'āla*) in something else it can happen that it acts in the human body and it can happen that it does not act [in the human body]. If it is a power that acts in the human body, it can happen that it produces an appropriate effect and it can happen that it produces a non appropriate effect and the totality of this effect would be an act whose origin (*maṣḍarubū*) is not the complexion [of that which acts] *but its specific form that arises after the complexion*. That is why [this act] is called an act through the totality of the substances (*bi-jumlat al-jawābir*), meaning through the form of the species, not through the quality, that is the four qualities and the complexion produced out of them.³²

It is now clear that the specific form of any compound is not the new complexion derived from the mixture of the primary qualities of the ingredients, but yet another property that Avicenna characterizes as a perfection, because it arises precisely *after* the new complexion has been completed, and disposed, or rather *prepared* the matter to receive such additional form (*zā'ida*). It is thus not only unique and specific to that compound, as already noticed by M. McVaugh,³³ but its realization in the matter has been made possible by the new complexion, which disposed the matter to receive it. Yet this new form is independent and not even of the same order of quality of the ingredients of the compound, since it does not proceed from the primary contraries. Therefore, when a drug or any compound is said to act through the totality of its substance it is said to act through this specific form, which is the source of its action and not through its complexion.

Avicenna seems obviously to give preeminence to the specific property over the primary sensible qualities whose action can be rationally measured and deduced. He will not try, in the *Canon*, to give any theoretical account of the former. The passage quoted above is extracted from the second part of the first book of the *Canon*, "On causes and symptoms of diseases". It is worth noting that even in the etiological context of a systematic classification of general causes, Avicenna emphasizes the individual and unpredictable nature of medicine. Whether here or in the context of the compound complexions of Book V, the main pharmacological consequence of such distinction remains the emphasis on experiential knowledge when it comes to properties that arise out of the specific form. Such properties cannot be known and determined rationally, but only through experience, being the property of a specific drug, and hence not compa-

³² Ibn Sinā, *al-Qānūn*, Bk. I, *ṣann* 2, *ta'lim* 2, *jumla* 1, *faṣl* 15, vol. I, 95, 23 - 96, 7.

³³ McVaugh, in: *Arnaldi de Villanova, Aphorismi de Gradibus*, 18.

rable to any other. By contrast, the qualities of the complexion that derives from its simples can be systematically analyzed and predicted.³⁴

Be that as it may, it should be noted that the epistemological gain is so far meager: even if we know now that the purging effect of scammony on yellow bile stems from its specific form, we still don't know the cause, or the reason why scammony purges yellow bile. In other words, we still don't know the origin of a specific form that does not come from the complexion of its primary qualities and yet requires such complexion as its receptacle.

II

Actually, we find a full-fledged theoretical account of the specific property in Avicenna's treatise *On Heart Drugs (al-adwiya al-qalbiyya)*,³⁵ which was written before the third book of the *Canon*,³⁶ that refers to it in the 11th section devoted to the conditions of the heart: "We have written a distinct treatise *On Heart Drugs*, which is beneficial for him who has combined his knowledge of medicine with his knowledge of the principles (*al-uṣūl*) that are more general than medicine."³⁷ Indeed *On Heart Drugs* is at the cross-road between medicine and the higher science of natural philosophy from which medicine draws its principles. More importantly, it includes already all the key concepts as well as the explanatory framework that were at work in the passage quoted above, which receive here a more thorough and developed treatment.³⁸

³⁴ As underlined by McVaugh in: *Arnaldi de Villanova, Aphorismi de Gradibus*, 18-19.

³⁵ Depending on the manuscripts the title varies between *al-Adwiya al-qalbiyya*, *Risāla fī al-Adwiya al-qalbiyya* (ms. Paris, Bibliothèque Nationale, ar. 5966), or *Fi Ahkām al-adwiya al-qalbiyya*, like for example in Brockelmann, *Geschichte der arabischen Litteratur*, Suppl. 1, 827 who lists more than a dozen manuscripts, a list which is by no means exhaustive given the numerous manuscripts of the treatise spread out in libraries and private collections all over the world. Despite having been published more than once, the treatise has not yet been properly edited. I have used in this study the following edition: M. Z. al-Bābā, ed., *Min mu'allafāt Ibn Sinā al-ṭibbiyya, Kitāb daf' al-maḍārr al-kulliyya 'an al-abdān al-insāniyya - al-urjūza fī al-ṭibb - Kitāb al-adwiya al-qalbiyya*, Aleppo, 1984, 221-294 (hereafter, *al-Adwiya al-qalbiyya*). See also M. S. Khan, "Ibn Sinā's Treatise on Drugs for the Treatment of Cardiac Diseases", in: *Islamic Quarterly* 27/1 (1983), 49-56.

³⁶ The first book of the *Canon* was composed before 405/1015, when Avicenna was thirty-five years old (cf. Musallem, "Avicenna, X-Medicine and Biology", online access). According to Ibn Abi Uṣaybi'a (*Uyūn al-anbā' fī ṭabaqāt al-aṭibbā'*, A. Müller, ed., Leipzig, 1882, vol. 2, 6, 23) *On Heart Drugs* was composed as soon as Avicenna arrived in Hamadān. It is dedicated to "al-sharīf al-sa'īd Abū al-Ḥusayn b. 'Alī b. al-Ḥusayn al-Ḥusaynī". See *al-Adwiya al-qalbiyya*, 221 and 209-220 (editor's introduction).

³⁷ See Ibn Sinā, *al-Qānūn*, vol. 2, 265-66 (quoted by Al-Bābā in his introduction to the treatise, *al-Adwiya al-qalbiyya*, 218).

³⁸ Two aspects of the transmission of *On Heart Drugs* are worth mentioning:

1) Because our treatise deals with dispositions of the soul like happiness and sorrow, fear and anger that are actually affections (*infi'ālāt*) proper to the *pneuma* originating in the heart, part of it has been annexed to the fourth book of Avicenna's *Kitāb al-Nafs* at the end

The treatise opens with a very dense introduction summing up in few lines the main tenets of Avicenna's physiology and positing, in tandem with Aristotle, the heart as the origin of all the organs and their faculties. The heart, being the seat of the *pneuma* is the source of the powers or faculties that govern the organism of any living being, and hence of the faculties of the soul, that are carried by the *pneumata* to the different organs of the body:

Just like the organs substantiate out of the humours only (*kamā anna al-akblāt innamā tajawbar minbā al-a'dā*)³⁹, because of the mixture (*imtizāj*) between the [humours] that results in a unique *forma complexionalis* (*šūra wāhida mizājīyya*), through which what is being mixed (*al-mumtazij*) is prepared to receive the states (*al-ahwāl*) that were not acquired (*lam tustafad*) from the simples, likewise the *pneuma* substantiates out of the quintessence of the humours (*ṣafwat al-akblāt*), through the mixture (*imtizāj*) of their four kinds that results in one *forma complexionalis*, through which the *pneuma* is prepared to receive the

of which the philosopher broaches the same issue, without delving into it. Instead, he refers his reader to his "medical books in which he addressed the causes of the readiness of the individuals, that differ according to their natural disposition (*bi-jibillatiḥā*) and according to the difference of their situation, for happiness, sorrow, anger, ... let it be read there" (Ibn Sinā, *al-Shifā'*, *al-Ṭabī'īyyāt*, *Kitāb al-Nafs*, G. Qanawāti and S. Zāyid, eds., Cairo, 178, 8-11). According to S. van Riet, that explains why Abū 'Ubayd al-Juzjāni, Avicenna's famous disciple, has appended at the end of this book, the first nine chapters of *al-Adwīya al-qalbiyya*. All the Latin manuscripts of Avicenna's *De Anima* include that appendix that has been thus preserved by the modern editors of the text, whereas all modern editions of the Arabic text have dropped it. See S. van Riet, "Trois traductions latines d'un texte d'Avicenne: '*al-Adwīya al-qalbiyya*'", in: *Actas do IV Congresso de Estudos Arabes e Islamicos, Coimbra-Lisboa*, 1968, Leiden: Brill, 1971, 339-344, and U. Wiesner, "Avicenna xiii: The Influence of Avicenna on Medical Studies in the West", in: *Encyclopaedia Iranica*, vol. 3, Fasc. 1, 107-110, (online access).

2) *On Heart Drugs* was translated independently into Latin by Arnald of Villanova (d. 1311) in 1306, as *De viribus cordis* (On the powers of the heart) or *De medicinis cordialibus* (literal translation of the Arabic *al-Adwīya al-qalbiyya*). Arnald's translation, which has been revised by Andrea Alpago (d. 1522), has been often associated with the *Canon*, and referred to as *Sextus de viribus cordis*, with respect to the five books of the *Canon*. In his English 'paraphrase' of the first book of the *Canon*, O. Cameron Gruner inserted a translation of important excerpts of the *De viribus Cordis* when he saw fit (see O. C. Gruner, *A Treatise on the Canon of Medicine of Avicenna incorporating a translation of the first book*, London: Luzac & Co, 1930, 123-125 and 534-552). In her adaptation of Gruner's paraphrase, Laleh Bakhtiar has erroneously and misleadingly incorporated into the text of the *Canon*, as if they were part of it, the excerpts inserted by Gruner; see *The Canon of Medicine (al-Qānūn fi'l-tibb)*, Avicenna (Abū 'Alī al-Ḥusayn ibn 'Abd Allāh ibn Sinā), adapted by Laleh Bakhtiar from translations of Volume I by O. Cameron Gruner and Mazar H. Shah; correlated with the Arabic by Jay R. Crook with notes by O. Cameron Gruner, *Great Books of the Islamic World*, Chicago, 1999, 143-162.

³⁹ The verbal form *tajawbara* is not very common in the terminology of the philosophers. It is mainly found in al-Fārābī's and Avicenna's opuses with the sense of "becoming a substance". See also D. Janos, *Method, Structure and Development in al-Fārābī's Cosmology*, Leiden: Brill, 2012, 396 ff. who devotes an appendix to the usage of *tajawbur* (that he translates as 'substantialization') and *tajawbara* in al-Fārābī's cosmology and notes that it may have been originally a neologism coined to translate the Greek forms *ousiotês*, *ousiôsis* and *ousiousthai*, found in several Neoplatonic authors of late antiquity, some of which had been translated into Arabic.

powers (faculties) of the soul (*tasta'iddu bi-hā al-rūḥ li-qubūl al-qiwā al-nafsāniyya*), that were not acquired through the simples, but whose origin (*mabda'ubā*) is from the divine emanation (*al-fayd al-ilābi*) that brings to actualization everything that is *in potentia*, when its preparation for such a perfection has been accomplished, without parsimony or tepidity.⁴⁰

All parts of the body acquire the powers through which they realize their function and hence achieve the perfection proper to their nature, according to the same principle: a first complexion of simple ingredients (ultimately primary qualities) gives rise to a *forma complexionalis* (*ṣūra mizājīyya*) that prepares the matter (*tasta'diddu bi-hā*) to receive the powers (*quwan = dunameis*) proceeding from an external transcendent agent, namely the “divine emanation”. While the emanated specific forms are totally independent from the simples, they nevertheless manifest themselves only when there is a properly disposed material recipient. The reception of the form is thus determined by the material conditions of the recipient.⁴¹ In the following chapters, Avicenna emphasises the notion of preparedness or readiness (*isti'dād*) as opposed to potentiality (*quwva*). The former seems to imply a first stage of information (*ṣūra mizājīyya*) that prepares the matter, through the complexion of the primary qualities, to receive that particular emanated power or form. Not any recipient can receive any form, for example wool cannot receive the form of a sword while remaining wool.⁴²

Some philosophers had made a subtle distinction between potentiality (*quwva*) and preparedness (*isti'dād*). Whereas potentiality is about two contraries equally, preparedness is not about two contraries equally. Every human being is potentially happy or sad, but some are prepared (disposed)⁴³ (*musta'idd*) for happiness only, whereas others are prepared (disposed) for sorrow only. [...] It seems thus that preparedness perfects potentiality (*mustakmilan li-l-quwva*), with respect to one of the two contraries. It thus became manifest thereby, that even though the *pneuma* has, insofar as it is in potentiality, [the capacity] to be both happy and sad, insofar as its preparedness [is concerned] it has only one. Moreover it is manifest that the potentiality toward both things is necessary to [the *pneuma*] in order to substantiate (*kaymā tatajarrabar*), whereas preparedness is not necessary to it, but it only happens to it accidentally, through a cause or a reason (*'illa wa-sabab*).⁴⁴

In contrast with potentiality which is more general, being relative to any form whatsoever, the notion of preparedness or readiness is characterized by a restricted relativity, that implies that the matter is arranged *for* a specific form only.

⁴⁰ *Al-Adwīya al-qalbiyya*, chap. 1, 222, 5-10.

⁴¹ See J. McGinnis, *Avicenna*, Oxford: Oxford Univ. Press, 2010, 88 and 136-37: “A general principle of Avicenna's philosophical system is that whatever is received is received according to the mode of the receiver. Limitations belonging to that which is being acted upon or receiving a given form restrain the forms that an agent can impose upon the recipient”.

⁴² See *al-Adwīya al-qalbiyya*, chap. 2, 224, 14-15.

⁴³ For the sake of consistency *isti'dād* and its derivatives have been as far as possible translated by ‘preparedness’ and its derivatives, knowing that here *musta'idd* refers rather to the predisposition of the human being towards such or such state.

⁴⁴ *Al-Adwīya al-qalbiyya*, chap. 3, 226, 14 - 227,9.

Moreover, whereas potentiality is natural and thus necessary, preparedness or readiness requires an external cause and is thus accidental.

The same principles apply to the action of the exhilarating drugs in which the same two-tier system of qualities remains at work: on the one hand the known primary qualities and on the other “unknown properties”. Happiness and sorrow, fear and anger are affections (*infi‘ālāt*) proper to the *pneuma* which is in the heart and their intensity or their decrease depends on the intensity or the decrease of the preparedness of their humoral complexion not on the agent of happiness. Hence exhilarating drugs will act on the *pneuma* in many different ways, for example by balancing its complexion through heating or cooling. More often they will act through what Avicenna calls “an unknown property” (*kbāṣṣiyya majbūla*) by contrast to the known cause (*‘illa ma‘lūma*) like for example cooling. For instance hyacinth acts through an unknown property alone, whereas apple pulp (*rubb al-tuffāḥ*) “exhilarates through a specific property, and when the complexion of the *pneuma* is very hot, it exhilarates, in addition to the unknown property, through a known cause, that is cooling”.⁴⁵ Such properties whose action is being described on a par with the action of the primary qualities, characterized as “known causes”, are thus also considered as causes, but causes whose nature is not fully understood if at all. The issue at stake is thus epistemological as much as it bears on the nature of such properties. How do such properties work and can the mystery surrounding their nature be lifted? In other words, does their “occult” nature reflect only a limitation of our knowledge and hence a transitory state meant to be overcome? The answer to such questions is all the more crucial because such properties have been proven to play a prominent role in the pharmacopeia of the *Canon* given the importance Avicenna confers upon them in terms of therapeutics, as we have already seen in the first part of this chapter. It is against such a background that we should understand his reversal in the chapter he devotes to the concept of *kbāṣṣiyya*,⁴⁶ which might be considered as the first theoretical development on that matter.

The chapter starts by drawing a strict parallel between nature and specific property (*kbāṣṣiyya*), so that the definition of nature applies also to property and the only difference between them is that of the general to the particular.

In reality, the specific property is nothing other than nature (*al-kbāṣṣiyya laysat fī al-ḥaqīqa shay‘ ghayr al-ṭabi‘a*). The definition of nature as “the principle of motion and rest in that in which it is, by essence, as well as of all its other actions by essence,” applies to the specific property. However, in reality, property differs from nature in terms of the more particular to the more general. For the common people (*al-‘amma*) they differ in terms of dissimilarity.⁴⁷

⁴⁵ *Al-Adwīya al-qalbiyya*, chap. 10, 242-245 (243, 10-11).

⁴⁶ *Al-Adwīya al-qalbiyya*, chap. 11, 245-249.

⁴⁷ *Al-Adwīya al-qalbiyya*, chap. 11, 245, 4-6.

The definition of nature is of course borrowed from Aristotle's *Physics* (II 1, 192b 21-23). Interestingly enough, Avicenna opens the chapter "On Defining Nature" in the *Physics* of the *Shifā'* with a comparison between nature as an imperceptible power of motion in the body in which it resides, similar to the 'occult' power of attraction the magnet exercises on iron:

Furthermore it becomes known to us that these bodies, for which we don't find external movers, are [actually] only moved and acted upon by an external mover that we neither perceive nor reach (*lā nudrikubu wa-lā naşilu ilayhi*). Rather that mover might be some imperceptible separate thing, or it might perhaps be something perceptible in itself but having an imperceptible effect (*ghayr mahşis al-ta'thir*) – namely that the relation between it and what is acted upon by it, and which indicates that it necessitates the effect, is imperceptible. Like someone who has never sensibly seen a magnet attracting iron, or who was not intellectually aware that it attracts iron – since that is like what is impossible to be grasped (*ka-l-muta'adhbhir idrākubu*) through intellectual inquiry –, when he sees the iron being moved toward the [magnet] he will probably think that [the iron] is moving towards [the magnet] by itself. It is thus manifest that the mover is not the body qua body, but rather the body moves only through a power in it (*bi-quwwatin fihi*).⁴⁸

By equating nature as a principle of movement with the occult power of the magnet to attract and hence to move iron, Avicenna transfers to the former the characteristics of the latter: nature is a non-sensible power, a *dunamis* which is known only through the sensible effects it produces in a natural body. In that sense, "every principle of any essential motion whatsoever is a nature."⁴⁹ For example "the vegetative soul is called a nature" as "a power from which its action proceeds without volition" in the generation and growth of the plants.⁵⁰ Likewise for "the state of fire's nature when it moves it upward". These are particular instances knowing that the definition of nature as "the first principle of motion and rest in that to which it belongs essentially rather than accidentally"⁵¹ is "like the generic [sense] and provides each one of the natures beneath it with its meaning" (*fa-hādbā burwa hadd al-ṭabi'a allati ka-l-jinsiyya wa-yu'ti kull wāḥid min al-ṭabā'i' allati taṭṭubā ma'nābā*).⁵²

This will be one of the main axes that structures Avicenna's argument in *On Heart Drugs*: property is no more occult than any other natural power and

just as when one asks about the reason why (*lammiyya*) fire burns, the answer is nothing other than its being hot – the meaning of such answer is that it only has a combustible

⁴⁸ Ibn Sinā, *al-Shifā', al-Ṭabi'iyyāt, al-Samā' al-ṭabi'i*, S. Zāyid, ed., Cairo, 1983, I 5, 30, 1-6. See also Avicenna, *The Physics of the Healing*, Books I & II. A parallel English-Arabic text, translated introduced and annotated by J. McGinnis, 2 vol., Utah: Provo, 2009, vol. 1, 38, 8-23 (§2) from which I greatly benefited.

⁴⁹ Ibn Sinā, *al-Samā' al-ṭabi'i*, I 5, McGinnis, *The Physics of the Healing*, 44, 4-5 (§ 8) [Zāyid, ed., 32, 9].

⁵⁰ McGinnis, *The Physics of the Healing*, 39, 19-20 (§ 3) [Zāyid, ed., 30, 13-14].

⁵¹ As reproduced by Avicenna in this chapter, McGinnis, *The Physics of the Healing*, 40, 18-19 (§5) [Zāyid, ed., 31, 6-7].

⁵² This is how Avicenna concludes the chapter, McGinnis, *The Physics of the Healing*, 44, §9 [Zāyid, ed., 34, 3-4].

power by nature – likewise if one asks about the reason why the magnet attracts the iron, the answer is nothing other than that it has an attractive power by nature.⁵³

The error of the commoner is thus to attribute the combustion power of fire to the extreme heat that he thinks constitutes the nature of fire and in general to consider that “each action proceeding from the body proceeds only out of either heat or cold, or moisture or dryness, or heaviness or lightness, or movement, or any of the things that exist in the simple [bodies].”⁵⁴

In the meantime, Avicenna still has to show how the primary qualities and their derivatives are in no better position to account for the natural power of a body than they are constitutive of the nature of the simple bodies. In other words, they are no more constitutive of the differentiae of the body than any other property of that body.

In reality [property differs from nature the way the particular differs from the general], because some active powers (*ba‘d al-quwā al-fā‘āla*) arise firstly (*taḥḍuth awwalan*) and in the state of simplicity, in the matter which underlies the elemental bodies (*al-ajsām al-‘unṣuriyya*)⁵⁵ that undergo generation and corruption, like for example the powers of fire, earth, water and air, and some [active powers] arise secondarily when the complexion arises in the [first active powers], so that they get prepared (*fa-ista‘addat*) by the complexion to receive such [additional] power [...].

Be that as it may, some forms and powers do not exist in the state of simplicity, but the preparedness for them is completed after simplicity, like for example the power to attract iron that exists in the magnet.

None of the two powers (i.e. first and second) belong to matter by essence (*wa-lā wujūd ihḍā l-quwwatayn li-l-‘unṣur min dhātibi*),⁵⁶ but [they come] from outside, namely from the divine emanation that pervades the universe, and brings every power (*potentia*) into actuality, in one of two ways: as for the first one it is through the primary preparedness (*al-isti‘ādā al-awwal*). The second is through the complexion. The complexion is only prepared to receive [that power], it is neither that power nor does it produce it.⁵⁷

These lines echo the famous passage of the *Canon* reproduced at the beginning of this paper, that explains what it means for an ingested food or drug to act through the totality of its substance. In the case of a primary mixture like here, or of a complex one like there, in which several materials can interact in a compound medicine, the emphasis is again on the preparedness of the new complexion derived from the primary qualities and hence its readiness to receive the new property or power, radically different in nature and independent from the first qualities, yet requiring their complexion in order to be able to arise after the

⁵³ *Al-Adwīya al-qalbiyya*, chap. 11, 246, 11-14.

⁵⁴ *Al-Adwīya al-qalbiyya*, chap. 11, 247, 5-7.

⁵⁵ Here I have adopted the reading of the mss. Escorial, ar. 844, fol. 54a 23 (not used by the editor of the text) and Rampur 3206-2-F 3066 mentioned in the critical apparatus against *al-ajsām al-ṭabi‘iyya al-‘amma* selected by the editor (see *al-Adwīya al-qalbiyya*, 245, 9 and n. 9).

⁵⁶ Again, I adopted the reading of all the manuscripts used by the editor (plus the ms. Escorial, ar. 844, fol. 54b, 7) against the amendment he suggested, see *al-Adwīya al-qalbiyya*, 246, n. 7.

⁵⁷ *Al-Adwīya al-qalbiyya*, chap. 11, 245, 9-246, 8.

complexion, though Avicenna insists the new power “is neither the complexion nor produced by it”.⁵⁸ Its origin is now explicitly stated: it is an “external” efficient and divine cause, whose action is similar to the Giver of Forms, which bestows substantial forms on properly prepared matter. The complexion is thus only conducive to the power received from the divine emanation, so that “the magnet acquires (*istafāda*), through the complexion, a power of attraction just as the vegetal has acquired, through the complexion, a nutritive power.”⁵⁹ Moreover, it seems that this transcendent cause emanates both types of power: the primary qualities as well as the specific powers. “None of them”, Avicenna makes clear, “belongs to the matter by essence”. They are thus all accidental, being all dispensed by the “divine emanation pervading the universe” whose counterpart is a receptivity, be it the sheer receptivity of the first matter, whose primary preparedness or readiness could amount to nothing more than being void of any other form than the primary powers, or the receptive role of primary mixture whose appropriate preparedness gives rise to the specific power.

Complexions (*amzija*) differ in their readiness to receive a given power but nothing more specific is said about what prepares or disposes such mixture to receive such power, and Avicenna acknowledges that in reality we don’t know why such a body receives such power and not another. Our ignorance is actually two-fold and includes properties as well as the cognized nature (*al-ṭabī‘a al-ma‘rūfā*). On the one hand “we are ignorant of the principle which provides the existence of such power” and on the other we are ignorant of “the reason why such body was prepared to receive such power to the exclusion of another body”. Having said that, our ignorance includes equally “colors, odors, powers of the souls and others”.⁶⁰ The right answer is thus that:

From the totality of such phenomena, we know that the existence in actuality (*al-wujūd bi-l-fi‘l*) occurred to them from the active principles (*al-mabādi’ al-fā‘ila*) only, whose cause is God almighty, and we know that it did occur because of the specification of matter (*li-ikhtisāṣ al-madda*) with a preparedness (readiness) (*isti‘dād*) consequent to a mixture. However, we don’t know the proportion of the simples of such mixture as long as we remain in the world of generation and corruption. Our ignorance of the reason why such power occurred in the magnet is not more wondrous than our ignorance of the reason why the thing is prepared for redness and yellowness, or rather the body for the soul. Wonder ceases with respect to the usual and commonly known things, and the soul neglects the subject of investigating them, while what is rare brings about (*yaḡlub*) wonder and calls upon investigation and reflection concerning its cause.⁶¹

⁵⁸ We will thus not call them secondary powers as they are not derivative from and cannot be reduced to the first ones.

⁵⁹ *Al-Adwīya al-qalbiyya*, chap. 11, 247, 13-14.

⁶⁰ *Al-Adwīya al-qalbiyya*, chap. 11, 247, 14 - 248, 3. Compare with Ibn Sinā, *al-Shifā‘ al-Ṭabī‘iyyāt*, *Fi al-af‘āl wa-l-infi‘ālāt*, M. Qāsim and I. Madkour, eds., Cairo, 1969, chap. 2.1, 254-256 where the same problem is raised in almost the same terms.

⁶¹ *Al-Adwīya al-qalbiyya*, chap. 11, 248, 4-12.

On Heart Drugs emphasises that properties are on par with nature and what is true of the latter is true of the former. Just as fire burns through heat, likewise the mineral attracts iron because of a power of attraction in it. “The nature of such power is to attract just as the nature of that power called heat is to burn. However, the burning power bears a name, whereas this power bears no name. That one [i.e. the burning power] is commonly known and this one [the attractive power] is unusual.”⁶² But as Avicenna noted in the remainder of the passage, it is neither the name that makes a concept known, nor its being widespread that removes its strangeness. Properties are thus no more occult than any other power or quality, but what is rare and unusual arouses wonder. And the right answer in both cases is that the magnet “has acquired through the mixture a power of attraction”, just as fire has acquired through the properly disposed first matter by heat and dryness a power to burn. In both cases the real efficient cause is external, above and beyond the sublunar world. Here it is God, elsewhere the Giver of Forms which, as aptly described by McGinnis, “continuously emanates the various species forms that make up our world with a regularity that is akin to a nature, albeit that emanation is still a volitional act according to Avicenna and so is not strictly speaking the result of a nature.”⁶³ Avicenna can thus conclude:

Overall, the specific property is a nature coming from the divine supreme emanation into bodies that are composed of elements, due to the specific complexions that arise in the [elements], that are conducive to specific preparedness(es) (*isti'dādāt kbāṣṣa*).⁶⁴

However, not all mixtures yield the right and appropriate complexion (*mizā*) for the form of such species and its property. Some complexions will yield only a plain quality (*kayfiyya sādbiya*) which is not susceptible of action and passion, like a color or a figure, whereas other complexions will yield active and passive powers or a specific form (*ṣūra naw'iyya*). “The active and passive powers that are not psychic are called specific properties, despite the fact that some people will apply the denomination ‘property’ to all of these in such cases.”⁶⁵ Having said that, Avicenna is not sure what would be the exact categorical status of such entities and whether they would fall under the logical division of *differentia* or *proprium* as a necessary concomitant of the essence:

When it is said for example that such a drug acts by its substance, that means it acts by this form through which it is specified (*allati tanawwa'a bi-hā*). When it is said that it acts through its quality that means it acts through that which it has acquired from the elements, or through its complexion. Scammony heats through the fiery substance in it. However, it does not purge yellow [bile] by that means, but rather through the acquired power that belongs to it specifically (*bi-naw'iyyatibi*) and that it was prepared to receive

⁶² *Al-Adwiya al-qalbiyya*, 246, 17 - 247, 3.

⁶³ See McGinnis, *Avicenna*, 88. Compare the passage above and its sequel (*al-Adwiya al-qalbiyya*, 249, 1-11) with Ibn Sinā, *Fi al-af'āl wa-l-infi'ālāt*, chap. 2.1, 255, 9 - 256, 8.

⁶⁴ See *al-Adwiya al-qalbiyya*, chap. 11, 248, 13-15.

⁶⁵ Ibn Sinā, *Fi al-af'āl wa-l-infi'ālāt*, chap. 2.2, 261, 14-15.

through the complexion. This power is often a specific difference and often a property. It is difficult for us to give an indication that will discriminate between these two. However, the denomination “specific property” (*al-khāṣṣa*), in this case and in the usage of the philosophers of nature, is applied to the thing that is called *differentia* in logic as well as to the thing that is called *proprium*.⁶⁶

III

At this point we need to take stock: if Avicenna has somehow lifted the mystery around the specific properties, it is at the expense of the primary qualities which are now the result of the same “occult”, transcendent and unpredictable cause. Properties like the magnet’s power of attraction or the scammony’s power of drawing yellow bile are no more occult than the so-called primary tangible qualities and none of them is more “essential” to the substance than the other, in other words all of them are accidental *differentiae*.

In a sense this is somehow in keeping with his elemental theory and his denial that primary qualities are constitutive of the element’s substantial form. Indeed A. Stone has shown brilliantly that for Avicenna the form of the elemental bodies does not reside in the primary sensible contrarieties, as was the case for Aristotle’s commentators.⁶⁷ Hot, cold, moist and dry are sensible qualities and thus accidents; therefore they cannot be essential characteristics of substances:

The commentators are confused about that because of the necessity for them to distinguish between forms and accidents which [in this case] refers to the distinction between the natural forms of these bodies and their qualities, and because they thought that all or some of these qualities are the forms of these bodies, despite the fact that they are susceptible of increase (*ishtidād*) and decrease (*duff*).⁶⁸

The nature and hence the form of the elements cannot depend on primary sensible qualities that undergo change, otherwise how can we explain that boiling water remains water even after losing its coldness which is considered as one of its constitutive qualities? Likewise for the water being jetted upwards when its natural inclination is downward, does it still remain water?⁶⁹ Avicenna’s solution is quite radical: cold and moisture are not more constitutive of the nature of water than is its inclination downward, but all such qualities are the effects of the nature of water considered as a nameless (*lā ism labā*) principle.

Nature is something other than the [downward] inclination [of water], rather it is the principle (*mabdaʿ*) of such inclination. Likewise, you should know that nature is different from the above mentioned quality, rather it is its principle. [...] You should know that it

⁶⁶ Ibn Sinā, *Fi al-afʿāl wa-l-infiʿālāt*, chap. 2.2, 262, 1-7.

⁶⁷ See Stone, “Avicenna’s theory of primary mixture”, 110 ff. on which the following paragraph depends, and McGinnis, *Avicenna*, 87.

⁶⁸ See Ibn Sinā, *al-Shifāʾ, al-Ṭabīʿiyyāt, Fi al-kaww wa-l-fasād*, M. Qāsim and I. Madkour, eds., Cairo, 1969, chap. 6, 127, 18 -128, 3.

⁶⁹ See Ibn Sinā, *Fi al-kaww wa-l-fasād*, 130, 13 - 131, 2.

is the nature of water that changes water into such quality and preserves it with it and since such nature has no name, a name is borrowed for it from the action it produces. Therefore, it is sometimes called heaviness and sometimes coldness and moisture.⁷⁰

All qualities are thus now in the same boat, as “results of the same nameless occult faculty”⁷¹. As Stone has shown such ‘demotion’ of the primary qualities is required by Avicenna’s definition of mixture in the *Shifā’*, as “a uniform quality (*kayfiyya mutashābiba*) that arises “when the elemental bodies, being in contact, act upon one another” and “neither achieves domination over the other to the point of changing its substance, but it changes its quality to a point at which the action and passion stabilize”.⁷² Such a definition means that, in contrast to Aristotle’s theory of mixture (where a single unified body emerges out of the mutual alteration of the “constitutive qualities” of the ingredients that change and become uniform), for Avicenna the initial ingredients are not corrupt in the process but “are united merely by alteration, while their substances remain unchanged”, because their *quwā* (*dunameis*) “which are their essential forms” are preserved.⁷³ In other words, Aristotle’s definition of complexion, which implies that the ingredients remain in potentiality and are not corrupt (*De gen. corr.* I 10, 327b 25) because their “*dunameis* are preserved”, is explicitly understood by Avicenna in the sense that the ingredients are preserved in their “active power”. He can hold at the same time “both that small particles of the elements” and hence the form of the elemental bodies “remain in the complex, and that a *mixtum* is a ‘homogeneous stuff’”⁷⁴ because for him the form of the elemental bodies does not reside in the sensible qualities, as was the case for Aristotle’s commentators. These are not anymore constitutive of the elements and hence what is mixed in order to produce “a homogenous quality” are accidental sensible qualities and not differing substantial forms that are not sensible. “Because the primary qualities are no longer thought of as constitutive, the elements can easily lose these qualities, in whole or in part, without being corrupted”.⁷⁵

Be that as it may, a final question remains. Why did Avicenna need to distance himself twice from the commentator’s tradition: first, by deliberately⁷⁶ understanding Aristotle’s definition of mixture as meaning that the ingredients are

⁷⁰ Ibn Sinā, *Fi al-kawwān wa-l-fasād*, 131, 6-10 and Stone, “Avicenna’s theory of primary mixture”, 111.

⁷¹ Stone, “Avicenna’s theory of primary mixture”, 117.

⁷² Ibn Sinā, *Fi al-kawwān wa-l-fasād*, chap. 6, 126-127, tr. Stone, “Avicenna’s theory of primary mixture”, 112.

⁷³ See Ibn Sinā, *Fi al-kawwān wa-l-fasād*, chap. 6, 126, 11-12, for the remainder of the passage see Stone, “Avicenna’s theory of primary mixture”, 112.

⁷⁴ Stone, “Avicenna’s theory of primary mixture”, 113.

⁷⁵ Stone, “Avicenna’s theory of primary mixture”, 116.

⁷⁶ See *Fi al-kawwān wa-l-fasād*, chap. 6, 127, 11-15 where Avicenna quotes explicitly Aristotle on that matter, overemphasizing and justifying his own interpretation against the more common interpretation of the commentators.

preserved in their active power (*bi-l-quwwa al-fi'liyya*) and, second, by consequently denying primary sensible qualities the status of substantial form of the elements, thereby demoting them in order to align them with the properties and deem all of them accidental?

The answer may be found in the opening pages of the *Canon*, where Avicenna provides us with an explanation of the main principles of medicine, starting with the main constituents of the body, namely the four elements and the four humours. Their mixture determines the “complexion” of every human body that he defines in the following terms:

I say that complexion is the quality that results from the interaction of the contrary qualities when they reach a certain limit, and which exists in elements [divided] into minute parts as each to get in closer contact to one another. When [the elements] interact mutually through their powers, a uniform quality in all of them arises from the totality and this is the complexion. Given that the primary powers in the [above] mentioned elements are four: heat, coldness, humidity and dryness, it is evident that the complexions in the bodies undergoing generation and corruption come to be from these [powers] only in two modes (and this is according to what is necessitated by an absolute theoretical intellectual division not related to anything else): one of them is the equable⁷⁷ (*mu'tadilān*) complexion, in which the proportions of the contrary qualities in what is being mixed (*al-mumtazij*) are equal and counter compensate each other so that the complexion is a quality which is exactly the mean between [the contrary qualities] (*kayfiyya mutawassita baynā bi-l-tahqiq*). The other mode is when the complexion is not an absolute mean between the contrary qualities, but inclines more towards one of the extremes, either in one of the two contrarieties that are between coldness and heat or moisture and dryness, or in both.

What is considered in the art of medicine as equability and departure from equability (*al-i'tidāl wa-t-khurūj 'an al-i'tidāl*) is neither this nor that. Rather, it is necessary for the physician to accept from the natural philosopher that what is equable in the sense [we defined] can in no way whatsoever exist, let alone be the complexion of a human being or of a member of a human being. He has to know that the [term] ‘equable’ (*mu'tadil*) that the physicians use in their discussions is not derived from the [term] ‘equality’ (*ta'ādul*) which is the equal balance (*al-tawāzun bi-l-sawwiyya*) but from equity (*'adl*) in distribution (*qisma*), so that, through such distribution, the mixed ingredient, be it a body in its totality or an [individual] member, will get the measure of the elements in terms of quantity and quality, that it ought to have in a human complexion, in most equitable proportion and distribution.⁷⁸

The definition of the *Canon* corroborates the one we find in the *Shifā'*: here, as there, “minute” elemental bodies are still present in the complexion, though it is even more explicit in the passage above that the interaction happens between

⁷⁷ In order to be able to reproduce in English the derivations from one same root, as Avicenna did in Arabic, I have adopted, in my own translation, the term ‘equability’ instead of ‘balance’, as used in the translation of O. Cameron Gruner, modified by M. McVaugh, in: *A Source Book in Medieval Science*, E. Grant, ed., Cambridge, MA.: Harvard Univ. Press, 1974, 717.

⁷⁸ Ibn Sinā, *al-Qānūn*, Bk I, *fann* 1, *ta'lim* 3, *faṣl* 1 “On Complexion”, vol. I, 6, 17-31.

the qualities that are mixed in order to produce one unified and uniform quality. Moreover here, like there and maybe more explicitly so, the complexion, namely the medium uniform quality, is an accident. Indeed, what is at stake here is the complexion of the human body, and while Avicenna starts by making a distinction between absolute and relative equality concerning the “quantities of opposite qualities in a complexion”, he qualifies the equability of the complexion of a human being, “be it a body in its totality” or some individual member, as the “measure of the elements in terms of quantity and quality, that it ought to have in a human complexion, in most equitable proportion and distribution”. As already noted by McVaugh, the emphasis here is on an “average” equality rather than “one normal human complexion to be related to a point on the absolute scale”. The influence of Galen is significant although “in general the relative individual nature of *equalitas complexionis* is emphasized far more emphatically by Avicenna than by Galen”.⁷⁹ According to Avicenna, the complexion proper to the human being, that is the proportioned mixture of the four primary qualities, is highly variable and depends on many considerations resulting in different varieties of equable complexions, with respect to internal as well as external factors as diverse as race, climate, age, parts of the body etc.

The human complexion is thus “something with a latitude (*labu ‘ard*) which cannot be restricted by a definition (*laysa munḥaṣir bi-ḥaddin*), though it is not either left at random, rather it has limits in terms of excess and deficiency which when bypassed, the complexion ceases to be a human complexion”.⁸⁰ Accepting that the human complexion is susceptible of a myriad of variations across a spectrum without ceasing to be a human complexion, in other words without altering its substantial form, implies that the ultimate primary qualities affected by such variations could change without altering the essential nature of the human complexion and hence should not be constitutive of such nature. They are thus mere accidents, as well as the medium quality itself which can never be more than approximate. That is why Avicenna could not accept the commentators’ promotion of the primary qualities to the rank of substantial qualities which is incompatible with the dynamic aspect of a healthy human complexion in constant flux able to undergo a wide range of changes, yet preserving its substantial form.

⁷⁹ See McVaugh in *Arnaldi de Villanova, Aphorismi de Gradibus*, 20-21. For a history of balance in medieval medical theory see J. Kay, *A History of Balance, 1250–1375. The Emergence of a New Model of Equilibrium and its Impact on Thought*, Cambridge: Cambridge Univ. Press, 2014, chap. 3 and 4.

⁸⁰ Ibn Sinā, *al-Qānūn*, vol. I, 7, 8-11.

IV

While, on the one hand, the emphasis on a complexional range proper to each species allows to preserve the substantial form of a body across a scale of qualitative and quantitative changes,⁸¹ on the other it confirms that medicine and particularly pharmacotherapy still rely, in the first place, on experience. This holds true, first, because human complexions are not identical and therefore the same drug will not always have the same effect, given that it “can be cold with respect to the human body and hot with respect to the body of a scorpion [...]; furthermore, the very same drug can be hotter with respect to Zayd’s body than it is to ‘Amr’s body. This is why the therapists (*al-mu‘ālijūn*) are instructed not to persevere with the same drug when it does not succeed in altering a complexion”.⁸² Moreover, even if the qualities resulting from the complexions can be strong indicators of the nature of the latter, for example “hot odors are the sign of a dominant heat, and the complexions with a subtle odor are the sign of a cold complexion”,⁸³ nevertheless, Avicenna warns us, the physician cannot trust what seems to be obvious to his senses:

It happens often that a drug has an intense power despite its small quantity. When a small amount of it is mixed with a great number of drugs whose power is not very intense, what dominates according to the sight is not what dominates according to the power.⁸⁴

Hence, not only could the effect of a new compound drug not be rationally deduced, since the specific property resulting from its specific form was known only through experience, but the testing of drugs was required twice before application: “to see what forces it possesses and to see if it is harmful”.⁸⁵

The very same considerations are to be found in Maimonides’ commentary on the *First Hippocratic Aphorism*, “life is short, the art is long ... experience is dangerous...”,⁸⁶ in a passage where Avicenna’s influence is all the more signifi-

⁸¹ See along the same lines, Ibn Sinā, *Fi al-af‘āl wa-l-infi‘ālāt*, 2. 2, 264, 9-10: “the complexion of each species has a latitude (‘ar2.) that it tolerates. When the extremity of each one of its limit is surpassed the species is abolished.”

⁸² Ibn Sinā, *al-Qānūn*, vol. I, 9, 5-8.

⁸³ Ibn Sinā, *Fi al-af‘āl wa-l-infi‘ālāt*, 2. 2, 264, 13-14.

⁸⁴ Ibn Sinā, *Fi al-af‘āl wa-l-infi‘ālāt*, 2. 2, 265, 6-9.

⁸⁵ McVaugh in Arnaldi de Villanova, *Aphorismi de Gradibus*, 26 who quotes the example of sea water which according to Galen (*De Simplicium medicamentorum [temperamentis ac] facultatibus*) seems clearly to be wet while in reality it has a drying effect on the human body that the physician can discover only after testing it.

⁸⁶ Maimonides’ Commentary on Hippocrates’ Aphorisms has been edited and translated into German by C. Schliwski, *Moses Ben Maimon, Šarḥ Fuṣūl Abuqrāt. Der Kommentar des Maimonides zu den Aphorismen des Hippokrates*. Kritische Edition des arabischen Textes mit Einführung und Übersetzung, 3 vols., Ph.D. dissertation, Universität zu Köln, 2007. See A. Bar-Sela and H. E. Hoff, “Maimonides’ interpretation of the First Aphorism of Hippocrates,” *Bulletin of the History of Medicine* 37 (1963), 347-354 for an English translation of Maimonides’ commentary on the first Aphorism. See also F. Rosenthal, “‘Life is Short, the Art

cant that it does not speak its name. Indeed, in a section intended to explain what is meant by the formula “experience is dangerous” (*al-tajriba khaṭar*), Maimonides starts by distinguishing between two sorts of accidents (*a'rād*) that attach to “every natural body”: those relative to its matter, “like health and disease, sleep and wakefulness” as far as man is concerned, “meaning those relative to his being an animal”, and those relative to his form “that are named properties because they are proper to that species alone” (*biya allati tusammā khaṭwāṣṣ li-annahā kbāṣṣa bi-dhālika al-naw' wahdabū*) like “thinking, reflecting, marvelling and laughing”⁸⁷:

The actions performed by a drug in our bodies with respect to its matter are: warming and cooling, moisturising and drying. These are the ones which the physicians call the first powers, and they say that such drug heats or cools *by its nature*. Similarly they also say it acts through *its quality*. [...] The actions which the drug performs in our bodies with respect to its specific form (*min jihati šūratibi al-naw'iyya*) are those which the physicians call *property* (*al-kbāṣṣa*). Galen referred to this kind of action when he said that: “[the drug] acts *through the totality of its substance* (*bi-jumlati jawharibi*)”. That means that it performs its action with respect to its specific form through which that body substantiates (*tajawhara*) and becomes this [body],⁸⁸ and not that it is an action resulting from its quality. [The physicians] call them also the tertiary powers that are like the purging [power] of the purgative drugs or their emetic [power] or their being a deadly poison, or an antidote to the absorption of poison [...]. All these actions are consequent to the form not to the matter. [...]

In his well known book *On the Simple Drugs*, Galen has already explained how to infer from its taste the natures (*ṭabā'i*) of a drug and the actions consequent to its qualities. As to the knowledge of what the drug does with respect to its specific form, and this is what is meant by saying that it acts *through the totality of its substance*, we have no evidence (*dalīl*), by which to infer this action, nor a method to know it, other than by experience.⁸⁹

Hence the necessity to resort to experience, though experience can be dangerous: “How many drugs have a bitter [taste] and are extremely malodorous while being a beneficial drug, whereas there could be a plant whose taste and odor are similar to the tastes and odors of all other nutrients, but it is a deadly poison.”⁹⁰ Behind the avowedly Galenic inspiration, the concepts as well as the terminology at work are blatantly Avicennan and don't require further explanation.⁹¹

is Long, 'Arabic Commentaries on the *First Hippocratic Aphorism*,' *Bulletin of the History of Medicine* 40 (1966), 226-245, here: 236-237 and more recently P. Pormann and P. Joosse, "Commentaries on the *Hippocratic Aphorisms* in the Arabic Tradition: the Example of Melancholy," in: *Epidemics in Context. Greek Commentaries on Hippocrates in the Arabic Tradition*, P. Pormann, ed., Berlin: de Gruyter 2012, 211-249, here: 229-230.

⁸⁷ My translation based on the Arabic edition of Schliwski, "Moses Ben Maimon, Shara Fuura Abuqrāā," part 2, 11-12 § 15 (my emphasis).

⁸⁸ *Wa-šāra hādha*, meaning he became a certain 'this' *a tode ti* (see *Cat.* 5, 3b 10)

⁸⁹ My translation of Schliwski, "Moses Ben Maimon, *Šarḥ Fuṣūl Abuqrāt*," part 2, 12, 3-13, 5 (§§ 15-18) (my emphasis)

⁹⁰ Schliwski, "Moses Ben Maimon, *Šarḥ Fuṣūl Abuqrāt*," part 2, 13, 5-11 (§18).

⁹¹ This is confirmed by another passage in *On the Causes of Symptoms* (*Maqāla fi bayān ba'd al-'arād wa-l-jawāb 'anhā*), addressed to the Sultan al-Afḍal, where the influence of *On Heart Drugs* seems more obvious, as Maimonides is commenting on exhilarating potions pre-

According to McVaugh the doctrine of the *forma specifica* and the implications it holds for pharmacy had a considerable impact on the 13th century Western medical tradition. The “Avicennan emphasis upon the irrational, empirical element in medicine strengthened the Middle Ages insistence thereupon and their contemporary rejection of theoretical matters.”⁹²

In closing, it was important for us to show, even briefly, that the same impact can be observed within the context of Arabic medicine, where it happens to be as effective yet still in need of examination. Maimonides is not the only example. Other physicians contemporary to him engaged openly with Avicenna’s theory of specific property.⁹³ The influence it exercised on medical epistemology, as well as on the reflection on the place of experience and its relation to theory in medical practice has still some way to go in terms of scholarship.

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scribed to the Sultan in order to act on his melancholic disposition, knowing that melancholia used to be associated with heart conditions: “As for he who recommended exhilarating potion (*sharāb mufrīh*) and an electuary including emerald, jacinth, gold and silver, this is correct and very beneficial, because these are cardiac drugs which benefit through the specific property (*bi-l-khāṣṣiyya*), that is through their specific form (*bi-ṣūratihā al-naw‘iyya*) which is the totality of their substance (*jumlat jawharihā*), and not through their qualities (*lā mujarrad kayfiyyātihā*)” (my translation of the Arabic edition, reproduced in Moses Maimonides, *On the Causes of Symptoms (Maqāla fī bayān ba‘d al-‘arād wa-l-jawāb ‘anhā - Ma‘amar Ha-Hakra’ah - De Causis Accidentum)*, J. O. Leibowitz and S. Marcus, eds., Berkeley: Univ. of California Press 1974, 174. An English translation by A. Ber-Sela, H. E. Hoff and E. Faris is also provided in the same volume, 91).

⁹² See McVaugh in Arnaldi de Villanova, *Aphorismi de Gradibus*, 29.

⁹³ See E. Gannagé, “Médecine et philosophie à Damas à l’aube du XIII^e siècle: un tournant post-avicennien?,” *Oriens* 39 (2011), 227-256.

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Is Physiognomy a Science? Reflections on the *Kitāb al-Firāsa* of Fakhr al-Dīn al-Rāzī

Mubammad Ali Khalidi / Tarif Khalidi

“The face of every neighbour whom I met
was as a volume to me.”

W. Wordsworth, *The Prelude*

“There will be time

to prepare a face to meet the faces that you meet.”

T.S. Eliot, *The Love Song of J. Alfred Prufrock*

Prologue

These reflections make no claim to be a wide-ranging account of Islamic physiognomy (*firāsa*) or of its historical origins. They are, instead, an attempt, first, to reconstruct some of the fundamental ideas on physiognomy in the writings of the celebrated theologian Fakhr al-Dīn al-Rāzī (d. 606/1209); second, to draw parallels, where appropriate, between these reflections and some late medieval European scientific and physiognomical ideas; and finally to ask whether some of these ideas are of interest from the viewpoint of the contemporary history and philosophy of science. We believe that a mere reconstruction of al-Rāzī's views would be of limited interest were they not accompanied by a comparative and philosophical analysis which situates al-Rāzī's views in a wider cultural context.¹

¹ The most comprehensive recent discussion of the views of al-Rāzī and other classical Islamic thinkers on *firāsa* is in Antonella Ghersetti, “The Semiotic Paradigm: Physiognomy and Medicine in Islamic Culture”, in: *Seeing the Face, Seeing the Soul: Polemon's Physiognomy from Classical Antiquity to Medieval Islam*, Simon Swain, ed., Oxford: Oxford University Press, 2007, 281–308; see also Ghersetti's numerous other writings on Islamic physiognomy. Swain's book is fundamental on the question of origins and continuities between the Greek and Islamic traditions. On Islamic physiognomy in general see Toufic Fahd, *La divination arabe: études religieuses, sociologiques et folkloriques sur le milieu natif d'Islam*, Paris: Sindbad, 1987, 369-429; Toufic Fahd, “Firasa”, in: *Encyclopaedia of Islam*, 2nd ed., vol. 2, Leiden: Brill, 1965, 916-917; Anna Akasoy, “Arabic Physiognomy as a Link between Astrology and Medicine”, in: *Astro-Medicine: Astrology and Medicine, East and West*, A. Akasoy, C. Burnett and R. Yoeli-Tlalim, eds., (“Micrologus' Library”, 25), Florence: Edizioni del galluzzo, 2008, 119-141. The introduction to Yusuf Murad's edition of the *Kitāb al-Firāsa* (see Bibliography below) still contains much valuable material. On al-Rāzī in general, see G.C. Anawati, “Fakhr al-Din al-Razi”, in: *Encyclopaedia of Islam*, 2nd ed., vol. 2, Leiden: Brill, 1965, 751-755; John Cooper, “al-Razi, Fakhr al-Din (1149-1209)”, in: *Routledge Encyclopedia of Philosophy*, E. Craig, ed, vol. 8, London: Routledge, 1998; and, most recently, Tariq Jaffer, *Ra-*

Some theoretical considerations

In chapter 2 of *The Order of Things*, Michel Foucault attempts a reconstruction of what he terms the *episteme* of the sixteenth century in western European culture. His reconstruction yields four major “figures of knowledge” or “spheres of cognition” which he lists and analyses as follows: (1) *convenientia*: adjacency and juxtaposition, (2) *aemulatio*, reflection or duplication, (3) analogy, which “draws together all figures in the universe” and (4) sympathies, which “excite the things of the world to movement”. All four spheres tell us how the world must “fold in upon itself, duplicate itself, reflect itself or form a chain so that things can resemble one another.”²

This cognitive paradigm, though distant in time and space from Arabic-Islamic culture, must nevertheless impress a student of that culture in the period between, say, the 10th and 13th centuries, by its aptness and relevance. Research into the scientific thinking of that period reveals strikingly similar cognitive categories, widely attested in the works of natural scientists, theologians, physicians and others who concerned themselves with the investigation of human nature and its connections to the universe that envelopes it. With *‘ilm al-firāsa* (physiognomy) in particular, this paradigm offers a promising entry to the epistemic background of this science. This is so because the real value of Foucault’s analysis resides in what one might call the intellectual presuppositions that made this science possible.³

Therefore, before we come to al-Rāzi and his *K. al-Firāsa*, it would be useful to begin by highlighting some salient cognitive categories of the scientific thought of that period. Arabic terms that may be posited as cognate, and additional to, the four posited by Foucault would include: *mushākala* (sharing common attributes), *mujāwara* (adjacency), *tamāthbul* (sharing a common form), *ta’lif* (composition), *jadb* (attraction), *muṭābaqa* (congruence), *mushābaha* (similarity), *mujānasa* (sharing a common genus), *shawq* (desire; sympathy), *qiyās* (analogy), *ikhtilāf wa-ittihād al-ṭabā’i* (difference and unity of natural characteristics), *ta’thir* (influence), *tasāwī* (equivalence), *nisba* (relationship), *mumāssa* (contiguity), *tafā’ul al-‘anāšir* (interaction of elements), *ta’alluq* (mutual dependence; attachment), *tanāsur* (mutual confirmation), *shibh wa-iftirāq* (similitude and difference), *ittiṣāl* (connection), *muqābala* (polarity), *muhākāt* (emulation) and *inṭibā’* (imprinting). It will become evident how thickly many of these terms will appear in the discussion that follows.

Many of these Arabic cognates are derived from verbal stem VI, i.e. *tafā’ala*, denoting mutual or reciprocal action. What we observe here is a world of corre-

zi: Master of Qur’anic Interpretation and Theological Reasoning, New York: Oxford University Press 2015.

² Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences*, London: Tavistock Publications, 1985, chapter 2.

³ See also the interesting and relevant observations in Keith Thomas, *Religion and the Decline of Magic*, Harmondsworth, Middlesex: Penguin Books, 1985, 264–274.

spondences and analogies, where the sciences, both natural and occult, prop each other up, where science is driven by associative thinking. One dominant scientific trope or figure widely discussed by thinkers like al-Rāzī was the mirror.⁴ Another was magnetism, which opened the door to phenomena like supernatural or prophetic healing. This doctrine of correspondences and analogies facilitated a belief in systems of divination like palmistry (*‘ilm al-kbuṭūṭ*) and physiognomy (*firāsa*). It is also not unlikely that a cosmology influenced by neoplatonism may have encouraged pantheistic thought whereby the earth itself was regarded by some thinkers like al-Rāzī as animate⁵, a vibrant and living reflection of its creator. Such a world of similitudes, of the macro and the micro, was of course, and could only be, a world of signs.

Most pertinent of all such signs or *āyāt* is the overwhelming presence of the Qur’ān itself: God-as-speech. This immediate ever-present theophany, with its own self-definition of *muhkam* and *mutashābih* verses, ensured that God’s speech would always contain both what is absolutely clear as well as what is subject to interpretation. To know God is therefore to “read” his signs as they should be read, and the commandment *iqra’* (read/recite) fortifies the constant urging to interpret the signs, to infer the existence, wisdom, omnipotence and mercy of the creator by unlocking the signs of his creation. Furthermore, the “Be! and it is” of Qur’ānic command, an illocutionary utterance, established God as the ultimate cause of all phenomena while at the same time encouraging belief in the influence of certain Qur’ānic verses, passages and prayers used as incantations, upon physical manifestations such as psychic or medical conditions.

Given this intellectual climate, how is this “reading” of the world to be done? Two aspects of generating scientific knowledge might be emphasized here: inferring the invisible from the visible (*al-istidlāl bi-l-shāhid ‘alā l-ghā’ib*) and the concept of comprehensive knowledge (*iḥāṭa*). Both were important in al-Rāzī’s scientific and theological thinking. The first principle, regarded as a sub-set of analogy, was a frequent topic of discussion and delimitation among both jurists and theologians, both Mu‘tazilites and Ash‘arites, and was of course particularly relevant to any discussion that had to do with inferring God’s existence and actions from observing the world of nature. The second, *iḥāṭa*,⁶ was often cited as a synonym of knowledge: to know is to gather together the whole ensemble of signs, to comprehensively understand the interconnectedness of things, the most vivid illustration of which is of course the Qur’ān itself.

⁴ For a similar interest in mirrors in medieval western Europe, see the discussion of Roger Bacon’s views in Robert Bartlett, *The Natural and the Supernatural in the Middle Ages*, Cambridge: Cambridge University Press, 2008, 124. For magnetism in late medieval European thought, see Thomas, *Religion*, 266, 446.

⁵ Al-Rāzī, *al-Mabāḥith al-mashriqiyya*, vol. 2, Haydarabad, Deccan: Dā’irat al-Ma‘ārif, 1343/1925, 102.

⁶ See, e.g., al-Rāzī, *al-Tafsir al-kabir*, Beirut: Dār Iḥyā’ al-Turāth al-‘Arabi, [s. a.], vol. 29, 211, *ad Q* 57:3. All translations from primary sources are by the authors.

Body and soul in al-Rāzī

Among classical Islamic thinkers, one of the earliest and most detailed discussions of the human body as a microcosm occurs in al-Jāhīz (d. 255/869).⁷ In his discussion of this concept al-Jāhīz affirms that the human body combines in itself all the elements found in the macrocosm. Thus, it was only natural for other thinkers to assert that if the human body mirrors the world in miniature, so the various bodily members such as the face, the hand or the foot mirrored the soul.⁸ In what is perhaps his most graphic description of the body and its relationship to the soul, al-Rāzī constructs the following image:

The body is like a house, fully built and equipped with all its furniture, with its doors open. The head is like the upper chamber, the holes in the head like windows... the eye like the door of the chamber, the nose like the balcony above the main gate, the lips like the door's two leaves, the teeth like gatemen, the tongue like a chamberlain... the heart like a winter chamber, the stomach like a kitchen and the bones like the wooden beams from which the house is built. The rational soul (*al-naḥs al-nāṭiqā*) is like the king and ruler of the house. It sees with the eye, hears with the ear, imagines with the front of the brain, thinks with the middle of the brain and remembers with the back part of the brain.⁹

In discussing the powers of the soul, al-Rāzī rejects the arguments of the philosophers who, he claims, posit two powers for the soul, theoretical and practical, then divide these powers, assigning each act to a separate power and claiming some as corporeal, others as spiritual. Al-Rāzī argues that all these powers and cognitions must be ascribed to the substance (*jawhar*) of the soul itself, with each bodily member acting as an instrument (*āla*) of the soul and performing a specific function.¹⁰ Against Galen but in agreement with Aristotle, al-Rāzī locates the home of the soul in the heart, from which all thought and feelings proceed.¹¹

The human soul, then, is a substance (*jawhar*) distinct from all others in its essence (*mufāriq bi-dhātihī*). It is not a body (*jism*) nor a condition (*ḥāla*) in a body, though animal and vegetable souls may be described as faculties (*qiwā*).¹² The attachment of the soul to the body is described as even stronger than that between the lover and the beloved.¹³

⁷ Al-Jāhīz, *Kitāb al-Hayawān*, ʿAbd al-Salām Muḥammad Hārūn, ed., vol. 1, al-Qāhira: Muṣṭafā al-Bābī al-Ḥalabī, 1965, 212 ff.; cf. *Rasāʾil al-Kindī al-Falsafīyyah*, Muḥammad ʿAbdul Ḥādī Abū Ridāh, ed., vol. 1, Cairo: Dār al-Fikr al-ʿArabī, 1950, 260–261.

⁸ See, e.g. al-Masʿūdī, *Murāj al-dhahab wa-maʿādin al-jawhar*, Charles Pellat, ed., Beirut: Université Libanaise, 1966–1979, paras. 1220–1221, 1227–1228, 1237–1238, 1240–1241.

⁹ Al-Rāzī, *Kitāb al-Nafs wa-l-rūb*, Muḥammad Ṣaghīr al-Maʿsūmī, ed., Islamabad: Islamic Research Institute, 1968, 82–83; see also al-Rāzī, *al-Taḥṣīr al-kabīr*, vol. 1, Beirut: Dār Iḥyāʾ al-Turāth al-ʿArabī, [s.a.], 187, ad Q 1, for microcosm and macrocosm.

¹⁰ Al-Rāzī, *Kitāb al-Nafs*, 77–78.

¹¹ Al-Rāzī, *Kitāb al-Nafs*, 51–74.

¹² Al-Rāzī, *Mabāḥith*, vol. 2, 232; cf. Ibn Ḥazm, *al-Fiṣal fi al-milal wa-l-awṣāʾ wa-l-niḥal*, Cairo: Al-Maṭbaʿa al-Adabiyya, 1317–1320, vol. 5, 74 who argues that the soul is a body.

¹³ Al-Rāzī, *Mabāḥith*, vol. 2, 383.

This body-soul dyad is of course subject to the various natural laws that determine the arrangement of the humors. The reason why souls differ in their moral attributes – for example some are cowardly while others are courageous, some are noble, others are ignoble and so forth – is to be sought, according to al-Rāzī, either in the humors themselves or in “external effects” (*umūr kbārījīyya*) or in the substance of the soul itself.¹⁴ However, against those whom al-Rāzī calls the “Naturalists” he argues as follows:

The creation of all human souls from one soul is a clearer proof of God’s omnipotence. If things had been determined only according to nature and special characteristics, what would be generated from a single human could only be things similar in form, creation and nature. But since we observe among individual humans such diversity as the black and the white, the red and the dark, the beautiful and the ugly, the tall and the short, it follows that he who created and arranged them thus is one who exercises active choice (*fā’il mukhtār*), and not some influential nature or some determining cause.¹⁵

His objections to the “Naturalists” are further specified in the following passage:

Given the uniform effects (*tasāwī l-ta’thirāt*) of natural characteristics, of the stars, the four seasons and the four elements, the generation (*tawallud*) of bodies diverse in their natural characteristics, attributes, colours and nourishment proves that they came into being through the disposition (*tadbīr*) of one who is wise, merciful, possessed of choice, and omnipotent, not through the disposition of natural characteristics and the four elements. You will observe, for example, that an orange contains the four natural characteristics together: the skin is hot and dry, the flesh is cold and humid, the juice is cold and dry, the pip is hot and dry. That all these contradictory natures can be found in a single orange must be the result of one who exercises active choice.¹⁶

These passages, however, are not so much a refutation of natural effects as they are a theological assertion that God, and not nature, is the ultimate cause of all phenomena. This allows al-Rāzī, first, to adopt a relatively tolerant attitude towards oddities and marvels, the occult as well as the manifest, as against the more rigid views on marvels among, say, the Mu‘tazilites or the philosophers; and, secondly, it allows him to admit the secondary effects of nature, the stars, the four humors and so forth on the created world.

If we now consider those aspects of al-Rāzī’s thought which bear more directly on *fīrāsa*, the soul, we are told, is related to the body in its capacity as arranger and disposer (*tadbīr, taṣarruf*) and all bodily faculties (*al-qiwā l-badaniyya*) are controlled and managed by the soul. The “earthly animal” (*al-ḥayawān al-arḍī*) is composed of the four elements. It is wholesome if these four are harmonious but corrupt if one dominates over the others and in their bodily constitution animals are similar to humans.¹⁷

¹⁴ Al-Rāzī, *Mabāḥith*, vol. 2, 416.

¹⁵ Al-Rāzī, *Tafsīr*, vol. 9, 159, *ad Q* 4:1.

¹⁶ Al-Rāzī, *Tafsīr*, vol. 13, 91, *ad Q* 6:95; see also vol. 13, 104, *ad Q* 6:98.

¹⁷ Al-Rāzī, *Mabāḥith*, vol. 2, 234, 279, 383.

Now the soul manifests its presence through the body in a number of ways, and one such way involves the manner in which pious or impious souls can leave their mark on the body:

What this verse signifies is that which appears on the forehead by reason of much prostration, and what God causes to appear of beauty by day on the faces of those who prostrate themselves by night. This is well established (*muḥaqqaq*) to any rational person. Consider two men who spend the night, one in drinking and amusement, the other in prayer, recitation and the pursuit of religious knowledge. The following day, anyone would be able to tell apart the one who had been drinking and amusing himself from the one who was thankfully remembering God.¹⁸

This is fortified in al-Rāzī's commentary on Q 88:1-9, where the Qurʾān speaks of the faces of the damned and the blessed "on that Day", presumably the Day of Judgment. Al-Rāzī however allows that the description of the faces, some humiliated and crestfallen, others joyful and beautiful, applies not just to the after-life but to this life as well. He then adds the following comment:

Humiliation in point of fact appears on the face and that is why it is linked to the face here. This is similar to another verse "You shall see them being paraded before it, heads bowed in humiliation, and casting furtive glances" [Q 42:45]. Humiliation appears on the face because it is the opposite of arrogance whose locus is the head and brain.¹⁹ [...] "Furtive glances" means that they begin by moving their eyelids weakly and furtively, as one might observe in the case of one who is certain of execution and regards the executioner's sword but is incapable of opening his eyelids fully as he does normally when he looks upon the things that he loves.²⁰

The body-soul relationship is thus one example of how all things in the universe have their reflection and shadows. Indeed a prophet may be said to be a reflection of God because of the appositeness (*mulāqāt*), parallelism (*muqārana*) and commonality (*mujānasa*) between them.²¹ Then again, when we imagine the forms of mountains, seas and individuals, what is present to the mind and heart is of course their images, similitudes and pictures. These are like the images in a mirror, but the heart of the believer is itself like a mirror in purity, indeed purer than a mirror.²² One must thus bear in mind that, according to al-Rāzī, Qurʾānic parables and similitudes (*amthāl*) are meant to have the most profound effect on the heart, more effective than any definition of the thing-in-itself. This is because these similitudes are designed to compare the evident with the occult, the visible with the invisible, thus causing the sense (*ḥiss*) to be congruent (*muṭābiq*) with reason, which constitutes the ultimate degree of clarification.²³

¹⁸ Al-Rāzī, *Tafsīr*, 28:108, ad Q 48:29.

¹⁹ Al-Rāzī, *Tafsīr*, vol. 31, 150-51; cf. al-Rāzī, *Kitāb al-Nafs*, 82-83.

²⁰ Al-Rāzī, *Tafsīr*, vol. 27, 182, ad Q 42:45.

²¹ Al-Rāzī, *Tafsīr*, vol. 1, 264, ad Q 1.

²² Al-Rāzī, *Tafsīr*, vol. 1, 87, 92, ad Q 1.

²³ Al-Rāzī, *Tafsīr*, vol. 2, 72 ad Q 2:17.

Firāsa: definitions and epistemic principles

In his *Tafsīr*, al-Rāzī proposes to analyze synonyms of the term *‘ilm* (knowledge, science), thirty in number.²⁴ After discussing such terms as *idrāk*, *shu‘ūr*, *taṣawwūr*, *bifẓ*, *ma‘rifa*, *dirāya*, *ḥads*, *ẓann*, and so on, he reaches number twenty-nine, which he calls *firāsa*, and defines as follows:

Firāsa is inference from outward physical features (*khalq*) to inward moral states (*khulūq*). The Almighty indicated the truth of this avenue to knowledge in the following verses ... The term itself is derived from such phrases as “The wild animal detected the presence of the lamb”. It is as if *firāsa* is a form of subtle detection (*ikbtilās*) of the objects of knowledge. This comes in two forms: the first occurs to man as a passing thought (*khātīr*), the cause of which is unknown, it being a form of inspiration (*ilhām*), indeed of revelation (*wahy*)...the second form comes about through a craft (*sinā‘a*) that is learnt, which is inference from outward appearances to inward moral states. People of *ma‘rifa* [probably Sufis], when interpreting the Qur’ānic verse “Can such be compared to one possessed of certainty from his Lord, recited by a witness from him” [Q 11:17] state that “certainty” (*bayyina*) is the first form of *firāsa*, thus referring to the purity of the soul’s substance, while the “witness” (*shahīd*) is the second form, which is inference from outward appearances to inward conditions.²⁵

Concerning the verse quoted above, i.e. Q 11:17, al-Rāzī comments as follows:

One interpretation holds that the word “recited” (*yatlūhu*) does not refer to recitation of the Qur’ān at all but rather to the occurrence of this “witness” which comes after (*yatlūhu*) the “certainty”. According to this interpretation they argue that what is meant is that the outward form of the Prophet, his face and his physical features all witness to his truth, since he who looked at him using his reason recognized that he was neither mad nor a sorcerer nor a liar. Thus, the phrase “witness from him” means that all these conditions refer to the Prophet himself.²⁶

It is in these and similar passages of his *Tafsīr* and his other works that al-Rāzī establishes for *firāsa* a rational as well as a Qur’ānically sanctioned place among the various types of knowledge. Thus, when we come to his *Kitāb al-Firāsa* the definitions set forth above as well the general epistemic climate discussed earlier ought both to be kept in view.

Right at the beginning of that work, al-Rāzī attempts to establish the veracity of the inference from outward to inward by arguing that the temperament (*mizāj*) can either be the soul itself or an instrument of the soul. In either case, both outward appearance and inward moral state must be regarded as dependent upon temperament. It follows that inference from the one to the other is logically valid.²⁷

He then argues that the principles of *‘ilm al-firāsa* are derived from “natural science” while its branches and derivatives (*tafāri‘uhu*) are established through

²⁴ Al-Rāzī, *Tafsīr*, vol. 2, 203 ff., ad Q 2:31.

²⁵ Al-Rāzī, *Tafsīr*, vol. 2, 208, ad Q 2:31.

²⁶ Al-Rāzī, *Tafsīr*, vol. 17, 201–202.

²⁷ Al-Rāzī, *Firāsa*, 94–95.

experiences (*tajārib*). It is therefore like medicine, and any refutation addressed to this science must also be addressed to medicine. The term itself is linguistically derived in exactly the same words that al-Rāzī uses in *Tafsīr* 2: 208, above, including the term *ikhṭilās*, or subtle detection.²⁸ Setting aside discussion of the Sufi practice of *firāsa*, al-Rāzī turns his attention to *firāsa* as a craft to be learned, and concludes by calling it a “certain knowledge” (*‘ilm yaqīnī*) in its principles but with conjectural branches (*ẓann al-furū‘*).²⁹

To find out what precisely al-Rāzī means by *ẓann*, we need to go back to his list of the synonyms of knowledge, as in *Tafsīr*, 2:203 ff., above, where he defines *ẓann* as follows:

Ẓann is preponderant belief (*‘itiqād rājiḥ*). Since belief admits of both strength and weakness and thus is not strictly determined (*maḍbū‘*), so too the degrees of *ẓann*. That is why it has been defined as that which gives more weight in the heart to one of two polarities of belief while allowing the other polarity to be possible. *Ẓann*, when it reaches the ultimate in power, may also be called knowledge, so it is not surprising that knowledge itself is also called *ẓann*. Thus, some exegetes, in commenting on the verse “those who believe they will meet their Lord” [Q 2:46] maintain that the term *ẓann* was used here to stand for knowledge for two reasons. First, in order to emphasize that the knowledge of most people in this life, when compared to their knowledge in the after-life, is like belief when compared to knowledge; and secondly, because genuine knowledge in this life can hardly be attained except by prophets and true believers mentioned by God in the verse “who believe in God and His Messenger, then are free of doubt” [Q 49:15]. You must know therefore that if *ẓann* proceeds from strong indications (*amāra qawīyya*), it must be admitted, indeed praised, since most knowledge is of this kind. If it proceeds from weak indicators, it is reprehensible, as in the verse “conjecture (*ẓann*) can never substitute for truth” [Q 10: 36] or in the verse “some suspicions (*ẓann*) are sinful” [Q 49:12].³⁰

In a further refinement of his views on *‘ilm* and *ẓann*, al-Rāzī makes it clear that the “exegetes” mentioned in the passage above include himself, for in commenting on Q 2: 46, above, he repeats the argument that by *ẓann* in that passage *‘ilm* is intended, and explains this metaphor (*majāz*) by saying that both terms have in common the fact that they are a preponderant belief. But whereas *‘ilm* is preponderant and excludes its opposite, *ẓann* is preponderant without excluding its opposite.³¹

To round out this discussion we need to examine three or four epistemic modes that undergird al-Rāzī’s treatment of the topic in his *Kitāb al-Firāsa*. The first is *ihāṭa*, a mode of knowledge mentioned earlier in connection with the ways in which the signs of God should be read. When applied to *firāsa*, *ihāṭa* appears as an essential prerequisite to the proper practice of *firāsa*. According to al-

²⁸ Al-Rāzī, *Firāsa*, 96.

²⁹ Al-Rāzī, *Firāsa*, 97.

³⁰ Al-Rāzī, *Tafsīr*, vol. 2, 207.

³¹ Al-Rāzī, *Tafsīr*, vol. 3, 50.

Rāzī he who wishes to practice this craft must have comprehensive understanding (*aḥāṭa ʿilman*) of a whole body of knowledge, both logical (e.g. the rules of inference), as well as naturalistic (e.g. the structure of the human body), and a detailed grasp of its humors, nutrition and surrounding climate.³²

The second epistemic mode is *mushābaha*, which we have frequently encountered earlier as an important explanatory principle given a world whose various parts reflect each other, a world of macro-micro and a world in which revelation itself descended in order to illustrate the analogy between divine and human. In placing *firāsa* among other similar sciences, such as geomancy and palmistry, and the effects of the heavenly bodies, al-Rāzī allows for a more acute power of perception (*quwwat baṣīra*) to exist among certain people whose grasp of “real sciences” (*ʿulūm ḥaqīqīyya*) may otherwise be defective.³³ This is sometimes associated with habitat, so that certain desert dwelling nations, for example, may have developed a greater knowledge of meteorology because of a more urgent need for them to know their natural environment than city dwellers.

Six guiding principles are then outlined: congruence between states of joy or anger and facial expressions; congruence between such states and the human voice; similarity (*mushābaha*) between animals and humans where the body and temperament, common to both animals and humans, reveal in an animal its inner state immediately and without the interference of reason; fixed national characteristics of various nations; differences between male and female among both animals and humans; and analogy between one psychic state and another moral state (e.g. between anger and heedlessness, or insolence and vileness).³⁴ These indicators however are qualified by al-Rāzī in a number of important ways. In conformity with his definition of *zann*, above, al-Rāzī insists that by themselves such indicators cannot lead to anything other than a weak conjecture, which can only be fortified by a multiplication of indicators.

Hence the third epistemic principle is *tajriba*, experience. As in medicine and the science of the stars, so in *firāsa*, experience is cumulative. But neither analogy nor *tajriba* should be used alone when drawing inferences. Rather, both together must be used for purposes of detection, leading to preponderant belief (*zann ghalib*).³⁵

The fourth epistemic principle is that of propinquity. This becomes relevant when indications are contradictory. For instance, if there are indicators from the face that a person is a coward, and from his chest and shoulders that he is courageous, the bodily organ nearest to these indicators must be given priority. The heart is the locus of the angry power, the brain of the rational power and the liv-

³² Al-Rāzī, *Firāsa*, 99.

³³ Al-Rāzī, *Firāsa*, 103.

³⁴ Al-Rāzī, *Firāsa*, 108–116.

³⁵ Al-Rāzī, *Firāsa*, 112.

er of appetitive power. Hence indicators closest to these organs should be prioritized when a verdict is being sought.

It is in his *Kitāb al-Firāsa* where al-Rāzī draws together the various strands of his scientific thought, where we see most vividly the operations of the cognitive categories that have informed our discussion above.

Is firāsa a science?

Having now examined the epistemic underpinnings of *firāsa* and its methodological toolkit, it is tempting to regard it as hopelessly mired in a pre-modern perspective on the universe. Despite some significant differences between twelfth century Islamic science and sixteenth century European science, the Foucauldian schema, outlined in section 1, with its emphasis on universal analogies and sympathies, would seem to capture aspects of the worldview associated with *firāsa* and other divinatory sciences fairly well. There seems no doubt but that terms like *mujāwara* (adjacency) and *mumāssa* (contiguity), for example, fit neatly into Foucault's first category of *convenientia* (adjacency, juxtaposition). Meanwhile, *mushākala* (sharing common attributes), *tamāthul* (sharing a common form), *muhākāt* (emulation), as well as a host of other concepts, fit into the second category of *aemulatio* (reflection or duplication). Furthermore, *jadb* (attraction), *qiyās* (analogy), *tafā'ul al-ʿanāṣir* (interaction of elements), and several others, cleave most closely to the third category of analogy, which involves drawing together all figures in the universe. And finally, *shawq* (desire, sympathy) and *ta'thir* (influence) are most congruent with Foucault's fourth category of sympathies, which entails exciting the things of the universe to movement. Instead of the strict causality that is held to be the mark of most modern scientific enterprises, we seem to have a paradigm that finds in the universe signs and echoes, and interprets features of the world as pointing to one another as though imbued with intentionality. Moreover, these resonances between different parts of the world are, for al-Rāzī, a result of divine intervention, which ensures that the diverse elements of the universe all point to one another, and ultimately, jointly designate their creator. This is a far cry from the disenchanting universe that is supposedly the mark of the modern or post-Enlightenment scientific outlook. In the universe envisaged by the science of *firāsa*, by contrast, "the world remains a great enchanted garden," as in the well-known quotation from Max Weber.³⁶

Yet, as we have already seen, in his defense of the science of *firāsa*, al-Rāzī does not rest his case on brute signs and analogies, but rather posits a causal link that underlies the relationship between facial features and aspects of character.

³⁶ Max Weber, *Sociology of Religion*, Boston: Beacon Press, 1963, 270; first published in German, 1922. In this passage, Weber is contrasting the attitude towards the world taken by the "popular religions of Asia" with that of Protestantism.

There is a purported causal mechanism relating outward features (*khalq*) to inner character (*kbulq*), for they are related as effects of a common cause, the common cause being variously described as the soul itself (*nafs*) or its instrument, the temperament (*mizāj*). In this context, the temperament is a theoretical posit in a well-established theory of humoral physiology that was widely used by physicians. If the temperament, imbalances in which were held to account for a variety of physical diseases and ailments, acts as a causal basis for the link between facial features and character traits, this goes a long way towards demystifying the relationship between outward facial signs and inward character traits. Hence, far from an enchanted world of mysterious signs and indications, we seem to have instead the mundane causal connections that are supposed to be so central to the practice of modern science.

If that is the case, then al-Rāzi's challenge that any objection to *firāsa* ought to be leveled equally against medicine, looms especially large. Though the challenge was aimed at his skeptical contemporaries, it applies with equal if not greater force today. The onus is on the critic of *firāsa* to show how it differs substantively from classical Islamic medical science in its methodology and epistemic underpinnings. To modify al-Rāzi's challenge and to bring it up to date, how can we explain the fact that the Islamic science of *firāsa* appears to modern eyes to be thoroughly delusional, while the contemporaneous science of medicine, though wrong and indeed misguided in many of its hypotheses and explanations, seems at least on the right track? The theory and practice of medicine in classical Islamic writings is riddled with error from the vantage point of modern medicine. It is nevertheless recognizable as a precursor to the modern science of medicine, while *firāsa* seems to bring us face-to-face with an alien "form of life".³⁷ One can think of this as an updated version of al-Rāzi's challenge to the skeptic: If *firāsa* relies on the same empirical method and evidentiary standards as medicine, then what accounts for the differing attitudes to the two sciences?

One way of addressing this challenge is by referring to the historical progression of the two sciences. It might be said that the reason that *firāsa* is not seen today as a precursor to modern social psychology or moral psychology, or perhaps indeed evolutionary psychology, is merely a matter of historical contingency. There is simply no uninterrupted set of texts and practices that would link this medieval science to these contemporary disciplines. A clear disparity exists between *firāsa* and modern scientific pursuits, not because of a fundamental difference in worldview. Rather, what accounts for the ostensible break or rupture is merely the absence of a set of practices that would serve to link the two areas of inquiry. This can be contrasted with medicine, which in both theory and practice, followed a fairly continuous trajectory from classical Islam to the late medi-

³⁷ The phrase is taken from Ludwig Wittgenstein, *Philosophical Investigations*, Oxford: Blackwell, 1953, § 23.

eval period in Europe, and from there to early modern medical science, and finally, to the modern science of physiology and medicine.

But that answer is not completely satisfactory because it suggests that our differing impressions of the two sciences is based, not on a reasoned argument, but on an accident of history. A more rationalist response might be that the crucial difference between *firāsa* and medicine is not that the former does not posit a causal relationship between the two main theoretical entities that it investigates, but that the posited causal link is simply absent in the case of *firāsa*. Even though al-Razī attempts to ground relations of analogy in actual causal ties between temperament and character on the one hand and facial features on the other, he was mistaken in thinking that there was a causal mechanism that would fill the gap between the two sets of phenomena. But the problem with this attempt to meet the challenge and explain the perceived difference between medicine and *firāsa*, is that the principal causal relationships that were held to exist in humoral medicine, between blood, yellow bile, black bile, and phlegm, on the one hand, and the various physiological ailments that they were posited to explain, on the other, are also nonexistent. Thus, a key set of causal laws that were held to obtain in the medical domain is also illusory, yet classical Islamic medicine appears importantly different from *firāsa* in terms of its scientific credentials.

Another response to the challenge to the skeptical interlocutor might fall back on Karl Popper's much-maligned "demarcation criterion" between science and pseudo-science.³⁸ On a Popperian conception, the crucial difference would be that the pseudo-science of *firāsa*, unlike the science of medicine, is un-falsifiable or incapable of being refuted. What grounds might there be to assert this of *firāsa*? There are certainly indications in al-Razī's text of the kind of *ad hocery* that is often associated with pseudo-scientific endeavors and shields them from refutation. Consider his pronouncements on the differences in features and character between "easterners", who are supposedly tall in stature, strong in heart, and courageous, and "westerners", who are said to be small in body and faint-hearted. In defending this ethnological claim against possible objections, he avers: "If you see an easterner with the outward appearance of a westerner, you would need to judge that he has a western character."³⁹ The proviso effectively immunizes the claim against refutation, since any counter-example to the generalization can be dealt with by saying, not that it refutes it or even constitutes an exception to it, but that it unwittingly corroborates it. A similar move occurs after al-Razī claims that differences in appearance between men and women point to differences in their character and psychic condition. He continues by saying that if the possessor of the science of *firāsa* "finds in the face of a male and the

³⁸ See Karl Popper, *The Logic of Scientific Discovery*, London: Routledge, 1992; first published in German, 1935.

³⁹ Al-Rāzī, *Firāsa*, 113.

rest of his bodily members the shape of a female, he is to judge from this his innate character and psychic condition, and vice versa."⁴⁰ That is, discovering feminine characteristics in a male does not count against the connection between maleness and certain facial and bodily features; it merely indicates that the male in question has feminine *psychological* as well as physical traits. This move again seems to render the generalization un-falsifiable. Indeed, the same argumentative strategy can be observed in the very well known and often-told story about Polemon.⁴¹ In al-Razi's version, Polemon receives a portrait of the king without knowing whose portrait it is, and affirms that it is a picture of a man with great sexual appetite. Since the king was not believed to be lascivious, this was initially taken to be a refutation of physiognomy, until that is, the king himself confirmed the diagnosis, asserting that he had protected himself from that vice through exercising self-restraint. By distinguishing innate character from acquired dispositions and outward conduct, practitioners of *firāsa* seem (again) to have at their disposal a technique that would shield their pronouncements from refutation. However, though there is some evidence to suggest that there are textbook instances of un-falsifiability in al-Razi's exposition of the theory and method of *firāsa*, it is not clear that this is unique to this branch of science. Indeed, as many of Popper's critics have observed, it is a routine feature of "normal science" to introduce *ad hoc* hypotheses to save any entrenched scientific theory, and it may indeed be the rational strategy in many instances to defend a well corroborated theory against apparent exceptions rather than surrender it to the first counter-example that might come along.⁴²

Where then does this leave us with respect to the contemporary version of al-Razi's challenge to the skeptic? If none of the answers we have canvassed are fully adequate to explain the apparent disparity between *firāsa* and medicine, perhaps we should conclude that the differences are overblown and that the challenge to the skeptic is upheld. That is one possibility, but before summarily dismissing any of these answers, it is worth bearing in mind that when it comes to some questions, even though no single answer is correct, some combination of answers might yet be justified. Despite the fact that in al-Razi's hands, *firāsa* has acquired some of the trappings of modern scientific disciplines, particularly in its emphasis on causality and the accumulation of empirical evidence, its differences with medicine are not negligible. Given the lack of a causal mechanism that would ground its central theoretical claims, the preponderance of *ad hoc* hypotheses

⁴⁰ Al-Rāzi, *Firāsa*, 115–116.

⁴¹ Al-Rāzi, *Firāsa*, 118–119. For details on the Polemon anecdote, its origin, and its various incarnations, see Gherseti, "The Semiotic Paradigm", 283–285.

⁴² The concept of "normal science" is derived from Thomas Kuhn, *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press, 1970 (first published 1962), as is the claim that refutations are extremely rare in science and only occur during times of crisis, which usher in scientific revolutions.

called in to save some of its generalizations from falsification, as well as a lack of historical ties that would link its conceptual apparatus to contemporary scientific disciplines, it seems significantly different from medicine, and these differences may indeed warrant the skeptical attitude towards it that al-Razi lamented.

Conclusion

In this paper we have attempted to delineate the epistemic underpinnings of Fakhr al-Din al-Rāzī's work on physiognomy, identifying some of his main conceptual and methodological tools. In so doing, we have tried to draw parallels between his epistemic stance and that of pre-modern and early modern European inquirers, particularly as interpreted in the work of Foucault. Arguably, both traditions relied on an elaborate system of signs and symbols, imbuing the world with analogies and sympathies, rather than the causal relationships and mechanisms prevalent in modern science. Yet, physiognomy is not so easily dismissed as "pseudo-science", as al-Rāzī himself was keen to emphasize. For he challenged his skeptical and naysaying contemporaries to show that physiognomy was any different than medicine, and his challenge is not easily met. Indeed, we argue that al-Rāzī's challenge remains a live one for contemporary interpreters of pre-modern science. With hindsight, it may seem as though physiognomy and medicine are starkly different disciplines, destined for different futures, but a more nuanced look at both reveals that matters are not so simple. Nevertheless, the challenge may be more tractable if we do not think of science as being definable in terms of a rigid criterion or necessary and sufficient conditions. If science is understood, instead, as a multi-dimensional endeavor, comprising both an epistemic toolkit and a cultural practice, then the differences between medicine and physiognomy may appear more significant. On this more nuanced understanding of science, it may just be possible to explain why the former morphed into a modern scientific practice while the latter was left by the historical wayside.

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A Science for Kings and Masters

Firāsa at the Crossroad between Natural Sciences and Power Relationships in Arabic Sources

Antonella Ghersetti

*Firāsa between divination and science*¹

Toufic Fahd's book *La Divination arabe* extensively deals with *firāsa* (physiognomy), thus leading us to assume that it could be subsumed under the label "divination". In modern western eyes divination is "the foretelling of future events or discovery of what is hidden or obscure by supernatural or magical means; soothsaying, augury, prophecy"². Generally speaking, component concepts like "divination", "obscurity" or "supernatural" need to be redefined when we shift to the pre-modern world and to different mental categories. As a consequence, it is perhaps appropriate to wonder if this classification corresponds to the perception of physiognomy common to the Arab world in the pre-modern period.

In the pre-modern Arab world *firāsa* (physiognomy) was often, but not systematically, perceived as a form of divination. As such, it frequently appears listed in the same category as astrology, oneiromancy and other forms of divination. For instance, in *al-Fibrīst* by Ibn al-Nadīm (d. 385/995), books on *firāsa* feature in the same chapter as books on *khiblān* (interpretation of beauty spots), *ikhtilāj* (interpretation of involuntary muscular contractions), *faʿl* (omens), *zajr* (auguring from the flight of birds) etc.³ In later sources of an encyclopaedic character, like those of al-Nuwayrī (d. 732/1332) or al-Ibshihī (d. ca. 850/1446), *firāsa* (physiognomy) also appears in the same chapters as *kibāna* (divination, fortune-telling), *zajr*, *ṭira* (prediction), *faʿl* etc. Here physiognomic signs properly pertaining to *firāsa* in the sense of "physiognomy" and anecdotes referring to *firāsa* in the sense of "intuition, acute perception (of what is hidden)" are lumped together,⁴ in a certain sense supporting Fahd's claim that it is impossible to draw a clear line between

¹ I thank Johannes Thomann for his valuable remarks and for drawing my attention to supplementary sources.

² *Oxford English Dictionary online*; divination is in the category of "Religion and Belief", subcategory "Belief Systems and Practices", further subcategory "Occult" (last accessed on November 10, 2016).

³ Ibn al-Nadīm, *al-Fibrīst*, Riḍā Tajaddud, ed., Tih-rān: Dār al-Masīra, 1988, 376.

⁴ Al-Nuwayrī, *Nibāyat al-arab fi funūn al-adab*, vol. 3, Cairo: [s.n.], 1924, 149-151 (interestingly enough, in this section *firāsa* is coupled with sharp intelligence "*ḍbakā*"); al-Ibshihī, *al-Mustaṭraf fi kull faʿn mustaṭraf*, M. M. Qumayḥa, ed., vol. 2, Beirut: Dār al-Kutub al-ʿIlmiyya, 1986, 191-192.

divination in the proper sense and physiognomy.⁵ Besides, the pre-eminence of Arabs in divinatory practices was acknowledged in Arabic sources, like *Murūj al-dhahab* by al-Masʿūdī, (d. 345/956)⁶ or the pseudo-al-Jāhīz *Bāb al-ʿirāfa wa-l-zajr wa-l-firāsa fi madhhab al-Furs*, a treatise presenting diverse kinds of divination in relation to the different populations that invented or practiced them.⁷ On the basis of these elements, Fahd concludes that the Arabs were generally recognized as unrivalled masters in inductive divination. Thus the evolution of the typically Arab *qiyāfa*⁸ into physiognomy, as a consequence of the impact of Greek cultural heritage on the Arab encyclopaedia, was quite natural.⁹

The habit of practising forms of divination based on sharp-sighted observation and intuitive acumen, like *qiyāfa*, certainly made the practice of the physiognomic process easily accepted. Nevertheless, we must consider that counting *firāsa* as a form of divination could hold true when *firāsa* is intended in the sense of “intuition”, “acute perception”, but this is not true when dealing with “scientific” *firāsa* (labelled in the sources as *al-firāsa al-ḥikmiyya*). This discipline, aiming at inferring moral traits from physical features, largely stemmed from the introduction of the Classical tradition into the Arab world, and was readily accepted without diffidence¹⁰ – although some authors seem to express a more critical attitude toward some of its methods or its immoderate use.¹¹

⁵ “Il n’est pas possible d’établir une ligne de démarcation nette et radicale entre magie, astrologie, physiognomonie et divination proprement dite, car elles trempent toutes dans une même ambiance et sont issues du même courant de pensée secrète.” Toufic Fahd, *La Divination arabe: études religieuses, sociologiques et folkloriques sur le milieu natif de l’islam*, Leiden: Brill, 1966, 42.

⁶ Quoted by Fahd, *Divination*, 104–105.

⁷ On this see below.

⁸ Especially *qiyāfat al-bashar*, morphoscopic inspection used for recognizing genealogy and parentage in particular; the other branch of *qiyāfat* is *qiyāfat al-atbar*, examination of footprints. *Qiyāfa* is still practice nowadays by nomads of the Arab Peninsula.

⁹ Fahd, *Divination*, 106: “[...] Les Arabes [...] passaient pour maîtres incontestés dans la divination inductive [...]” and “[...] il était normal que la *qiyāfa*, propre au système tribal et au cadre désertique, subisse les transformations qui en ont fait un art strictement physiognomonique” ; Fahd, *Divination*, 378.

¹⁰ See e.g. the 63rd question of al-Tawḥīdī-Miskawayh, *al-Hawāmil wa-l-shawāmil*, Aḥmad Amin, Aḥmad Ṣāqī, eds., Cairo: Maṭbaʿat Lajnat al-Taʿlīf wa-l-Tarjama wa-l-Nashr, 1951, 166–172: here *firāsa* is defined “a reliable discipline which has firm foundations and reliable premises” (*ṣināʿa ṣābiḥa, qawīyyat al-uṣūl, wathīqat al-muqaddimāt; al-Hawāmil*, 167).

¹¹ The theologian al-Nāshīʿ al-Akbar (d. 293/906) in his *al-Kitāb al-awsaṭ* seems rather skeptical of the methods described by pseudo-Aristotle: see Josef van Ess, *Frühe muʿtazilitische Häresio-graphie: Zwei Werke d. Nāshīʿ al-Akbar (gest. 293 H.)*, Beirut: Orient-Institut der Dt. Morgenländ. Ges.; Wiesbaden: Steiner [in Komm.], 1971, Ar. text 124–125, transl. 113–115. It must be noticed that al-Nāshīʿ al-Akbar seems very critical of disciplines of Greek origin in general: e.g. he attacked the logicians and the adherents of Greek medicine. ʿAbdallāh al-Baghdādī (3rd/9th c.) in his *Kitāb al-kuttāb* recommends moderation in having recourse to physiognomy (and to astrology as well): see Dominique Sourdel, “Le ‘Livre des secrétaires’ de ʿAbdallāh al-Baghdādī”, in: *Bulletin des Études Orientales* 14 (1952-54), 115-153, Ar. text 146, transl., 120, 43-78 (see also the edition of the full Arabic text by Hilāl Nāji in *al-Mawrid*, 2/2 (1973)).

The translation of the pseudo-Aristotelian *Physiognomonika* made by Ḥunayn b. Ishāq (d. 260/873)¹² is crucial to *firāsa*'s integration into the field of medicine.¹³ To the pseudo-Aristotelian text, Ḥunayn added notes of a medical character quoting passages from Galenic and Hippocratic treatises whenever he deemed it suitable. This integration of *firāsa* into the field of medicine, typical of the Arab-Islamic approach to physiognomy, produced the category of “scientific” *firāsa* (*firāsa ḥikmiyya*) that sources openly distinguish from “intuitive” *firāsa* (*firāsa sharʿiyya*). Medicine provided *firāsa* (physiognomy) with sure foundations since both share experimental practice and the inductive method, resulting in a common diagnostic technique, based on careful observation of the bodily features in order to know what is hidden: illness or character. Described as a “science aiming at recognizing something invisible from visible signs”, *firāsa* was thus classified among the natural sciences along with medicine¹⁴. The physician and philosopher Ibn Sinā (d. 428/1037) in his *Risāla fī taqṣīm al-ʿulūm al-ʿaqliyya* includes *firāsa* among “subaltern natural sciences” along with medicine, astrology, onirocritic, sciences of talismans, theurgy and alchemy.¹⁵ Later the Egyptian physician Ibn al-Akfānī (d. 749/1348) classifies it as a branch of physics, thus also giving physiognomy a secondary rank among natural sciences.¹⁶ The same position is conferred to *firāsa* in other works dealing in one way or another with the classification of sciences, like *Miftāḥ al-saʿāda* of Ṭāshkōprüzāda (d. 968/1561) or *Kashf al-zunūn* of Ḥājji Khalifa (d. 1067/1657), and in technical dictionaries like *Kashshāf iṣṭilāḥāt al-funūn* of al-Ṭahānawī, completed in 1158/1745.¹⁷

¹² Edition and Italian translation *Il Kitāb Aristātālīs al-faylasūf fī l-firāsa nella traduzione di Ḥunayn b. Ishāq*, (Quaderni di studi arabi. Studi e testi, 4), Antonella Gherseti, ed., Roma: Herder, 1999.

¹³ On the relationship between physiognomy and medicine in the Classical and in the Arab world see Johannes Thomann, *Studien zum “Speculum physionomie” des Michele Savonarola*, Diss. phil. University of Zürich 1997, 102-106.

¹⁴ This terminological shift to “science” (*ʿilm*) in the expression *ʿilm al-firāsa* and in the other elements of divination, is the result of the impact of the Greek culture on the Arab world; in particular, the notion of *technē* radically changed the perspective of divination; Fahd, *Divination*, 525.

¹⁵ Ibn Sinā, “Les Divisions des sciences intellectuelles” Georges C. Anawati, transl., *MIDEO* 13 (1977), 323–335, here 328. See also Ibn Sinā, “Classification des Sciences et structures de *summae* chez les auteurs musulmans,” in: *Medieval Education in Islam and in the West. International Colloquia of La Naplouse (France)* organized by George Makdisi et al., Paris: Geuthner, 1977, 61–70; here 65. A thorough examination of Ibn Sinā’s attitude towards physiognomy, including its “syllogistic” nature, is found in Johannes Thomann, “Avicenna über die physiognomische Methode”, in: *Geschichten der Physiognomik*, Rüdiger Campe and Manfred Schneider, eds., Freiburg: Rombach, 1996, 47-63.

¹⁶ Muḥammad b. Ibrāhīm Ibn al-Akfānī, *Irshād al-qāṣid ilā asnā al-maqāṣid*, Jan Just Witkam, ed., (= *De Egyptische arts Ibn Al-Akfānī [gest. 749/1348] en zijn indeling van de wetenschappen: editie van het Kitāb irshād al-qāṣid ilā asnā al-maqāṣid met een inleiding over het leven en werk van de auteur*), Leiden: Ter Lugt Pers, 1989, 48 (Arabic), 198–199 (Dutch transl.).

¹⁷ Ṭāshkōprüzāda, *Miftāḥ al-saʿāda wa-miṣbāḥ al-siyāda fī maʿwāḍiʿāt al-ʿulūm*, vol. 1, Beirut: Dār al-Kutub al-ʿIlmiyya, 1985, 309–310; Ḥājji Khalifa, *Kashf al-zunūn ʿan asāmi al-kutub wa-l-*

The utility of firāsa

The notion that *firāsa* is something useful was largely shared by Arab scholars. Both works of an encyclopaedic character and specific treatises dealing with physiognomy testify to this attitude. For instance, this point is extensively analysed in *al-Tadbirāt al-ilābiyya* of the Andalusian Sufi Ibn ʿArabī (d. 638/1240), a work on the art of government whose digressions include one on *firāsa*. In particular he qualifies *al-firāsa al-ḥikmiyya* as a necessary science for those whom God did not bestow with intuition (*al-firāsa al-sharʿiyya*), since “human beings necessarily associate”¹⁸ and need to pick intimates on sure ground. In particular, thanks to physiognomy, sovereigns will be able to recognize those who are most fit to be “a true friend, a companion in nightly entertainment, a vizier for the kingdom.”¹⁹ Later on, the physician and encyclopaedist Ibn al-Akfānī also tackles this point: he explains that *firāsa* is a useful science because it permits one to choose associates with due awareness. In his *Irshād al-qāṣid ilā asnā al-maqāṣid*, starting from the idea that man is a social (or political, to use the Aristotelian term) animal, he points at three specific fields of social life in which *firāsa* can be used: the choice of a friend (*ṣadiq*), the choice of a wife (*zawj*) and the choice of a slave (*mamlūk*).²⁰ Other authors, like Ṭāshköprüzāda and later on Ḥājji Khalifa, also describe it as a useful science.²¹ The latter, recalling Ṭāshköprüzāda, declares that the utility of physiognomy is self-evident (*mawḍūʿuhu wa-manfaʿatuhu zāhirān*);²² yet, he does not specify any possible application, probably because the practical applications of physiognomy were already well known so that they did not need further elucidation. The utility of *firāsa* is also taken up in treatises entirely dedicated to this discipline. In what is perhaps the most extensive treatment of physiognomy in the Arab-Islamic world, *Kitāb al-siyāsa fi ʿilm al-firāsa*, al-Anṣārī (d. 727/1327) commences his work by proclaiming its utility in regulating social relations thanks to the insight it provides on character.²³

funūn, Muḥammad Sharaf al-Din Yāltaqāyā and Rifʿat Biljah al-Kilisi, eds., 3rd ed., repr. Beirut: Dār Iḥyāʾ al-Turāth al-ʿArabī, [s.a.], vol. 2, col. 1241–1242; al-Ṭahānawī, *Kashḥbāf iṣṭilābāt al-funūn*, [repr.] Teheran 1967, vol. 1, 44 and vol. 2, 1123–1124.

¹⁸ Ibn ʿArabī, *al-Tadbirāt al-ilābiyya fi islāḥ al-mamlaka al-insāniyya*, in: *Kleinere Schriften des Ibn ʿArabī*, Henrik S. Nyberg, ed., Leiden: Brill, 1919, 162.

¹⁹ Ibn ʿArabī, *Tadbirāt*, 163.

²⁰ Ibn al-Akfānī, *Irshād al-qāṣid*, 48 lines 634–635 (Arabic); 198 (trans.): *wa-manfaʿatuhu jalīla fi taqḍimat al-maʿrifa bi-akhlāq man yaqtarr al-insān ilā mukhbālatatibi min ṣadiq wa-zawj wa-mamlūk li-yaṣir ʿalā baṣira min amribi fa-inna al-insān mammū bi-dbālika li-annabu madanī bi al-ṭabaʿa*. See also Fahd, *Divination*, 387 and note 5.

²¹ Antonella Ghersetti, “The Semiotic Paradigm: Physiognomy and Medicine in Arabic Culture,” in: *Seeing the Face, Seeing the Soul: Polemon’s Physiognomy from Classical Antiquity to Medieval Islam*, Simon Swain, ed., Oxford: Oxford University Press, 2007, 281–308, esp. 286–287.

²² Ḥājji Khalifa *Kashf al-zunūn*, vol. 2, col. 1241.

²³ *Kitāb al-firāsa*, Bursa MS Hüseyin Çelebi 882 fol. 2 a–b.

The application of physiognomic inference stressed in theoretical works is confirmed in practice by the existence of short résumés, sometimes organized in the form of tables (*taqwim*), conceived to provide rapid reference to the interested readership. This is exemplified by the table included in an apocryphal treatise attributed to Ibn ‘Arabi’s *Qabs al-anwār wa-bahjat al-asrār*, a work containing notions of erotology, astrology and other types of divination. The table, which lacks a theoretical introduction and only provides a very brief “how-to” introduction, is structured in columns indicating physical signs paralleled by columns explaining their physiognomic interpretation.²⁴ This format suggests that it was probably conceived as a reference work for quick consultation.

Firāsa was obviously perceived and presented as a branch of knowledge rich in practical applications in social life. This perception probably had its roots in earlier times. Traditions also hint at this, even if in this case *firāsa* has to be taken in a non-technical sense. As a matter of fact, seemingly even before the irruption of Greek heritage into the Arab-Islamic world, the induction of moral features and character from external appearance was clearly perceived as a guiding light in social life. ‘Abd Allāh b. al-‘Abbās, the “father” of Qur’ānic exegesis who died in 68/687-88, is credited with the assertion that there were four great “physiognomists”: Zipporah, who suggested that her father Shu‘ayb (Yethro) hire Moses; the king who examined Jonas; Potiphar, who picked Joseph as his aide; Khadija who decided to follow the Prophet.²⁵ A slightly different version of this anecdote is given in *Nuzhat al-majālis* of al-Ṣaffūrī (d. 894/1448): in this ‘Alī b. Abī Ṭālib mentions Zipporah, Khadija, Potiphar (‘*aziz Miṣr*) and Abū Bakr as the best physiognomists. This version also expounds on the circumstances of the physiognomic evaluation and contains Qur’ānic quotations relevant to the personalities mentioned. Thus we learn that the most reliable physiognomists (*aṣḍaq al-mutafarrisīn*) are Zipporah, since she recommended Moses as a servant to her father (Q 28:26);²⁶ Khadija since she carefully examined (*tafarrasat*) the Prophet; the Egyptian, since he recognized in Joseph the qualities of a good adviser (Q

²⁴ See Antonella Ghersetti, “Una tabella di fisiognomica nel *Qabs al-anwār wa-bahjat al-asrār* attribuito a Ibn ‘Arabi”, in: *Quaderni di Studi Arabi* 12 (1994), 15–47.

²⁵ “Les meilleurs physiognomistes furent quatre: La fille de Šu‘ayb (Yethro) qui examina (*tafarrasat*) le visage de Moïse et dit à son père de le prendre à son service, le roi qui examina (celui de) Yūnus (Jonas) qui avait renoncé à vivre parmi son peuple, al-‘Aziz (=Phutiphar) qui regarda (celui de) Joseph et demanda à sa femme de bien le traiter, et, enfin, Ḥadīga qui regarda (celui de) Mahomet et le suivit avant la révélation” (al-Jinā‘ī, *al-Daraja al-‘uliyā fi tafsīr al-ru’yā*, apud Fahd, *Divination*, 379 note 2). The work, as yet unpublished (to our knowledge), is a treatise on divination focussed on oneirocriticism; Fahd, *Divination*, 340 n. 48.

²⁶ “One of the women said: ‘Father, hire him; the best person to hire is one strong and trustworthy’”; *The Qur’an. A New Translation*, Tarif Khalidi, transl., London: Penguin 2009, 313.

12:21)²⁷ and Abū Bakr since, as the text relates, after a careful examination he appointed ‘Umar his successor (*tafarrasa fi ‘Umar fa-ja‘alahu al-khalifa ba‘dahu*).²⁸

The verb *tafarrasa* in these texts means “to scrutinize, look firmly”, but also – and more precisely – “to recognize or detect a quality in someone”, and this is exactly the intended meaning here. It hints at the inductive procedure based on the concept that scrutiny of exterior features allows reliable insight into individuals’ character and that this can be used to select one’s associates. Moreover, in this anecdote scrutiny is used to choose associates, be they servants (the case of Zipporah and Moses), husbands (the case of Khadija) or political advisers or successors (Potiphar and Abū Bakr). This particular facet of *firāsa*, allegedly attested in an early stage of its history in the Arab-Islamic world, is taken up in the following period, when (scientific) *firāsa* was recognized as a well-defined discipline and thus integrated into the encyclopaedia of the sciences. Physiognomy, being a “means of classifying people so as to gain knowledge of their internal ideas and motives”,²⁹ was deemed a powerful tool for predicting people’s behaviour. This is particularly useful in politics and in the art of government, and the pseudo-Aristotelian tradition of political philosophy represented by the *Sirr al-asrār* (‘Secret of Secrets’), whose last chapter deals with physiognomic judgements, seems to be a meaningful development of this peculiar application of physiognomy.³⁰

It is worth underlining that the use of physiognomy as a rhetorical tool³¹ to discredit political adversaries, typical of the treatise of Polemon of Laodicea (ca. 88-144 A.D.), is absent in the Arab-Islamic tradition, where the political dynamics were profoundly different.

²⁷ “The man who bought him, from Egypt, said to his wife: “Treat him hospitably, for he might be of use to us, or else we might adopt him as a son”. (transl. Khalidi, 184).

²⁸ al-Šaffūrī, *Nuzhat al-majālis wa-muntakhab al-naḥā’is*, ‘Abd al Wārith Muḥammad ‘Āli, ed., Beirut: Dār al-Kutub al-‘Ilmiyya, vol. 2, 1419/1998, 286. The story is part of the section on the virtues (*manāqib*) of Abū Bakr and ‘Umar. On this and other versions of the anecdote see Robert Hoyland, “The Islamic Background to Polemon’s Treatise” in: *Seeing the Face, Seeing the Soul: Polemon’s Physiognomy from Classical Antiquity to Medieval Islam*, Simon Swain, ed., Oxford: Oxford University Press, 2007, 227-280, here: 258–259.

²⁹ Emilie Savage-Smith, ed., *Magic and Divination in Early Islam*, Aldershot [et al.]: Ashgate Variorum, 2004, xli.

³⁰ *Sirr al-asrār* is preserved in two forms: a long version of ten chapters and a short version of seven or eight chapters. On its intricate textual history and its reception in the Middle East and in Europe see Regula Forster, *Das Geheimnis der Geheimnisse. Die arabischen und deutschen Fassungen des pseudo-aristotelischen Sirr al-asrār/Secretum secretorum*, (Wissensliteratur im Mittelalter, 43), Wiesbaden: Reichert, 2006. The short and the long version both contain physiognomic material, which means that this probably was already present in the archetype.

³¹ On the affinity between physiognomy and rhetoric that “has to do with actual manner of articulating a message” see Maria Michela Sassi, *The Science of Man in Ancient Greece*, P. Tucker, transl., Chicago; London: The University of Chicago Press, 2001, 76 ff.

Firāsa and slaves

As a consequence of the assimilation and integration of *firāsa* into medicine, physiognomy is also widely represented in medical treatises. Though the most influential general medical works like al-Rāzī's *al-Hāwī*, al-Majūsī's *al-Malakī* or Ibn Sinā's *al-Qānūn* do not contain sections specifically devoted to physiognomy, other works like *al-Manṣūrī fi al-ṭibb* of al-Rāzī (d. 313/925), or *Kitāb jāmi' al-gharaḍ fi ḥifẓ al-ṣiḥḥa wa-daf' al-maraḍ* of Ibn al-Quff (d. 685/1286) do.³² Interestingly, these are frequently connected with practical directions concerning the purchase of slaves:³³ thanks to the inductive and analogical procedure shared by *firāsa* and medicine, and their common humoral foundations, physicians charged with medical inspection of slaves were also qualified to assess their character. Slaves should not only be in good health but also possess the right personality and aptitude for the different tasks required, and *firāsa* was deemed apt for this psychological investigation. The first textual example of an association between physiognomy and the purchase of slaves is contained in *al-Manṣūrī fi al-ṭibb* of the famous physician Abū Bakr al-Rāzī. In the second *maqāla*, devoted to the discussion of temperament and humors and the way to infer them from bodily features,³⁴ an entire section (pp. 95-99) is dedicated to the purchase of slaves (*shirā' al-mamālik*). Here, emphasis is put on the assessment of the physical health of the slaves on sale; concluding his remarks, al-Rāzī suggests using *firāsa* as a recourse "for other matters"; hence implying that the following section is a natural continuation of this discussion. What follows is in fact an extensive and systematic treatment of physiognomic signs whose contents extend from *dalā'il al-sha'r* to *dalā'il al-ayn*, *dalā'il al-anf* and so on and where appearance of each part of the body is taken as an indication of psychological traits. This section also contains a list of character types, recalling that of the pseudo-Aristotelic *Physiognomonika* translated into Arabic by Ḥunayn b. Ishāq. *Al-Manṣūrī fi al-ṭibb*, translated into Latin by Gerard of Cremona (d. 1187) and circulating in Europe

³² Ibn al-Quff's *Kitāb jāmi' al-gharaḍ fi ḥifẓ al-ṣiḥḥa wa-daf' al-maraḍ* deals with purchase of slaves in ch. 59 (*fi shirā' al-ʿabid*) and with physiognomy in ch. 60 (*fi umūr ma'khūḍa min al-firāsa*); see Müller, *Kunst*, 158–165. For al-Rāzī's *al-Manṣūrī fi al-ṭibb* see below. An analogous method of inspection was used to purchase horses. Slaves and domestic animals were put on the same level: it is significant that they are treated one after the other in consecutive chapters in treatises of *ḥisba*.

³³ The reference work for literature on purchase of slaves in the pre-modern Islamic world is Hans Müller, *Die Kunst des Sklavenkaufs. Nach arabischen, persischen und türkischen Ratgebern von 10. bis zum 18. Jabrbundert*, (Islamkundliche Untersuchungen, 57), Freiburg: Schwarz, 1980, that also delves into the relation between purchase of slaves and physiognomy in some passages.

³⁴ *Jumal jāmi'a fi ta'arruf mizāj al-abdān wa-l-akblāṭ al-ghālība ʿalayhā wa-l-istidlālāt al-wajiza l-jāmi'a mina l-firāsa*; Abū Bakr Muḥammad b. Zakariyyā' al-Rāzī, *al-Manṣūrī fi al-ṭibb*, Hāzīm al-Bakrī al-Ṣiddiqī, ed., Kuwayt: al-Munazzama al-ʿArabiyya li al-Tarbiya wa-l-Thaqāfa wa-l-ʿUlūm, 1987, 79–107. See Müller, *Kunst*, 33–36.

under the title *Ad Almansorem*, had a strong impact on medicine and physiognomy in the Islamic and European world. In European treatises of physiognomy Abū Bakr al-Rāzī is mentioned as one of the greatest authorities.

An unusual, almost unique, approach is on the contrary testified in the *Kitāb al-dalā'il* of the Nestorian Ibn Bahlūl (Bar Bahlūl) (10th c.), a translator and a lexicographer who studied medicine in his youth. He conceived his *Kitāb al-dalā'il* as an encyclopaedia of signs of any kind from which to draw inferences: dreams, seasons, poisons etc. In his work, medical inspection and physiognomic assessment are split and dealt with separately: in the 43rd chapter, entitled *Bāb min al-firāsa min al-Kummāsh al-Manṣūri wa-ghayrihi*, Ibn Bahlūl lists bodily signs, drawing mostly from al-Rāzī's *al-Manṣūri fī al-tibb*; medical examination of slaves is dealt with well apart, in chapter 46.³⁵ It must be stressed that the rupture of the link between medicine and physiognomy in connection with the purchase of slaves, description of bodily parts and their psychological meaning being set apart from its medical context, seems quite exceptional.

The practical application of *firāsa* as a technique for picking out the best slaves seems proven by the existence of short treatises especially written by physicians to serve as guides to physical and psychological features of the persons sold in the slave market. The most popular of these works is perhaps *Risāla jāmi'a li-funūn nāfi'a fi shirā' al-raḡiq wa-taqlib al-'abid*, penned by the Christian physician Ibn Buṭlān (d. 458/1066). Here *firāsa* is explicitly mentioned as an essential part of the medical assessment; coherently, psychological appraisal immediately follows the search for signs of hidden diseases and physical defects. The author, best known in European Medieval medicine for his *Taqwīm al-ṣiḥḥa* (the well-known *Tacuinum Sanitatis*), dedicates an entire chapter of his *Risāla* to the physiognomic assessment of slaves: the third *fann* is in fact entitled "Knowledge of the character of slaves following the criteria of physiognomy, as philosophers do."³⁶ The "ethnological" method, often referred to in physiognomic Greek treatises, is combined with clinical and physiognomic inspection of bodily parts, and used to ascertain aptitude to particular types of work with a view to the profitable employment of slaves. For instance, African men of the *Beja* tribe are described as rapacious and brave: consequently they are not fit to be treasurers; Nubian women are submissive, and as such are perfect slaves; Armenian and Zaghawa women are not suitable for pleasure, so must not be chosen as concubines, and so on. Ibn Buṭlān also hints at the existence of a branch of this discipline specific

³⁵ On this see Antonella Ghersetti, "De l'achat des esclaves: entre examen médical et physiognomonie. Le chapitre 46 du *Kitāb al-dalā'il* d'Ibn Bahlūl (Xe s.)", in: *The Arabist, Budapest Studies in Arabic* 23 (2001), *Essays in Honour of Alexander Fodor on his Sixtieth Birthday*, 83–94. See Müller, *Kunst*, 37–38.

³⁶ Ibn Buṭlān, "*Risāla jāmi'a li-funūn nāfi'a fi shirā' al-raḡiq wa-taqlib al-'abid*", in: *Nawādir al-makḥḥūāt*, 'Abd al-Salām Hārūn, ed., vol. 1, Beirut: Dār al-Jil, 1411/1991, 381–420, 396–401: *Fī ma'rīfat akhlāq al-'abid bi-qiya's al-firāsa 'alā madhbhab al-falāsifa*. See Müller, *Kunst*, 45–80.

for women, denominated *firāsat al-nisāʾ*. He says: “it shows the features of women’s character, parts of the body and sexual appetite [...]. We shall not mention it, although it is a useful science, because its expressions are obscene.”³⁷

A treatise of the same nature, entitled *al-Nazar wa-l-tahqīq fi taqlīb al-raḡīq*, was penned by another physician, the Egyptian Ibn al-Akfānī, the author of *Irshād al-qāṣid*. Unfortunately, the work is only partially preserved, and the extant part of the text does not deal with *firāsa*; nevertheless, some passages alluding to women unquestionably point to the fact that physiognomy was applied to the purchase of slaves.³⁸ The existence of other treatises of the same kind proves that the use of physiognomy in this field was quite widespread: mention can be made of *al-Qawāl al-sadīd fi ikhtiyār al-imāʾ wa-l-ʿabid* of al-Amshāṭī (d. 902/1496)³⁹, a reworking of Ibn al-Akfānī’s treatise, and *Hidāyat al-murīd fi taqlīb al-ʿabid* dedicated to a certain “Mawlānā Aḥmad b. Muḥammad, afāndī al-diyār al-Miṣriyya” by Muḥammad al-Ghazālī, an unidentified Egyptian who lived in the Ottoman period.⁴⁰ The first title, *al-Qawāl al-sadīd fi ikhtiyār al-imāʾ wa-l-ʿabid*, written in 883/1478, opens with a reference to Ibn al-Akfānī’s treatise, which is said to be good but not completely satisfying. This perceived deficiency is the reason al-Amshāṭī authored a new work, adding useful notions taken from scholars and philosophers (*al-ʿulamāʾ abl al-firāsa wa-l-ḥukamāʾ abl al-siyāsa*) to his predecessor’s work. The treatise contains three chapters, an introduction and a conclusion. The introduction deals with useful advice for those who desire to purchase a slave; the first chapter describes the different kinds of men and women, be they free or slaves, and their characters; the second covers geographical regions and the features of their inhabitants; the last chapter contains a detailed description of bodily parts and their physiognomic signs “according to the statements of scholars (*al-ʿulamāʾ*), philosophers/physicians (*al-ḥukamāʾ*) and people of experience (*abl al-tajriba*).” The conclusion (*kbātima*) is dedicated to the inspection of slaves and the detection of flaws usually hidden by slave-traders. The second title, *Hidāyat al-murīd fi taqlīb al-ʿabid*, contains seven chapters dealing with medical and physiognomic interpretations of the different parts of the body. Interestingly, almost every sign receives a double – medical and physiognomic – interpretation. The first interpretation, based on humoral theory, is focused on temperament; the

³⁷ Ibn Buṭlān, “Risāla jāmiʿa”, 401. See Müller, *Kunst*, 64.

³⁸ See Jan J. Witkam in Ibn al-Akfānī, *Irshād al-qāṣid*, 74–75. See Müller, *Kunst*, 175–186. Edition and translation in Hannah Barker, “Purchasing a Slave in Fourteenth-Century Cairo: Ibn al-Akfānī’s Book of Observation and Inspection in the Examination of Slaves”, in *Mamlūk Studies Review*, 19 (2016), 1–23: here 18–23.

³⁹ See Fahd, *Divination*, 387–388; al-Amshāṭī, *al-Qawāl al-sadīd fi ikhtiyār al-imāʾ wa-l-ʿabid*, Cambridge University Library, MS Or. 1023 (7). See Müller, *Kunst*, 116–155.

⁴⁰ Muḥammad al-Ghazālī, “Hidāyat al-murīd fi taqlīb al-ʿabid”, in: *Nawādir al-makhtūṭāt*, ʿAbd al-Salām Hārūn, ed., vol. 1, Beirut: Dār al-Jil, 1411/1991, 421–442. See Müller, *Kunst*, 192–203.

second describes psychology, which is seen as the function of a certain temperamental disposition. Eyes, in particular, receive greater attention because they are thought to convey more specific indication of inner disposition. The treatise also includes observations of a physiognomic nature which are taken from *Luqat al-manāfiʿ*, a medical treatise composed by Ibn al-Jawzī (d. 597/1201); statements attributed to Galen and al-Jāhiz also feature in this text.

Firāsa and women

Like Ibn Buṭlān, other authors allude to the existence of a branch of *firāsa* specifically related to women, named *firāsat al-nisāʾ*. This particular subsection of physiognomy seems to be typical of the Arab-Islamic reception of the discipline: “physiognomy of women” in fact does not exist as such in the Classical tradition, where there is instead a “female physiognomy” valid for the females of every sort of animal. In the Classical tradition females are depicted as weak, treacherous and – from any point of view – inferior to males. Moreover, this approach to physiognomy treats a woman’s body only as a flawed shell, a deviation from a man’s body;⁴¹ as a result, women’s bodies deserve only cursory attention, if any at all. The core of this sex-oriented method of physiognomic analysis dates back to the pseudo-Aristotelian *Physiognomonika*, where the zoological method is first approached from the viewpoint of sex: male features are identified with those of the lion (*asad*) and female features with the panther’s (*nimr*).⁴² Approximately identical to the *Physiognomonika* are the contents of the Arabic version of the treatise of Polemon of Laodicea (ca. 88-144)⁴³: here too, sexual differences (masculinity and femininity) are related to animals in general, and not specifically to human beings. The physician Abū Bakr al-Rāzī seems to follow the same path (male *vs* female), but without any open reference to the model of the lion and the panther. In the second book of his *al-Manṣūri fī al-ṭibb*, in fact, some psychological and physical features are described from the perspective of sex: this is clearly stated in the section of his treatise devoted to “the character of females” *akblāq al-unthā* (which incidentally comes just before the passage on eunuchs), where bodily and psychological features are not related specifically to women but more generally to “females of every kind” (*al-unthā min kull jins*).

⁴¹ Referring to the pseudo-Aristotelian treatise, Sassi evokes “a negative sense of deviation” concerning animals, women and barbarians as terms of reference compared to “the image of the free Greek male”; see Sassi, *The Science of Man*, 48 and 49.

⁴² Gheretti, *Kitāb Aristātālīs*, 32–35 (Arabic); 65–67 (transl.). Greek text with English translation in: *Seeing the Face, Seeing the Soul. Polemon’s Physiognomy from Classical Antiquity to Medieval Islam*, Simon Swain, ed. (Appendix); the passage on male/female is at 650–653.

⁴³ The original is not extant. Arabic text with Engl. translation by Robert Hoyland: Polemon, “*Kitāb Aflimūn fī al-firāsa* = A New Edition and Translation of the Leiden Polemon”, in: Swain, *Seeing the Face*, 329–463; the passage on male/female is at 392–395.

The contents of Polemon's treatise are more closely followed by al-Anṣārī, who authored *Kitāb al-siyāsa fī ʿilm al-firāsa*, a summa of the physiognomic learning of the times, written in 723/1323. In this work he expounds on the three methods that must be used: zoological, geographical and sexual. This tripartite and clear-cut division is an explicit recognition of the sexual method as a procedure apart. The sexual method seems to be typically applied to women slaves in that visible signs are used to know the condition of the "hidden" parts of women's body in relation to beauty, aptitude to procreation and libido.⁴⁴ The establishment of a method explicitly based on sexual differences probably goes back to the treatise of the philosopher Fakhr al-Dīn al-Rāzī.⁴⁵ He is seemingly the first to distinguish an autonomous method based on sexual anatomy, in addition to the methods derived from the classical world: expressive (based on expressions of the face), zoological and ethnic. Fakhr al-Dīn al-Rāzī in fact features among the physiognomic authorities mentioned by al-Anṣārī. A similar sex-oriented approach is also perceptible in an anonymous treatise on *firāsa* falsely attributed to al-Jāhiz (*Bāb al-ʿirāfa wa-l-zajr wa-l-firāsa fī madhbhab al-Furs*)⁴⁶ where a specific section is dedicated not to *firāsāt al-nisāʾ* but more precisely to the "signs of women" (*ʿalāmāt al-nisāʾ*). In this short passage, beauty spots (which are the object of a particular form of divination)⁴⁷ are interpreted as hints at longevity, aptness to marriage, character and temperament. No particular attention is paid to libido or aptitude to sexual intercourse here, but other texts are more significant in this connection.

A telling example of the significance of this sex-oriented approach, typical of the Arab-Islamic physiognomic tradition, is a table contained in an apocryphal treatise ascribed to Ibn ʿArabi: *Qabs al-anwār wa-bahjat al-asrār* copied in 960/1553.⁴⁸ This beautifully coloured table is entitled *Jadwāl al-firāsa fī tadbīr al-riyāsa li al-ḥakīm al-fāḍil Aristāṭālīs bi-ḥasab šūrat al-insān wa-afʿālīhi*. Under the title *Firāsāt al-nisāʾ*, two columns describe women's bodily features and the corresponding physi-

⁴⁴ The entire 12th *maqāla* is dedicated to the physiognomy of women slaves: *Kitāb al-firāsa*, ms Bursa Hüseyin Çelebi 882 ff. 15a–18a.

⁴⁵ Edition and translation by Youssef Mourad, *La Physiognomonie arabe et le Kitāb al-firāsa de Fakhr al-Dīn al-Rāzī*, Paris: Geuthner 1939.

⁴⁶ Charles Pellat, "Nouvel essai d'inventaire de l'œuvre Ġāhizienne", in: *Arabica*, 31 (1984), 143. It is preserved in an *unicum* (Leiden 1206, 198, 2) copied on the 8th of Ramaḍān 757/4th of September 1356; edition and Russian translation with commentary by K. Inostrantsev: Pseudo-al-Jāhiz, "*Bāb al-ʿirāfa wa-l-zajr wa-l-firāsa ʿalā madhbhab al-Furs*", in: *Zapiski Vostočnago otdelenija Imperatorskago ruskago archeologičeskago obščestva*, (1907-8), 113–232, here: 133–Arabic; 162–232 transl.). On this see ʿA. al-Karim Zuhūr ʿAdi, "*al-Firāsa ʿinda al-ʿArab*", in: *Revue de l'Académie Arabe de Damas* 58 (1403/1983), 570–631, here: 618–619; Mourad, *La Physiognomonie arabe*, 36, 41, 42. Fahd, *Divination*, 31ff. and *passim*. See Antonella Gherseti, "Fisiognomica e stereotipi femminili nella cultura araba", in: *Quaderni di Studi Arabi* 14 (1996), 195–206, here: 200–201 for a discussion of its contents in relation to women's physiognomy.

⁴⁷ On this see Fahd, *Divination*, 390–393.

⁴⁸ On this see Gherseti, "Una tabella di fisiognomica".

ognomic interpretation. The scope of physiognomic judgment here is dramatically restricted to the sexual sphere and physical signs are interpreted exclusively as clues to the form and dimension of sexual organs. No assessment of intellectual or psychological features is taken into consideration, contrary to the rest of the table that deals with psychological features at large and without any restriction based on gender. It is worth emphasizing that no distinct section on “physiognomy of men” corresponds to the presence of this *firāsāt al-nisāʾ*.⁴⁹

“Physiognomy of women” materializes in fact in a specific kind of texts aiming at directing the choice and purchase of the best concubine. Even if Ibn Buṭlān tries to skip the subject, some remarks present in his *Risāla jāmiʿa* reveal that *firāsa* was often used to select women with a view to concubinage and childbearing: e.g. Berber and Beja were considered apt to sexual intercourse, while Indians, Berbers, Yemenites, and Turks were deemed apt to give birth.

This practical application of *firāsa* is confirmed by the existence of texts giving a kind of grammar of physical signs. A good example is an apocryphal treatise circulating under the name of Polemon, celebrated as the greatest authority in the field of physiognomy, who was also credited with special expertise in women’s physiognomy. A number of sources refer to this treatise: a work specifically dedicated to *firāsāt al-nisāʾ* penned by Iḥlimūn (or Filāmūn/Iqlimūn, depending on the sources) is mentioned in *Irshād al-qāṣid* of Ibn al-Akfānī, *Miftāḥ al-saʿāda* of Ṭāshköprüzāda, *Kashf al-zunūn* of Ḥajjī Ḥalīfa, and in a *Risāla* on physiognomy falsely attributed to the philosopher al-Kindī (d. ca. 252/866).⁵⁰ This work, entitled *Firāsāt al-nisāʾ*, is preserved – as far as we know – in a unique copy in Istanbul.⁵¹ It contains a list of bodily features and their physiognomic indications, and also includes advice and remarks on conjugal harmony and good manners, on the control of passions, on feminine psychology and anatomy and on women’s tricks (*makāʾid al-nisāʾ*, a topos of Arabic literature). These elements seem to suggest an application of physiognomy to the domain of interpersonal relationships in the frame of marriage or concubinage and seem to qualify the treatise, or at least part of it, as a work of the genre *adab al-nikāḥ*. The arrangement is significant: after an introduction consisting of a dialogue between a king and a philosopher – in the same vein as the *Sirr al-asrār*-frame – the work continues with a classification of the different types of women, who are categorized on the basis of proportions and colours of their bodies. This part is followed by a catalogue of bodily signs with their physiognomic interpretation, patently restricted to the spheres of sex and procreation. Contents and arrangement of the work testify to the fact that it was intended as a book for practi-

⁴⁹ Due to consistency with the aims of this essay a discussion of gender in physiognomic texts, although desirable, is not possible.

⁵⁰ Antonella Ghersetti, “Mondo classico e legittimazione del sapere nella cultura arabo-islamica: il trattato *Firāsāt al-nisāʾ* attribuito a Polemone di Laodicea”, in: *Scienza e islam. Atti della giornata di studio, Venezia 30 gennaio 1999*, G. Canova, ed., Roma: Herder, 1999, 59–68.

⁵¹ *Li-Iḥlimūn fī firāsāt al-nisāʾ*, Topkapı Sarayı Ah. III 3207, 75b–92b.

cal purposes, and in particular for the choice of concubines and perhaps wives. Physiognomic signs here are used to assess libido and aptness to sexual intercourse, thus denoting an intersection of erotology and physiognomy. This intersection is also proven by textual evidence. In point of fact it has been demonstrated that the pseudo-Polemon *Firāsāt al-nisāʾ* was already circulating in the 10th cent. but under a different title: it was named *Kitāb al-bāb* (*The book of coitus*) and attributed to the Greek physician Philoumenos, considered an expert in feminine medicine.⁵² The confusion of the two authorities, Philoumenos and Polemon, is seemingly the result of the similarity of the Greek names in their Arabic form; the false attribution generated by the similarity of names could also have been encouraged by the similarity of topic (the woman's body).

The application of physiognomy to the field of interpersonal relations, and intimacy in particular, seems thus to be peculiar to the Islamic development of this discipline. In this context *firāsāt al-nisāʾ* seems to be a branch of physiognomy more properly connected to erotology than to physiognomy at large.

*Firāsa at court: on kings and rulers*⁵³

The association of power and knowledge is a well-known phenomenon, and this seems all the more true in the Islamic world where "power and wealth were concentrated in courts to a greater extent than in the Classical and even medieval European worlds."⁵⁴ Physiognomy and the art of governing in particular had been intimates since ancient times: to know the secrets of human beings offered intellectuals, and notably to physicians, the opportunity to find positions in courts, and thus granted them social and political advantages. Of particular importance in this connection is physicians' association with courts: if they were not directly counted among the sovereign's advisers, physicians were often admitted to courts to protect the health of kings.⁵⁵ This alliance, also proven by the number of medical treatises dedicated to princes,⁵⁶ was based on the need to have professionals at

⁵² See Gherseti, "Mondo classico".

⁵³ On court life as social background to physiognomy in the Islamic world see Robert Hoyland, "The Islamic Background," 266–275; esp. 270–271 for guides offering advice on how to pick one's friends.

⁵⁴ Hoyland, "The Islamic Background," 266. Fahd suggests that in the Islamic world texts focussed on divination were produced progressively, in response to demand from caliphs who needed to know God's will: "Progressivement, et à la demande des califes qui se fiaient à la voix du ciel exprimée par les signes divinatoires, les héritiers de la science des devins, et non de leur fonction ni de leurs privilèges, fixent par écrit les codes d'interprétation et les règles des divers procédés divinatoires, de manière que chaque individu soit suffisamment armé pour donner aux signes qu'il retient la signification qu'il croit leur convenir » (Fahd, *Divination*, 525).

⁵⁵ On this see Floréal Sanagustin, "Princes et médecins dans l'orient musulman classique," *Annales Islamologiques* 31 (1997), 169–180, esp. 170.

⁵⁶ Sanagustin, "Princes et médecins", 178.

court to interpret physical signs of maladies or poisoning. The same interpretative skills, when applied to physiognomy, were deemed a useful tool for knowing the attitudes and the qualities of the sovereign's associates: on that basis he would be able to select the individuals to include in his restricted circle, to recognize the character of his relatives, to read the faces of his courtiers, to select his advisors and counsellors or to take a wife able to give birth to heirs. In medieval Europe the practical utility of physiognomy for kings and rulers was often stressed. Intellectuals (physicians, astrologers, philosophers) were often asked to give their advice to the sovereign, and physiognomy was included among the sciences represented at court.⁵⁷ Political power was thus sustained and enhanced by intellectual power, and the knowledge of how to interpret natural – and notably bodily – signs, and thus have control over people, represented the perfect balance in the power of kings. In the textual tradition, this association of political and intellectual power is embodied in the pairing of a sovereign and a philosopher, whose most conspicuous example is the pair of Aristotle and Alexander the Great in *Sirr al-asrār*. The hypothesis that Ibn Sinā, in his relation with princes, tried unknowingly to reproduce this mythical couple is meaningful.⁵⁸

The political role of physiognomy and its relevance to the art of governing are openly discussed in various sources. For instance, in *al-Tadbirāt al-ilāhiyya*, a treatise dealing with good government, Ibn ʿArabi devotes an entire section to *firāsa* on the grounds that it is a trait peculiar to the shrewd vizier. Those who lack the intuition derived from divine light (*al-firāsa al-sbarʿiyya*), Ibn ʿArabi states, must learn scientific physiognomy (*al-firāsa al-ḥikmiyya*) and rely on this to select the company they should keep, or the subjects with whom they may collaborate profitably.⁵⁹ Coherently, what follows is a list of bodily features conceived as a sort of concise guide to physiognomic evaluation. This comprehensive exposition of physical signs and their physiognomic interpretation closes with the exhortation to have recourse to *firāsa* in order to be on the right track to acquire knowledge of people (*taḥaqquq, tarsbud fi maʿrifat al-nās*).⁶⁰

⁵⁷ The case of Michael Scotus (1175–c.1232), active at the court of Frederick II of the Two Sicilies, is a case in point: it reproduces in practice the literary frame philosopher/king of *Sirr al-Asrār*. Michael Scotus superintended translation of works from Arabic into Latin, and his *Liber physionomie* written (probably between 1228 and 1235) at the request of the Emperor Frederick, is the first original contribution of the Middle Ages on physiognomy. Also interesting is the case of William of Mirica (see Joseph Ziegler, “Philosophers and Physicians on the Scientific Validity of Latin Physiognomy 1200-1500”, in: *Early Science and Medicine* 12/3 (2007), 285–312). A physician active at the court of the pope Clement VI, he proclaims the primary political value of physiognomy, since it regulates personal relationships in the political arena (“tam in yconomius quam in policis”) (see Iole Agrimi, *Ingeniosa scientia nature: studi sulla fisiognomica medievale*, Tarnuzze, Impruneta: SISMELE Edizioni del Galluzzo, 2002, 76–79).

⁵⁸ The hypothesis is put forward by Sanagustin, “Princes et médecins,” 180.

⁵⁹ Ibn ʿArabi, *Tadbirāt*, 161 ff.

⁶⁰ Ibn ʿArabi, *Tadbirāt*, 168.

The most conspicuous example of the political use of physiognomy is *Sirr al-asrār*, whose diffusion and renown outclass those of any other work of this kind. This pseudo-Aristotelian treatise, written by an anonymous Arab author whose existence is attested in the 10th century,⁶¹ had a wide circulation in medieval Europe, where it was known as *Secretum secretorum*.⁶² The work, also known in the Arab tradition by the title *Kitāb al-siyāsa fī tadbīr al-riyāsa* (roughly “On the art of government”), contains a series of suggestions on the art of government that Aristotle gives to his pupil, Alexander the Great. Originally a mirror of princes text, it took on a proem and additional layers of scientific and occult material in its longer form. In it Aristotle explains to Alexander that statecraft depends on two kinds of knowledge operating between the ruler and the ruled: public and secret, the last one peculiar to saints and sages. *Sirr al-asrār*’s ultimate message is that knowledge is power and that understanding is the head of government. Rulers are thus urged

to appoint ministers with special intellectual qualities: the perfect councillor should have ‘a good understanding, and a quick apprehension of what is said to him’; he should have a good memory and be able to speak eloquently, he should be ‘intelligent and quick-witted.’⁶³

How to choose a witty vizier or a good adviser is thus a matter of understanding and interpreting the signs; indeed, the last chapter of *Sirr al-asrār* is dedicated to *firāsa*. This chapter, that owes much to Polemon, also circulated independently of the bulk of the treatise and was the source most widely used and quoted in the Arab-Islamic treatises on physiognomy.⁶⁴ In the chapter on *firāsa* it is said that a sovereign must have recourse to physiognomic knowledge to choose those he wants as counsellors and associates in the art of government and/or in courtly life. A quick hint at the physiological foundations of physiognomic judgment opens this section, which implicitly places this discipline in the realm of medicine. Then Aristotle warns Alexander against people with certain physical features (whiteness, blueness or redness in the face) or any physical imperfection: he must be wary of these as if they were his enemies, because physical imperfection is a consequence

⁶¹ A version of this treatise existed before the end of X CE century: the title is mentioned by Ibn Juljul in his *Ṭabaqāt al-aṭibbāʾ* (written 337/987); see Forster, *Geheimnis*, 17; for an exhaustive discussion of the dates of the different versions of *Sirr al-asrār* ibidem, 11-19.

⁶² Arriving in Europe in the middle of the 12th century it was circulated at Frederick II’s court in the Latin translation by Philip of Tripoli, probably at the same time as the Latin translation of the pseudo-Aristotle’s *Physiognomonika*. A second, later translation is that of Bartholomew of Messina. It aroused passionate interest among intellectuals and was perhaps the most popular book of the Middle Ages; the last edition of the Latin translation was printed in Naples and Venice in 1555.

⁶³ William Eamon, *Science and the Secrets: Books of Secrets in Medieval and Early Modern Culture*, Princeton: Princeton University Press 1994, 49–50.

⁶⁴ The use of pseudo-Aristotle *Kitāb al-firāsa* by Fakhr al-Dīn al-Rāzī must be considered an exception since “most of the later physiognomical in Arabic [refer] to the *Sirr al-asrār*”: see Francis E. Peters, *Aristoteles Arabus. The Oriental Translations and Commentaries on the Aristotelian Corpus*, Leiden: Brill, 1968, 63.

of imperfect physiology and thus a clear sign of an imperfect nature.⁶⁵ Conversely, when he happens to meet the “perfect” (i.e. “well-proportioned and flawless”) man, he must choose him for his company and let him govern his subjects and serve him. Physiognomy contains thus a kind of promise of power over one’s enemies or companions, whose duplicity or treachery would be recognized.

The same literary frame features in the above-mentioned pseudo-Polemon *Firāsāt al-nisā*⁶⁶. This is focussed on the choice of a concubine or perhaps a wife more than on the art of government; nevertheless, the political application of physiognomy is not ignored and the text often hints at the importance of this discipline for a sovereign. The frame goes as follows. A pious king (*nāsik min ab-nā’ al-mulūk*) is obsessed by lust and love for women: he cannot stay away from them but, at the same time, he is consumed with jealousy. He fears, in fact, that the woman he loves could be involved with someone else “outside his kingdom” (*fi ghayr mamlakatibi*). He thus sends for a philosopher, who turns out to be Polemon (“the author of the *Kitāb al-firāsa*”), in order to describe his distress to him and to ask his advice on how to preserve his continence, to put an end to his suspicions and to acquire confidence in his partner.⁶⁷ The reply of Polemon opens with a meaningful statement: every association between things is possible, excepting that between kings and women since sovereigns, Polemon explains, do not accept losing control over what they dominate. Moreover, the relationship between the king and the women he desires is perturbed by that very lack of confidence and the fear of losing his control over them: he fears their disloyalty on a personal level but also on a political level since he yearns not only for sexual intercourse, but also for their conversation (*muḥādathatibinna*). The emphasis is obviously put on losing control of what is under supreme sovereign authority (*mulk*), which means persons but also secret information, hinted at in the allusion to conversation. The rest of the treatise consists of considerations on human psychology and physiology, the description of different categories of women apt to concubinage, advice on how to perform satisfactory sexual intercourse and comments on how to reach harmony and mutual satisfaction in a couple in order to have a long and fruitful relationship. Particular attention is given to the avarice and cupidity (*hirs, bukkh*) of women: the philosopher explains to the king how he must refrain from showing his attachment to them and from being generous in order to preserve himself from their rapacity. This is all the more true for a sovereign who must thus keep his distance from his subjects since – it is

⁶⁵ *Sirr al-asrār*, in *al-Uṣūl al-yunāniyya li al-naẓariyyāt al-siyāsiyya fi al-islām*, ‘Abd al-Rahmān Badawī, ed., Cairo: Maṭba‘at Dār al-Kutub al-Miṣriyya, 1954, 118. On physical imperfection as a negative physiognomic sign see Mohammed M. Ghaly, “Physiognomy: A Forgotten Chapter of Disability in Islam. The discussion of Muslim Jurists”, in: *Bibliotheca Orientalis* 66, 3–4 (2009), col. 161–198.

⁶⁶ Topkapı Sarayı Ah. III 3207, 75b–92b.

⁶⁷ Topkapı Sarayı Ah. III 3207, fol. 76a–77b.

said – “the king is not like his subject.” After these remarks, there is a shift to the art of government and the text explains that the king must strengthen his kingdom, not oppress his people so that they will not grow tired of him and be dignified in order to be respected. All this will make him feared and thus secure his sovereignty and preserve him from evil.⁶⁸ Women’s cupidity emerges again as a topos in a subsequent passage, where the king is urged to beware of women who seek only riches and who play all kinds of tricks to reach their goal.⁶⁹ This treatise, whose largest part is obviously more connected to erotology and *adab al-nikāh* than to the *Fürstenspiegel* genre, presents interesting features in connection with the political relevance of physiognomy. Its frame, which recalls that of *Sirr al-asrār*, is a clear indication of this; likewise, the several passages that stress the fear of being betrayed, the necessity of keeping one’s distance and the need to choose one’s associates carefully, correspond to the utility of *firāsa* in court life emphasized in treatises of a more theoretical nature.

The third significant text demonstrating the relevance of physiognomy to the art of government is the above mentioned *Bāb al-‘irāfa wa-l-zajr wa-l-firāsa ‘alā madbhab al-Furs* falsely attributed to al-Jāhiz. The work deals with different types of divination and its treatment of physiognomy is rather original if compared to the bulk of titles entirely or partially dedicated to the subject. The association between physiognomy and the art of government is established at the beginning, when the unknown author explains the different types of divination practised by different peoples. He lists *firāsa* and *siyāsa* side by side, sciences that the Persians brought from India along with other types of knowledge useful for kings and sovereigns (*mimmā yaṣluḥ al-mulūk wa-aṣḥāb al-duwal*).⁷⁰ The Persian kings would bring in all these sciences from India and Indian wise men (*‘ulamā’ al-Hind wa-ḥukamā’ihim*) could command high fees for divination at court; notably to those practising *‘irāfa* (knowledge of the future by means of past events)⁷¹ and *firāsa*. Their opinion was held in high esteem and sovereigns made their decisions on the basis of their verdicts.⁷² The relevance of physiognomy to the art of government is detailed in what follows. The point is meaningfully dealt with immediately after the description of how to distinguish true gems from fakes; similarly, *firāsa* is considered useful (*nāfi‘*) in discerning the evil nature of people, notwithstanding their benign appearance or behaviour, and those who are proficient at this will never fall victim to any trick (*ḥīla*) or camouflage (*tamwīh*). This is all the more true when one wants to preserve his secrets and avoid treachery,⁷³ points patently crucial to the art of government.

⁶⁸ Topkapı Sarayı Ah. III 3207, fol. 85b–86a. The passage is sometimes ambiguous since the pronouns sometimes seem to refer to subjects in general and sometimes to women (presumably those involved a relationship with the king).

⁶⁹ Topkapı Sarayı Ah. III 3207, fol. 87a–87b.

⁷⁰ Pseudo-al-Jāhiz, *al-‘Irāfa wa-l-zajr*, 116.

⁷¹ See Fahd, *Divination*, 113–119.

⁷² Pseudo-al-Jāhiz, *al-‘Irāfa wa-l-zajr*, 118.

⁷³ Pseudo-al-Jāhiz, *al-‘Irāfa wa-l-zajr*, 122–123.

The text continues quoting the statements on physiognomy and “the signs of men and women” of Jawbar al-Hindi, an obscure author who – it is said – penned a book he dedicated to the Persian kings. They, in turn, preserved it in the royal treasuries and used it as a guide in their actions, in state affairs and in the way they governed (*yaqtadūna bibi fi af‘ālibim wa-ahwāl mamlakatibim wa-ṣifāt riyāsatibim*). However, its utility is not limited to rulers: it is extended to every layer of society (*al-kbāṣ wa-l-‘āmm*) that takes it as a guide. Subsequent significant passages are devoted to the description of categories of people presumably living at court or associated with a sovereign and to bodily signs characterizing them. Many sentences refer to the choice of knights: the parameters evaluated are courage and ability in using sword, bow and arrow.⁷⁴ But other passages are clearly referred to advisors and even boon companions (notably chess players) and the signs that are to be taken as indications of their intellect, their nature and their ability to comply with the rules of life at court. The ability to have proper and timely conversation, lofty expressions, a moderate course in speech and to speak only after reflection is carefully evaluated in order to ascertain reliability of individuals.⁷⁵ The emphasis put on rhetorical skills (*tajwīd al-kalām*) and on the way one speaks is much more evident in this than in similar treatises; furthermore, the physiognomic judgement based on speech (its speed, its rhythm, its volume) and silence is described as peculiar to the Persian kings (*akāsira*) who inferred from these signs if somebody was treacherous, fraudulent and cunning.⁷⁶ Caution is recommended with flatterers, who are described as untrustworthy in speech and deeds. On the whole, advice and physiognomic evaluations seem especially conceived to guide kings in the choice of their associates at court.

The three examples taken into account so far demonstrate that *firāsa* was no doubt perceived as a science relevant to the art of government. They also seem to suggest that the political utility of physiognomy is of foreign origin – whether from the classical world (like in *Sirr al-asrār* and *Firāsat al-nisāʾ*) or Persia and India (like in *Bāb al-‘irāfa wa-l-zajr*).

Concluding remarks

Arab sources testify to a wide gamut of applications of physiognomy to social life: the purchase of slaves, choice of a concubine or a wife, choice of associates and political advisors at court. One peculiar feature, which seems to emerge from the texts outlining applications of *firāsa* in different fields and contexts, is the disparity between the two parties, the one performing – personally or by means of somebody else’s intervention – the physiognomic examination and the one

⁷⁴ Pseudo-al-Jāḥiz, *al-‘Irāfa wa-l-zajr*, 124.

⁷⁵ Pseudo-al-Jāḥiz, *al-‘Irāfa wa-l-zajr*, 125.

⁷⁶ Pseudo-al-Jāḥiz, *al-‘Irāfa wa-l-zajr*, 126.

undergoing it. Kings and rulers use *firāsa* to choose their subjects (courtiers, boon companions or advisers); men have recourse to it to choose their wives or their concubines; masters employ it to buy their slaves.⁷⁷ This power imbalance thus encompasses political relationships (kings and courtiers), social relationships (husbands and wives/concubines) and economic relationships (masters and slaves). The imbalance becomes twofold in the specific case of ‘physiognomy of women’ (*firāsāt al-nisāʾ*). Here, the asymmetry of gender (man *vs* woman) is heightened by the asymmetry of social status (master *vs* slave) thus resulting in a double reduction of scope in terms of gender and social rank.

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⁷⁷ This seems to parallel the use of physiognomy in the European Middle Ages when, from the 13th century onwards, physiognomy was practised by sovereigns but was also deemed useful by the components of the higher social classes: masters who had the authority to choose the right wife, suitable household servants and workers.

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Cometary Theory and Prognostications in the Islamic World and Their Relationship to Renaissance Europe

George Saliba

Introduction

By their very nature, or rather by the ambiguity of their nature, and by their irregular, and yet well attested appearances – before some of their periods were discovered towards the later half of the seventeenth century – comets have always justifiably stirred an immense curiosity regarding their essence, their behavior, and above all the reasons for their seemingly sudden appearances and disappearances. In a world totally dependent on the whims of deities and other supernatural beings, the need to control and survive the unconquerable forces of nature was always a high priority, and any clues or guidelines as to the manner in which one could do that was always highly welcome. For that reason, it is not surprising to find an extensive literature, spanning from the earliest recorded history to our own time, focusing particularly on the possible meaning of those seemingly odd appearances of strange looking “stars” in the celestial realms, that is, if they were to be considered as stars in the first place. And, as if their strange shapes, luminosity, and positions in the sky, etc., were not enough, almost all of those strange bodies presented themselves at times with enormous tails, stretching right across the visible portions of the skies. Those tails seemed quite arbitrary: stretching in this direction at one time, and in a completely different one on the other. If this type of behavior did not pose real problems for the enfeebled human, always trying to secure his survival in the midst of ferocious natural forces tossing him to and fro, then what would? This is the time when prognostication is most needed and sought after.

In this paper, I will focus on prognostications from comets, always from the perspective of exploiting whatever texts we have about them in order to paint a better picture of Islamic intellectual history and its impact on the European Renaissance.

Comets as tools of prognostication

In a cuneiform tablet (Figure 1) from the second century BC, now preserved at the British Museum, there is a descriptive statement about the behavior of a comet,

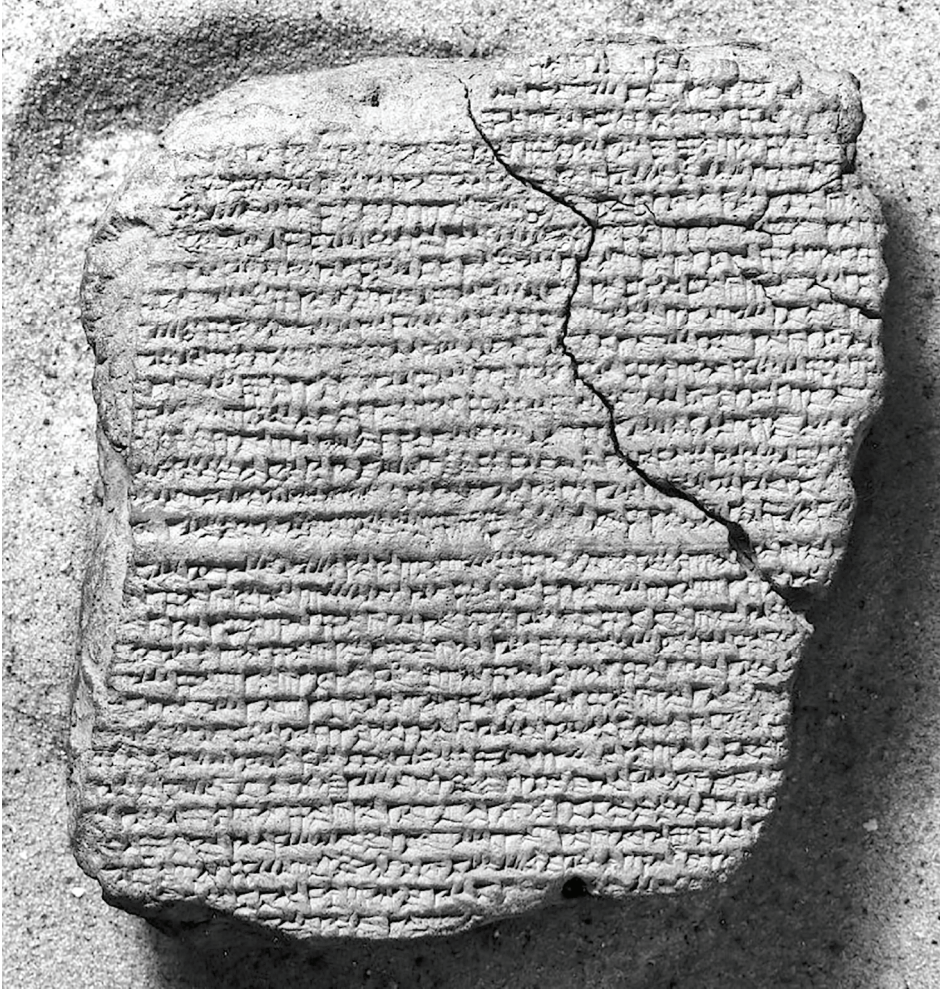


Figure 1: British Museum tablet number 41462¹

which was determined to be a sighting of Halley's comet around 164 BC.² According to the British Museum website, the text on the tablet says, among other things: "the comet which had previously been seen in the east in the path of Anu [that is near the equator] in the area of Pleiades and Taurus, now passed along in the path of Ea [that is near the ecliptic]." This is not the earliest sighting of a comet in cuneiform, but the first that could be confirmed to have sighted Halley's comet,

¹ Courtesy of British Museum: http://www.britishmuseum.org/research/collection_online/collection_object_details/collection_image_gallery.aspx?partid=1&assetid=90463&objectid=327183 (downloaded August 7, 2014).

² For a fuller study of the tablet see, F. Richard Stephenson, Kevin K.C. Yau, and Hermann Hunger, "Records of Halley's Comet on Babylonian Tablets", in: *Nature* 314 (1985), 587–592.

whose returns were later calculated to occur every 75-76 years. We note that the scribe who recorded the observation simply described the motion of the comet without attributing to it, or its motion, any particular astrological significance. Rather, like other astronomical texts from ancient Babylonia, he recorded what he saw empirically, and refrained from further comment, astrological or otherwise.

But this Babylonian tradition was not universally upheld in the astronomical/astrological writings of the period. For we know of the existence of other types of texts in which Babylonian astronomers offered specific speculations about the significance of celestial phenomena and their impact on human life. In the famous *Reports of the Magicians and Astrologers of Nineveh and Babylon*,³ one encounters more pointed prognostications such as the following: “When a comet reaches the path of the Sun, Gan-ba will be diminished; an uproar will happen twice. These words concern Akkad.”⁴ Here we see the birth of a tradition that connected the heavens to the earth, and an attempt to regularize such predictions, by codifying their meaning as per the direction from which they appeared, to the direction to which they moved, and the particular regions and people affected by those events.

Many more such statements can be gathered from the rich Akkadian literature. And depending on the interpretation of the ambiguous Akkadian terms *šallumu*, *bibbu*, or *kakkabu*, all used at one time or another to denote celestial phenomena such as comets, the number of such statements can be increased considerably. In the detailed prognostications preserved in the 56th tablet of the famous *Enuma Anu Enlil*, we read for example such statements as: “If a *bibbu* appears in the beginning of Nisan, Nergal will be exterminated: a Deluge. If a *bibbu* appears at the beginning of Tishri, at dawn and twilight, there will be a combat.”⁵

Part of the linguistic ambiguity in the Akkadian references has to do with the ambiguity in the nature of comets, when it comes to their distinction from other celestial phenomena such as shooting stars, meteors, fireballs, and the like, all of them constituting ripe material for prognostication. The terminology used to describe shooting stars and meteors, for example, with such terms as *šarāru* and *maqātu* – the first meaning something like “flashing” (close to Arabic *sharara* = spark), the second meaning something like “falling” – makes the terminology of prognostication very similar to that used for comets. Incidentally the term “falling” is rendered in much later Arabic texts describing the same phenomena with the Arabic term *inqidād* or related verbs. There too, the term is applied to both comets and meteors/shooting stars. As we read for example: “When a star like a light (or) like a torch shines, from east to west and disappears, the army of the enemy will be

³ Reginald C. Thompson, *Reports of the Magicians and Astrologers of Nineveh and Babylon*, London: Luzac 1900, vol. 2, 1 (=50), report 88.

⁴ Thompson, *Reports*, report 88.

⁵ See René Largeton, “Contribution à l'Etude des Astres errants dans l'Astrologie chaldéenne”, in: *Zeitschrift für Assyriologie* 52 (1957), 235–264, here: 237.

slain in its onslaught.”⁶ We note that the nature of this kind of prognostication is not different from that used with regard to comets, and thus the distinction between shooting stars, meteors and comets dims further. In fact, although ancient people had no way of knowing this, meteors, shooting stars, and the like are remnants of previous comets, and thus not totally alien to them⁷

Aristotle’s rationalization of comets

With an obvious wide-ranging confusion about the nature of such celestial phenomena as comets, meteors, shooting stars, fireballs, bolides, etc., it becomes easy to understand why the prognostications based on such phenomena were also confused and hard to pinpoint their import. There were attempts to rationalize all those phenomena in the Greek tradition, by first determining their nature, and then determining their relationship to the well-known wandering planets of whose well-regulated motions all ancient civilizations kept meticulous records. To Aristotle, for example, all of those phenomena could not be part of the ethereal world which followed a predictable, eternal circular motion, and thus had to all be classified as meteorological phenomena that took place in the upper reaches of the earth’s atmosphere. They were all explained as resulting from smoky exhalations ascending from the earth, which, upon reaching the upper regions of the atmosphere (where the sphere of air comes in contact with that of fire) were further heated by friction and in some cases caught fire to produce all those phenomena of light. In fact, the first book of Aristotle’s *Meteorologica* opens with the statement that, after having described the more perfect motions of the planets and the ethereal celestial spheres, presumably in his book *On the Heavens*, Aristotle goes on to say:

It remains to consider a subdivision of the present inquiry which all our predecessors have called Meteorology. Its province is everything which happens naturally, but with a regularity less than that of the primary element of material things, and which takes place in the region which borders most nearly on the movements of the stars. For instance the *milky way, comets, shooting stars and meteors*, all phenomena that may be regarded as common to air and water, and the various kinds and parts of the earth and their characteristics.⁸ [my italics].

⁶ Thompson, *Reports*, 202.

⁷ No need to stress at this point the religious and cultural significance of shooting stars and their repeated occurrence in later Islamic culture when the expression *a’ūdhu bi-l-lāh min al-shaytān al-rajīm* (I take refuge with God from the pelted Satan), is utterly pervasive, and where the term *rajīm* (pelted) specifically refers to Satan being pelted with shooting stars, or literally with stones during the pilgrimage rites. See also, M. Gaudefroy-Demombynes and Toufic Fahd, “*Radjīm*”, in: *Encyclopaedia of Islam*, Second ed., vol. 8, Leiden: Brill 1995, 379.

⁸ Aristotle, *Meteorologica*, H. D. P. Lee, transl., (Loeb Classical Library, 397), Harvard, Cambridge, Mass.: Harvard University Press, 1952, 5.

This very separation between these phenomena and the motion of the planetary spheres relieved Aristotle of the obligation of fitting them within his overall holistic system. For, if they were to be integrated into his system, Aristotle would have had to explain their prognosticative function in the same way he explained the function of the motion of the planetary spheres as being responsible for all the changes we witness in the world of generation and corruption. He elaborated on those notions in his book *On Coming to be and Passing Away*.⁹ By separating these meteorological phenomena from the ethereal, divine, and immortal world, which constantly revolved in a uniform circular motion, they could no longer be considered responsible for the events that take place in the world of generation and corruption – at least not responsible in the same way the planets and the planetary spheres were supposed to be, according to astrologers who used this Aristotelian reasoning.

By this very Aristotelian reasoning, one could not use comets to prognosticate the eruption of wars and famines, for such events and such major changes happened as a result of the motion of planetary spheres, which are the true causes of generation and corruption in general. By locating comets in the meteorological realm, it restricts their predictive utility to weather conditions at best. They would not share with the planets and their spheres the role of regulating change in the sub-lunar region as a whole. Categorized as meteorological phenomena, comets, meteors, fireballs, and the shooting stars, would have no more prognostication value than simple meteorological phenomena like lightning, thunder and rain. No one expects the death of a potentate every time it thunders or rains. But because comets were formed within the meteorological domain, because they were supposed to have originated from dry earthly exhalations, they may occur at the same time as dry air but should not be considered the cause of that dryness.

In Aristotle's words, *Meteorologica*. I, 7, he makes the following case for the concomitance of dryness and wind with comets:

We may regard as a proof that their constitution is fiery the fact that their appearance in any number is a sign of coming wind and drought. For it is evident that they owe their origin to this kind of exhalation being plentiful, which necessarily makes the air drier, while, at the same time, the moist evaporation is disintegrated and dissolved by the quantity of the hot exhalation so that it will not readily condense into water. But we will give a clearer explanation of this when the time comes to deal with winds.¹⁰

In that sense comets can be construed as accompanying meteorological changes, and in this manner Aristotle could be understood to have left the door slightly ajar for the astrologers to use comets in their prognostication of impending droughts and famines. But that does not mean that Aristotle would condone the

⁹ Aristotle, *On Coming to be and Passing Away*, E. S. Foster, transl., (Loeb Classical Library, 400), Harvard, Cambridge: Harvard University Press, 1978, 313-321.

¹⁰ Aristotle, *Meteorologica*, 55.

astrologers' other predictions of wars, battles, expiring potentates and the like as astrologers were prone to predict. Such major events cannot be directly connected to meteorological phenomena like winds and storms, which are concomitantly observed with hot spells and the like.

While responding to his opponents about the nature of comets, meaning the Pythagoreans in particular, Aristotle makes the following statement in *Meteorologica*. I, 6:

Of the Italian schools some of the so-called Pythagoreans say that a comet is one of the planets, but that it appears only at long intervals and does not rise far above the horizon. This is true of Mercury too; for because it does not rise far above the horizon many of its appearances are invisible to us, and so it is only seen at long intervals of time.¹¹

While this characterization makes the Pythagorean statement almost fully modern, to Aristotle, if this were true then comets, when compared to Mercury, would enter the domain of the ethereal region and thus become full planetary participants – hence fair tools for prognostication. This cannot be the case, as he demonstrates in his response to the Pythagoreans, thus he has to insist that comets were only meteorological phenomena.

For our purposes, this articulation of the Pythagorean position and Aristotle's response to it raises some very interesting issues: On one hand, and in order to explain the infrequency of comets, the Pythagoreans resorted to the assumption – without any empirical data to back up that assumption – that comets were identifiable bodies but have very long periods, and thus are not observed as often as other celestial phenomena. On the other hand, Aristotle responds with an alternative explanation of the comets' infrequency by comparing it to the infrequency of Mercury's sightings on account of the latter's proximity to the sun which makes it hard to observe. Although this alternative explanation only tries to explain the difficulty of observing objects in the vicinity of the sun, and says nothing about the nature of comets being in any way connected to that of Mercury, later astrologers, starting with the second century astronomer astrologer, Claudius Ptolemy (d. ca. 170), took that relationship a step further to make comets' nature very similar to that of Mercury and locating comets in the same celestial region as that of Mercury. Later astrologers will use that location in the proximity to the sun's rays to make the argument that the location was intentional so that comets will remain hidden until God, the almighty, decided to make them appear as warnings of his forthcoming wrath or the like. We shall have occasion to return to this point.

As for the shooting stars and their ambiguous relationship to comets, the ambiguity that we have seen in the very terminology of the Akkadian texts where such terms as *bibbu*, *kakkabu* and *šallumu*, for example, could mean both, we find Aristotle himself integrate a similar ambiguity into his own cosmology. In his description of the nature of shooting stars, he says:

¹¹ Aristotle, *Meteorologica*, 39–41.

We have laid down that the outer part of the terrestrial world, that is, of all that lies beneath the celestial revolutions, is composed of a hot and dry exhalation. This and the greater part of the air which is continuous with and below it are carried around the earth by the movement of the circular revolution: as it is carried round its movement frequently causes it to catch fire, wherever it is suitably constituted, which we maintain is the cause of scattered shooting stars.¹²

In essence, shooting stars and comets both originate from within the terrestrial exhalations and thus cannot be used for prognostication in the same fashion planetary spheres could. Though one may then legitimately argue that Aristotle may find room for comets to be used as harbingers of weather predictions, since that is the function of meteorological phenomena, it would be very hard to derive from Aristotle's classification and definition of the nature of comets any rational justification for using them as astrological harbingers of future events as one could do with planets.

Ptolemy's rehabilitation of cometary prognostication

Matters began to change a little, a few centuries later, with Claudius Ptolemy (d. c. 170), the major and arguably the last classical astronomer/astrologer of the Greek tradition. His use of comets for prognostication, in a way reminiscent of the Babylonian tradition we saw before, gave that genre of astrological science a new lease on life. This after it seemed that Aristotle had put an end to it by classifying comets among the meteorological phenomena and not among the planetary celestial spheres that were the mainstay of the astrological sciences. Furthermore, Ptolemy revived cometary prognostications despite his commitment to Aristotelian cosmology which he has amply demonstrated in his two major works, the *Megale Mathematike Syntaxis* – commonly known by its Arabic translation title, *Almagest* – and the *Planetary Hypothesis*. In both these works, the main framework of an earth-centered universe which he tried to justify and match with observations he himself had conducted, along with others he had inherited from earlier observers, reveals an unmistakable interpretation of what Aristotle tried to do in his *Metaphysics* without much success. At times Ptolemy had to make concessions in cases where the physical pre-suppositions of the Aristotelian cosmology could not be perfectly fitted within the empirical data he had gathered. Those concessions were heavily criticized by later generations, especially those working within the Islamic civilization. Recent research has already demonstrated how those critiques were internalized by the astronomers of the European Renaissance and how they had a direct impact on the works of those who finally managed to topple the Aristotelian universe.¹³

¹² Aristotle, *Meteorologica*, 51.

¹³ See this author's book *Islamic Science and the Making of the European Renaissance*, Cambridge, Mass.: MIT Press, 2007, 2011.

But Ptolemy's greatest concession was in the realm of astrology, where he also composed a full-size book divided into four treatises, which became commonly known as the *Tetrabiblos*. In this latter book, to which Ptolemy himself referred as the complementary part to his astronomical works, he laid down the elaborate foundation of what became a full-fledged astrological theory. This theory was perfectly matched with Aristotelian cosmological pre-suppositions – from relying on the planetary role of the celestial spheres in producing all the changes in the world of generation and corruption in the Aristotelian sub-lunar region, to details of how human character was molded by the motions of those spheres.

Where he deviated from Aristotle was in his rehabilitation of comets and other meteorological phenomena as instruments of prognostication. In book II, 9 of the *Tetrabiblos* Ptolemy devotes a chapter to what he called: “*Of the Colors of Eclipses, Comets, and the Like*”,¹⁴ and opens it with the following statement:

We must observe, further, for the prediction of general conditions, the comets which appear either at the time of the eclipse or at any time whatever; for instance, the so-called “beams,” “trumpets,” “jars,” and the like, *for these naturally produce the effects peculiar to Mars and to Mercury – wars, hot weather, disturbed conditions, and the accompaniments of these*; and they show, through the *parts of the zodiac in which their heads appear and through the directions in which the shapes of their tails point, the regions upon which the misfortunes impend*. Through the formations, as it were, of their heads they indicate the kind of the event and the class upon which the misfortune will take effect; through the time which they last, the duration of the events; and through their position relative to the sun likewise their beginning; for in general their appearance in the orient betokens rapidly approaching events and in the occident those that approach more slowly. [*my italics*].

In such words we see the full rehabilitation of comets as prognostic tools, now rationalized fully within the Aristotelian universe, with Ptolemy managing thereby to marry the old prognostications of the Babylonian and classical Greek traditions with the rationalization of the Aristotelian universe. But we cannot escape noticing that according to Ptolemy all cometary indications are in essence negative, predicting maleficent events such as misfortune, wars, famines, hot weather, etc., all features of the combined influence of the two most maleficent planets Mars and Mercury. And in an Aristotelian fashion Ptolemy went on to attribute to easterly comets fast actions and slow ones to westerly ones. But in all cases, with Ptolemy, comets were no longer purely meteorological as was firmly believed by Aristotle.

More explicitly, in a later and probably pseudo-Ptolemaic book called *Centiloquium*¹⁵ which presumed to summarize the contents of the *Tetrabiblos* in one hundred maxims – thus the name *Centiloquium* – we find the hundredth maxim echoing the Babylonian prognostications in the following manner:

¹⁴ Claudius Ptolemy, *Tetrabiblos*, Frank E. Robbins, transl., (Loeb Classical Library, 435), Harvard, Cambridge, Mass.: Harvard University Press, 1940.

¹⁵ Claudius Ptolemy, *Centiloquium*, Aaron Brody, transl., online publication: *Antiquus-Astrology.com*, 2008, §100.

Comets, whose distance is eleven Signs from the [Sun], if they appear in angles, the King of some Kingdom, or one of the principle men of the Kingdom will die; but if they appear in a subsequent House, his treasures are likely to do well, yet shall the King or Kingdom change their Governor; if they appear in a cadent or obscure House, diseases, and sudden death will succeed; if they move from the West to the East, a foreign enemy shall invade several Kingdoms and Countries; if the Comet move not, the enemy shall be provincial.

This language seems as if it was indeed extracted from a Babylonian astrological report, similar to the ones we have seen before.

Ptolemy was not unique in subjecting comets to a prognostic protocol, nor was he the sole representative of what could be understood as a continuation of old Akkadian prognostication traditions. Others from his period also had their own non-Aristotelian vision of the nature of comets, and, unlike Aristotle, did not think of them as simple meteorological phenomena. According to Auguste Bouché-Leclercq¹⁶ classical Greek astrologers thought like the Pythagoreans, who were squarely condemned by Aristotle, that comets either came from deep space and returned to it – a very modern concept – or were fiery lances cast by the planets themselves – and thus partook of the natures of those planets – hence their association with Mars and Mercury and their maleficent effects, as they were seen by Ptolemy, were at least partially justified.

Comets in Islamic civilization and their use for prognostication purposes

Islamic tradition seems to have inherited those conflicting attitudes about the nature and effects of comets that were prevalent throughout antiquity¹⁷. As far as I know, the first person to address the problem of comets in any serious manner was the polymath and philosopher Ya'qūb b. Ishāq al-Kindī (d. 873), who was not only a keen observer of a specific visitation of Halley's comet that lit the skies of Baghdad in 837, but was apparently so inspired by its dramatic appearance as to compose four different treatises on the subject of comets, one particularly devoted to this apparition of Halley's comet. Bio-bibliographical sources, such as the *Fihrist* of al-Nadīm¹⁸ preserve for us the titles of the following treatises, all composed by al-Kindī:

- 1) On the trace (*athar*) that appears in the sky and is called a planet/star (*kaṭkab*);
- 2) On the tasseled-hair star (*kaṭkab al-dhu'āba*);

¹⁶ Auguste Bouché-Leclercq, *L'Astrologie grecque*, Paris: Leroux, 1899, 358.

¹⁷ For a quick preliminary survey of comet observations in Islamic culture see, Edward S. Kennedy, "Comets in Islamic Astronomy and Astrology", in: *Journal of Near Eastern Studies* 16/1 (1957), 44–51, and Bernard Goldstein, "Evidence for a Supernova of 1006", in: *The Astronomical Journal* 70/1 (1965), 105–114, 109 for further bibliography.

¹⁸ Abū al-Faraj Muḥammad b. Ishāq b. al-Nadīm, *Kitāb al-Fihrist*, 'Alī Ṭawīl, ed., Beirut: Dār al-Kutub al-'Ilmiya, 1996, 420.

- 3) On the star (*kaʿkab*) which appeared and was observed for days until it disappeared;
- 4) On the great trace (*al-atbar al-ʿazim*) which was observed in the year 222/837.

Al-Nadim lists all these treatises, together with others, under the subtitle of al-Kindi's books on meteorology that he calls *kutububu al-ahdāthbiyyāt* (his books on meteorological phenomena – echoing the Arabic translations *ahdāth al-jaw* [or *al-āthar al-ʿulwīya*] of Aristotle's *Meteorologica*).

It is most unfortunate that none of those treatises seem to have survived, and only fragments of the last treatise can be gathered together from later citations.¹⁹ But by al-Nadim's general categorization of all these treatises under the heading of meteorological phenomena, and the fragments I could gather together from al-Kindi's last treatise, all speak directly to al-Kindi's firm defense of the Aristotelian position on comets as being only meteorological phenomena and not from the planetary realm. Yet, unlike Aristotle, the surviving fragments, few as they are, allow one to demonstrate al-Kindi's empirical strategy to prove, and not merely posit, that comets belonged to the meteorological realm rather than the planetary. By patiently observing the progress of Halley's comet from one day to the next and noticing that the comet moved so erratically both in longitude and latitude, he reached the conclusion that it did not belong to the super-lunar ethereal region where all motions were regular uniform circular motions that Aristotle himself categorized as divine specifically because of their permanence.

But al-Kindi's position did not seem to have been adopted by his students. In a rare surviving Latin text, claimed to be a translation of one of the works of a certain Shādhān (or Sādān), supposedly a student of Abū Ma'shar (d. ca. 272/886), who was himself a student of al-Kindi, Shādhān claimed to summarize Abū Ma'shar's opinions on astrological matters. On the matter of comets, this book claims that Abū Ma'shar was supposed to have said:

The philosophers say, and Aristotle himself, that comets are in the sky in the sphere of fire, and that nothing of them is formed in the heavens, and that the heavens undergo no alteration. But they all have erred in this opinion. For I saw with my own eyes a comet beyond Venus. And I knew that the comet was above Venus, because its color was not affected. And many have told me that they have seen a comet beyond Jupiter and sometimes beyond Saturn.²⁰

Despite Thorndike's admiration for this relatively modern position on the matter of comets being from the planetary region rather than the meteorological one, it is still difficult to understand how Abū Ma'shar could determine that the comet was beyond Venus on the basis of its color, with no indication that he had any parallax procedure in mind, like what was used later by Tycho Brahe (1546-1601) to determine once and for all that comets were indeed in the planetary region and not merely meteorological. Unless one could think that he may have resort-

¹⁹ See this author's forthcoming article, "al-Kindi als Astrolog revisited".

²⁰ Lynn Thorndike, "Albumassar in Sadan", in: *Isis* 45 (1954), 22–32.

ed to quote the relatively rare occasions where those planets were in conjunction with the comet and they appeared not to be eclipsed by its tail, thus demonstrating that the planets were in front of the comet so to speak, and thus the comet was beyond them.

About a century later, in a slightly incomplete anthological work, called *al-Mughnī fi ahkām al-nujūm*, by a lesser known, but well-read astrologer, a great collector of earlier works named Ibn Hibinta (alive 932), we find both meteors and comets being rehabilitated once more as tools of prognostication. In the second volume of the surviving text, published together with the first in facsimile and repaginated by Fuat Sezgin,²¹ we find a chapter titled: “*On Falling Meteors that are Called Shooting Stars*” (*fi inqidāḍ al-kawākib wa-biya allati tusammā al-shubub*) terms very reminiscent of the Akkadian *maqātu* “to fall.” He opens this chapter with a quotation from Ptolemy’s *Tetrabiblos*, a chapter devoted to foretelling weather-related events, in which Ptolemy spoke directly of forecasting from shooting stars in the following terms:

Rushing and shooting stars, if they come from one angle, denote the wind from that direction, but if from opposite angles, a confusion of winds, and if from all four angles, storms of all kinds, including thunder, lightning, and the like.²²

After this brief quotation from Ptolemy, Ibn Hibinta moves immediately to quote a much longer section, from the work of Dorotheus²³ on shooting stars and/or meteors (all using the expression that could apply to both *idbā inqadḍa kawkabun* = if a star falls, again repeating the Akkadian concept of *maqātu*).²⁴ And that is followed by a similarly longish quotation from the legendary Hermes.²⁵ In both of these sections, which read very much like Babylonian omen texts, the prognostication is elaborate and specific enough, such as:

if a star falls in the west, while Saturn is in Gemini, and in its triplicity as well, good fortune will befall the people of the east, while evil will befall the people of the west [...].²⁶

And from Hermes “if a star falls in the morning, and the sun is in Taurus, wars and tribulations will befall the people of Asia and Egypt.”²⁷

Interestingly enough, this chapter ends with a collection of historical incidents used to prove what Ibn Hibinta believes to have been his own tests of the theo-

²¹ Ibn Hibinta, *Kitāb al-Mughnī fi ahkām al-nujūm* = *The Complete Book of Astrology*. Reproduced from Bayerische Staatsbibliothek München, MS arab. 852 (Publications of the Institute for the History of Arabic-Islamic Science. Series C, Facs. ed., 41), 2 vols. Facsimile, Fuat Sezgin et al., eds., Frankfurt: Institute for the History of Arabic-Islamic Science, 1987, 129.

²² Ptolemy, *Tetrabiblos*, II, 13.

²³ This is Dorotheus Sidonius, for whose work see his *Carmen Astrologicum*, David Pingree, ed. and transl., Leipzig: Teubner, 1976.

²⁴ Ibn Hibinta, *Kitāb al-Mughnī*, vol. 2, 129-132.

²⁵ Ibn Hibinta, *Kitāb al-Mughnī*, vol. 2, 132-134.

²⁶ Ibn Hibinta, *Kitāb al-Mughnī*, vol. 2, 132.

²⁷ Ibn Hibinta, *Kitāb al-Mughnī*, vol. 2, 132.

ries he was quoting. These incidents, mostly falling around the years 929-934 are well documented in historical sources, and they also help determine the time when Ibn Hibinta was alive and conducting his observations. The citations begin with the following statement:

We have tested and examined, in more than one year, that the times when stars fell, and did so continuously in successive nights, from a variety of directions, and in a multiplicity of angles, [most likely meteor showers which happen at least twice a year], those times were usually followed by major consternations that took place, as was the case in the year 290 [902-3 AD] when Badr al-Mu'taḍidi was killed and his reign was ended.²⁸ And in the year 317 [929-30 AD] Nāzūk's incident with al-Muqtadir took place.²⁹ Then in the year 318 [930-1 AD] the upheaval of the infantry took place with all the mayhem that befell them.³⁰ A year after that, the pilgrims were attacked, together with Lu'lu', by al-Hajarī in the morning, in the same day.³¹ We saw many such things but we have forgotten the years in which they took place, so we did not mention them here, except to say that they were always followed by insurrections, the death of a great chief and many people.³²

These historical sightings do not only offer Ibn Hibinta the chance to claim that his prognostication theories have been empirically verified, but also give the reader a chance to locate and contextualize Ibn Hibinta's work itself, welcome information since not much is known about this author. And since most of those events happened during the years of 317-320/929-932 or so, we can safely agree with Fuat Sezgin, who introduced the facsimile edition of Ibn Hibinta's *Kitāb al-Mughnī*, that Ibn Hibinta must have lived during the first half of the tenth century AD, that is, during the turbulent political times of the caliphates of al-Muqtadir (295-320/908-932) and al-Qāhir (295-322/908-934) and may have even outlived both caliphs.

Once Ibn Hibinta laid out the guidelines on how to read the significance of shooting stars, fireballs, and the like, the next chapter in his *Kitāb al-Mughnī* is fully devoted to what he calls "*On Tailed Stars (al-Karwākib dhawāt al-adbnāb)*,"

²⁸ Ibn Hibinta, *Kitāb al-Mughnī*, vol. 2, 133, for this person see Ṣalāh al-Din Khalil Ibn Aybak Ṣafadi, *al-Wāfi bi-l-wafayāt*, vol. 10, (*Bibliotheca Islamica*, 6), Beirut: Orient-Institut Beirut, 1980, 94.

²⁹ This is a reference to the assassination of the Turkish general and Baghdad chief of police Nāzūk during the days of al-Muqtadir (908–932) whose death on 17 Muharram, 317 AH = March 1, 929 AD is extensively documented by al-Khaṭīb al-Baghdādī, in *Tārīkh Baghdād*, vol. 8, Beirut: Dār al-Gharb al-Islāmī 2001, 128. See also al-Muḥsin Abū 'Alī al-Tanūkhī, *al-Faraj ba'd al-shidda*, vol. 1, Beirut: Dār Ṣāder 1978, 226 n.15 and vol. 2, 52–53.

³⁰ This is a reference to the rebellion of the infantrymen of the army who opposed the appointment of the new caliph al-Qāhir (in 932), and freed al-Muqtadir from jail and reappointed him as caliph in 934.

³¹ This is a reference to the famous events that took place in the year 317, as recorded by many historians, of the attack of the Qarmatians on Mecca and the theft of the Black Stone which they took to Hajar in Eastern Arabia for twenty-two years before it was returned. See for example, Ibn al-Athīr, *al-Kāmil fi al-tārīkh*, vol. 7, Beirut: Dār al-Kutub al-'Ilmiya 1987, 53f; Ibn Kathīr, *al-Bidāya wa-l-nihāya*, vol.15, Imbāba [Cairo]: Dār Hajar, 1998, 37f.

³² Ibn Hibinta, *Kitāb al-Mughnī*, vol. 2, 134.

with clear emphasis on the comet's tails – perhaps in deliberate contradistinction to the previously mentioned designation of “*Tasseled-Hair Stars (karōkab dhū dhū'āba)*”, which focused on the comet's head.

Ibn Hibinta opens the new chapter with a clear statement about the nature and location of comets. He started by naming them, saying that they were “seven in number, within the sphere of the sun, hidden under its rays, in accordance with the nature of other planets.”³³ By placing comets within the solar sphere, explicitly above the sphere of the moon, Ibn Hibinta clearly comes very close to the anti-Aristotelian Pythagorean position that removed comets from the earth-bound meteorological region and placed them well in the ethereal one. But in contrast to the Pythagoreans, the fact that they were seven in number also meant that comets did not originate from an endless reservoir of comets in outer space, as the Pythagoreans would have thought, but that there was a finite number of comets, probably analogous to the other seven planets, and thus subject to observation and prognostication like the other planets. This reduced number would allow astrologers to record the effects of each comet and anticipate the impact of their recurrence – provided those comets could be individually identified, their recurrence recognized and interpreted. The very following sentence answers that concern by assigning specific names at least to five of those comets that were then firmly called planets:

[O]ne was called the planet *Ṭayfūr* (probably reminiscent of the ancient Greek comet *Typhon*), another is called *Nayzak* (a name shared with some shooting stars, originally meaning a javelin or an arrow, also reminiscent of classical Greek notions of planets casting the comets as arrows or javelins), and yet another is called *al-'Aṣā* (the Staff), another is called *Dhū al-Lihya* (the Bearded One), and finally one called *Dhū al-Qaṣ'a* (the One with the Bowl).³⁴

Toward the end of that chapter Ibn Hibinta adds prognostication from other comets, not named before. One was called *Fāris* (knight, translating Greek *Hippeus*). Others were called *Miṣbāḥ* (lamp, possible translation of Greek *Lampadidas*), *al-Birjīsī* (after Persian *Birjis* = Jupiter), *Jāriya* (maiden with a marginal note correcting it to *Jābiya*, basin), and finally returns to *Ṭayfūr*, which he then described as “like the devil, ugly, red colored, slow in motion, with backward looking cock's crown.”³⁵

Giving specific names to comets also echoes a tradition that goes back to classical Greek times if not before and that was noted by Leclercq as we just saw. With Aristotle, we find a confused conceptual scheme when, in his attempt to explain comets as dry earthly exhalations, (*Meteorologica* I, 7), he says that when exhalations are produced in a specific way they produce what is called “the beard-

³³ Ibn Hibinta, *Kitāb al-Mughnī*, vol. 2, 134.

³⁴ Ibn Hibinta, *Kitāb al-Mughnī*, vol. 2, 134.

³⁵ Ibn Hibinta, *Kitāb al-Mughnī*, vol. 2, 141-142.

ed” star, thus admitting that his contemporaries knew some comets as “bearded stars,”³⁶ a name here echoed in Ibn Hibinta’s rendering *dbū al-lihya*. Despite that, Aristotle still went further, as if to deny the very existence of an independent category of celestial bodies that could be called comets. As we already saw, to him, all such phenomena were only meteorological and thus occurred haphazardly in the upper regions of the earth’s atmosphere, and are not the same phenomena that tended to go into occultation and reappear. Furthermore, he even tried to narrow the distinction between comets and shooting stars, by saying (*Meteorologica* I, 7): “So we may define a comet as a shooting star that contains its beginning and end in itself.”³⁷ This was not the case with Ptolemy, as we have already seen, who turned this Aristotelian conceptual scheme upside-down and spoke explicitly of comets as prognostication tools and referred to them as “the so-called ‘beams,’ ‘trumpets,’ ‘jars,’ and the like” (*Tetrabiblos* II, 9). This terminology is very similar to Ibn Hibinta’s designations which implies that Ibn Hibinta must have benefited from Ptolemy as one of his major sources.³⁸

In the debate with the Pythagoreans we have seen Aristotle giving an explanation of why comets appear infrequently, by referring to the fact that comets shared this behavior with the planet Mercury, and thus may have originated from an area close to the sun and hard to see in normal times. Ibn Hibinta reiterates this tradition when he says that all the comets he named were hidden under the sun’s rays, and “made to appear when God wished to reveal certain events in some countries. He would make one of [the comets] appear, which would carry the usual indications that ancient scholars (*abl al-ilm min al-awā’il*) had already detailed.” Then in connection with the planet Mercury, he goes on to make the following caveat:

None of [the comets] appear, east or west, while Mercury is under the sun’s rays (*‘utārid mustatir*). Nor do they appear in one direction and Mercury in the other, because they do issue from its (i.e. Mercury’s) side. One of the indications of their appearance is when Mercury is seventeen degrees away from the sun, to the east or to the west, standing in station, ready to move forward.... Some even say that the comet is Mercury itself and appears [as a comet] only after acquiring a tail from the sun.³⁹

³⁶ Aristotle, *Meteorologica*, 5. says: “... and when besides there coincides with it an exhalation from below of suitable consistency; then a comet is produced, its exact form depending on the form taken by the exhalation – if it extends equally in all directions it is called a comet or *long haired star*, if it extends lengthwise only it is called a *bearded star*.” [my italics]. In his other work – although some think it is pseudo-Aristotelian we find other names like Torches, Planks, Jars, and Pits, etc.; *On the Cosmos*, D. J. Furley, transl., (Loeb Classical Library), Harvard, Cambridge, Mass.: Harvard University Press, 1978, 373.

³⁷ Aristotle, *Meteorologica*, 53.

³⁸ For other such names in the classical tradition, see Bouché-Leclercq, *L’Astrologie grecque*, 358f.

³⁹ Ibn Hibinta, *Kitāb al-Mughnī*, vol. 2, 134.

All these references are attempts to explain the relationship between comets and the sun, since their tails always point away from the sun, and their infrequent appearances – like that of Mercury, which is difficult to observe on account of its proximity to the sun. The statement that comets do not appear when Mercury is hidden under the sun’s rays occasioned a marginal comment [Ibn Hibinta, *Kitāb al-Mughnī*, vol. 2, 134, see Figure 2 below] made by a sixteenth century commentator, written with a different hand from the text, in which the commentator claims that he himself had witnessed the appearance of a comet when Mercury was in conjunction with the sun. This marginal note, which was already referred to by Kennedy in his article, “*Comets in Islamic Astronomy and Astrology*,” included observations of four comets altogether, and particularly mentioning a sighting of Halley’s return around the year 1456, which the commentator says he himself witnessed and which he associated with the fall of Constantinople (1453).⁴⁰

After explaining the nature and location of comets, Ibn Hibinta proceeded to give the various opinions regarding their prognostic interpretation. Starting with a quotation from Ptolemy,⁴¹ he paraphrases it thus:

[I]f one of those stars [comets] was of the nature of Mars and Mercury, it would indicate wars, fires, and earthquakes. The places where these take place are indicated by the position along the zodiac where those comets appeared ... Their shape indicates the nature of the event that will take place. Their position with respect to the sun indicates the commencement of the event; for if they appear in the early morning the events will be quick and fast, and if they appear in the evening and at night, the events will be slow and delayed. They are signs that indicate evil and calamities when they appear. Wherev-

⁴⁰ The full text of the marginal remark on Ibn Hibinta’s text says: “Thanks to God whose dominion’s marvels are countless. As for his statement that the tailed stars do not appear while Mercury is invisible, that is hidden under the sun’s rays, nor do they appear on one side and Mercury on the other, that may possibly be true with respect to specific tailed stars whose positions have been verifiably observed, and not to all of them, which are beneath the sun’s sphere. For we have observed [1] the tailed star that appeared during the year of Istanbul’s conquest, which had a strange motion and a long tail. It remained for a period of a month, always northerly in the direction of the land of the Greeks. [This is a citation of the return of Halley’s comet] We also observed a tailed star; [2] with a bright ray and fat tail; during the reign of al-Ashraf Ināl [1453–1461], which had a motion similar to that of the moon. It appeared in the west and continued to move across the zodiac until it appeared from the east in a period of about a month. [probably sightings of comets 1457 or 1459]. We also witnessed [3] at the beginning of the month of Ramaḍān, of the year 876 [= 10 Feb. 1472] a tailed star that was very large, as big as the moon, which had a fat tail, about twenty cubits [in length], and it crossed half the celestial sphere in 15 days. It used to appear towards midnight, and had a strange motion. It appeared from the east and disappeared in the west. Then there appeared [4] a star on the sixteenth of the said Sha‘bān, in the midst of the sky, from the sixteenth of Sha‘bān, and had a long tail, had its own motion, and Mercury was invisible [at the time]. This is contrary to the statement of the author. As for the statement of some that it [the tailed star] is Mercury itself, which gains an elongated tail from the sun, that should be taken with some [caution?]. What I say and believe that there are countless untold marvels in God’s dominion. God is Great. Written by Muḥammad b. Muḥammad al-Raḥḍi, may God be gentle to him. Amen. The end.”

⁴¹ Ptolemy, *Tetrabiblos*, II, 9 last paragraph.

هذه كواكب سبعة في فلك الشمس تحت شعاع
 طبائع الكواكب منها لوب يدعى طيفور
 مستقر بمعنى تحت الشعاع ولا يظهر
 في حرم وعطارد في اقرب نجم
 ان يكون ذلك في بعض ذوات
 الاذنان المرصولة المجرمانا
 تحت تلك الشمس ولقد شاهدنا
 لوب في ذؤنب ظهر في مخرج
 وكان له حرم مجيب ودين لوب
 وانما شهر من الزمان وهو كالي
 مسامت بلاد الريم ورايب
 لوب بدين له شعاع ودين عوفير
 في دولته في انبال وكان له حرم
 كحرم القمر وظهر من الغزير لم يزل
 يمتدح الريح المظهر من الشرق
 في نحو شهر من الزمان ولقد شاهدنا
 في اول كديهان 1767 ظهر كوكب
 ظهر في الريم ودين عوفير نحو
 العسر دراعا وقطوع نصف الفلك
 في لا آتوقا وكان يظهر من نصف
 في الريم وظهر من الشرق واحقر
 في الريم من كوكب يدعى كوكب
 سعدان المذكور في سنة 1768 وكان
 عرسه كان وله ذنب طويلا ولم يفرح
 وكان عطارد مخرق مستقره

Figure 2. Marginal note on Ibn Hibinta's *Mughni*, vol. 2, 134, in which sightings of four comets are reported. See note 40 for translation.

er the head of the comet appears, there evil begins, and wherever it casts its ray, which is its tail, there disasters will appear like starvation, rising prices, fires, upheavals, sickness, and the death of chieftains.

The next authority Ibn Hibinta quotes is none other than the legendary Hermes. Here he quotes Hermes as giving a catalogue of prognostication indicators that depend on the position along the zodiac where the comets appear. For example, Hermes is supposed to have said: "If one of them [a comet] appears in the sign of Aries, it indicates killings and wars among the Greeks (*Rūm*) and Berbers..., in Taurus it effects the people of the region governed by this sign, by way of hard times, plagues, diseases, injustices, enslavement, depression, and calamities..."⁴² and so on to cover all the twelve signs. We shall have occasion to return to this style of prognostication and its effects on later astrologers in both the Islamic and the European contexts.

By the eleventh century, and after the authoritative works of Abū Ma'shar, student and friend of al-Kindī, in the 3rd/9th century, and what we have seen of the work of Ibn Hibinta, in the 4th/10th century, we can claim that astrological theory had matured in the following 5th/11th century to include major works, such as those of al-Birūnī (d. ca. 441/1049) with his comprehensive *al-Taḥḥim li-awā'il šinā'at al-tanjīm*,⁴³ (translated as *Elements of Astrology*), Abū al-Ḥasan 'Alī Ibn Riḍwān al-Maṣri's (d. ca. 453/1061) *Sharḥ al-maqālāt al-arba'a li-Baṭlamyūs*,⁴⁴ (*Commentary on Ptolemy's Tetrabiblos*) and the most famous of all, the work of Abū al-Ḥasan 'Alī Ibn Abi al-Rijāl (ca. 454/1062) *al-Bāri' fi ahkām al-nujūm*⁴⁵ (*The Distinguished [Book] on the Judgment of the Stars*).

Although al-Birūnī's book was devoted to astrological theory, he only used it as an excuse to teach his young female patroness, Raiḥāna, the basics of astronomy, and thus mentions comets very briefly – only saying that they were within the subject of astrology, but did not give any detailed predictions of the type that we see with Ibn Hibinta.

Ibn Riḍwān's commentary on Ptolemy's *Tetrabiblos*, is simply that: a commentary limited to the range covered by Ptolemy, and only makes cursory statements here and there, including some explanatory comments in the context of *Tetrabiblos*, II, 7. It is to his credit that, when he added his own observation of the supernova of 1006,⁴⁶ he only classified it as a *Nayzak*, and did not draw from it any astrological prognostication. This even though he mentioned this supernova right in the bosom of an astrological commentary and gave a detailed horoscope

⁴² Ibn Hibinta, *Kitāb al-Mughni*, vol. 2, 135–136.

⁴³ Al-Birūnī, *The Book of Instruction in the Elements of the Art of Astrology. Written in Ghaznah, 1029 A. D. Reproduced from Brit. Mus. MS Or. 8349*, Ramsay Wright, ed. and transl., London: Luzac, 1934.

⁴⁴ Ibn Riḍwān, *Tafsīr Kitāb al-arba'a li-Baṭlamyūs al-Qalūdbi*, Princeton Ms. Garrett 3517.

⁴⁵ Abū al-Ḥasan 'Alī b. Abi al-Rijāl, *al-Bāri' fi ahkām al-nujūm*, Princeton Ms. Garrett 292Y.

⁴⁶ See Goldstein, "Evidence for a supernova of 1006".

for the time of its appearance, citing all the positions of the planets at the time. Still he said nothing about their astrological significance in that setting.

In the case of Abū al-Ḥasan ‘Alī Ibn Abī al-Rijāl, his book *al-Bārī‘ fi aḥkām al-nujūm*, was aptly translated into Castilian in the 12th century as *El Libro complido en los iudizios de las estrellas* (*The Complete Book on the Judgement of the Stars*),⁴⁷ in which he literally left no astrological topic untouched. But when it came to prognostication from the appearance of comets, he left it till the very end of the book, that is, Book VIII, chapter 41, with the Arabic title: “*Fi inqidāḍ al-kawākib*” (*On the Falling Stars*) – thus bringing forward once more the ambiguity between shooting stars and comets that we have seen above, and echoing once more the Akkadian term “falling”. But the most significant features of this chapter lie in two aspects: One is the chapter introduction, penned by Ibn Abī al-Rijāl; the second the contents of the chapter itself.

After finishing all he had to say about normal astrological subjects Ibn Abī al-Rijāl suddenly notes in the introduction of this last chapter:

Alḥaqtu bādḥā l-faṣl fi kitābi bādḥā ‘indamā ṣaḥḥa li bi-l-tajriba fi maʿwat Ibn Abī al-Ḥusayn wa-Sa‘id b. Khazrūn. Wa-illā fa-kuntu mimman lā yaltafitu ilaihi awwalan, wa-lā yaqūl bi-bi.

I have added this chapter to this book of mine, only when it was confirmed to me (*ṣaḥḥa li*) by experience after the death of Ibn Abī al-Ḥusayn and Sa‘id b. Ḥazrūn.⁴⁸ Otherwise I was one of those who never paid much heed to it at first, nor gave it any credence.

This very short introduction is pregnant with meaning. First it reminds us of the statement that was made by Ibn Hibinta when he claimed to have empirically verified the effects of “falling stars.” As for Ibn Abī al-Rijāl’s belief in the prognostication from comets, it reminds one of the statement of his contemporary al-Birūnī, who spent more than two thirds of his book *Elements of Astrology* teaching his student Raiḥāna about mathematics and astronomy proper. When he reached the section on astrology, the last third, he introduced it with the following statement about astrology:

And now that we have arrived at this point, having noted the terms used in geometry and arithmetic, called attention to the nature of the heavens, shown how to read the

⁴⁷ Aly Aben Ragel [=Ibn Abī al-Rijāl,] *El libro complido en los iudizios de las estrellas*, Gerold Hilty, introd. and ed., Madrid: Real Academia Española, 1954.

⁴⁸ For these two persons, see Hady Roger Idris, *La Berbérie Orientales sous les Zirides X^e-XII^e siècles*, vol. 2, Paris: Maisonneuve 1962, 811, where they are both identified. I owe this reference to my dear friend and colleague Julio Samso of the University of Barcelona who includes this information in his forthcoming book provisionally entitled “On Both Sides of Gibraltar Strait: Studies in the History of Medieval Astronomy in the Iberian Peninsula and the Maghrib.” According to Idris (*La Berbérie orientales*, vol. 1, 74) Ibn Khazrūn died in 991 or 992, a year or two after the appearance of Halley’s comet in 989, while Aḥmad b. Abī al-Ḥusayn, Amīr of Sicily, also known as al-Akḥal, died in 1035/1036 (vol. 1, 170) the year when the 1035 comet appeared. For the dates of these comets see: Gary Kronk, *Cometography: a Catalogue of Comets*, vol. 1, Ancient – 1799, Cambridge [et al.]: Cambridge University Press, 1999.

calendar and to manipulate the astrolabe, and have completed these subjects, it is time to deal with the expressions which astrologers use with regard to the decrees of the stars, and which are of interest to the *querent*. *By the majority of people the decrees of the stars are regarded as belonging to the exact sciences, while my confidence in their results and in the [whole] profession resembles that of the least of them. [my italics]*⁴⁹

Second, this short introduction clearly reflects the tension in the mind of Ibn Abi al-Rijāl when he says that he never gave that kind of prognostication much credence at first, a statement that could be taken to mean that such meteorological phenomena – following the Aristotelian designation for comets – were not of the nature of planets and thus could not be legitimate sources of prognostication. For as per Aristotle it was only the planets and their spheres that were responsible for the world of generation and corruption in the sub-lunar region as we repeatedly saw already. This ambiguous conceptual status of comets may have been why Ibn Abi al-Rijāl's delayed including this chapter until the very end of his book.

As for the contents of the chapter, it sounds very much like the language used by the legendary Hermes as quoted by Ibn Hibinta. It begins thus:

If a star fell from Aries and split the sky and its trace persisted, then the king will die, and there would be a strong fighting in the land of the Byzantines and Babylon. If it fell from Taurus then many cities will be destroyed in the lands of the Byzantines, and a plague will afflict Babylon [...].⁵⁰

Cometology during the Renaissance

It was Clarisse Doris Hellman,⁵¹ and while working only from the Latin sources, including a Latin translation of Ibn Abi al-Rijāl's *Bāri'*, who noted that this last chapter of the work was after all titled *De uisione cometarum* (*On the Appearance of Comets*) in the translation, a characterization that sharpened the ambiguity of the Arabic original which used the terms *Inqidāḍ al-kawākib* (*The Falling of Stars*) as we have seen. But because this very chapter was later quoted in sixteenth-century Latin sources as a separate treatise on comets, she went on to stipulate that there must have been such a treatise in Arabic. And because the author of *Al-Bāri'* was called Abū al-Ḥasan 'Alī, and the author of the commentary on the *Tetrabiblos*, Ibn Riḍwān, who was just mentioned above had the same name, Abū al-Ḥasan 'Alī, confusion in the Latin sources began to be multiplied as to who authored what and when. Not only was there confusion about whether Ibn Abi al-Rijāl intended this last chapter 41 of his book *Al-Bāri'* as an independent treatise on cometology as it was often quoted in the Latin sources, but also whether he or

⁴⁹ Al-Birūnī, *Elements of Astrology*, 210, paragraph 346.

⁵⁰ Ibn Abi al-Rijāl, *al-Bāri'*, fol. 323r = fol. 318 original pagination.

⁵¹ C. Doris Hellman, *The Comet of 1577: Its Place in the History of Astronomy*, New York: Columbia University Press, 1944, 46f.

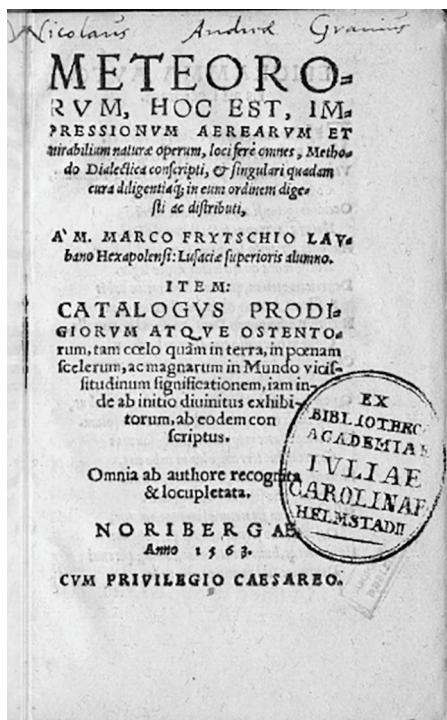


Figure 3. Title page of Marcus Frytschius' *Meteororum*, fols. 1-180, published in Nuremberg in 1563, which also announces the second section called *Catalogus prodigiorum*.

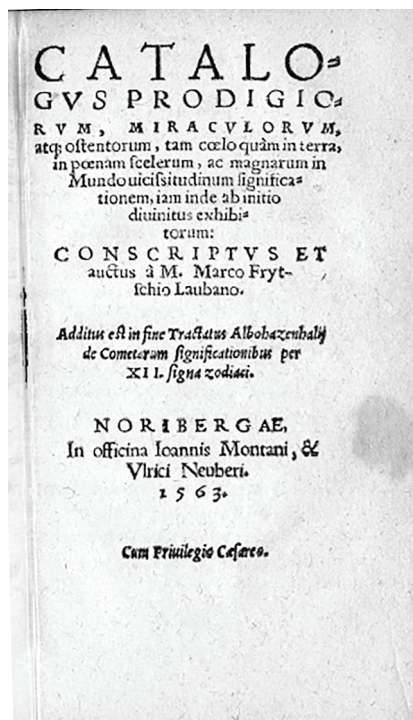


Figure 4. Title page of Marcus Frytschius' *Catalogus Prodigiorum*, published in Nuremberg, in the same year 1563. Note the announcement on this title page of the appended text titled *Additus est in fine Tractatus Albobazembalij de cometarum significationibus per XII. signa zodiaci*.

Ibn Riḏwān was the author of the treatise, since the Latin sources render both their names as Haly and/or Hali or even Aly.

Now there is a famous sixteenth-century book on prodigious events, called *Catalogus Prodigiorum Miraculorum*. This book was published in Nuremberg in 1563 as a separate section of another book on meteorology, called *Meteororum, hoc est, impressionum aerearum et mirabilium naturae operum loci fere omnes, methodo dialectica conscripti, et singulari quadam cura diligentia'q; in eum ordinem digesti ac distributi*, by Marc Frytschius (Figure 3).

This second section of the *Meteororum*, had its own separate title, namely, *Catalogus Prodigiorum*, and also had different pagination (Figure 4).

But on the title page of the second section, Figure 4, there was an announcement to the effect that this section which contained the *Catalogus Prodigiorum* was to be followed by a treatise called “*De cometarum significationibus...*” by the ambiguous author simply called Albohazenhali. Those who satisfied themselves

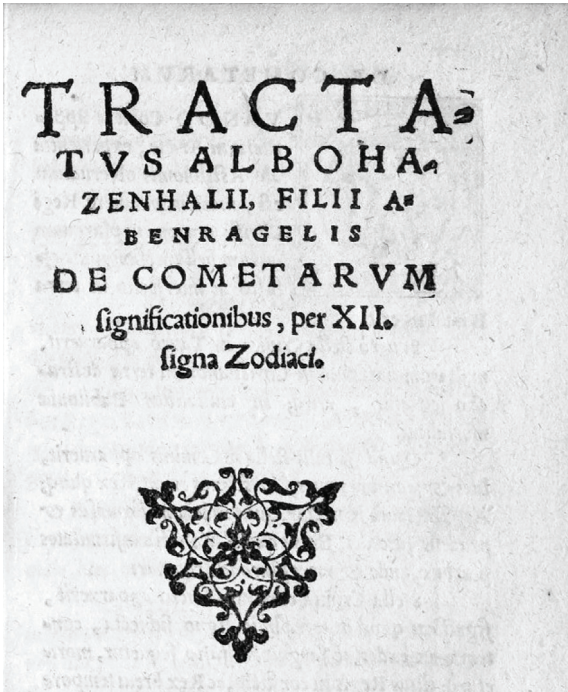
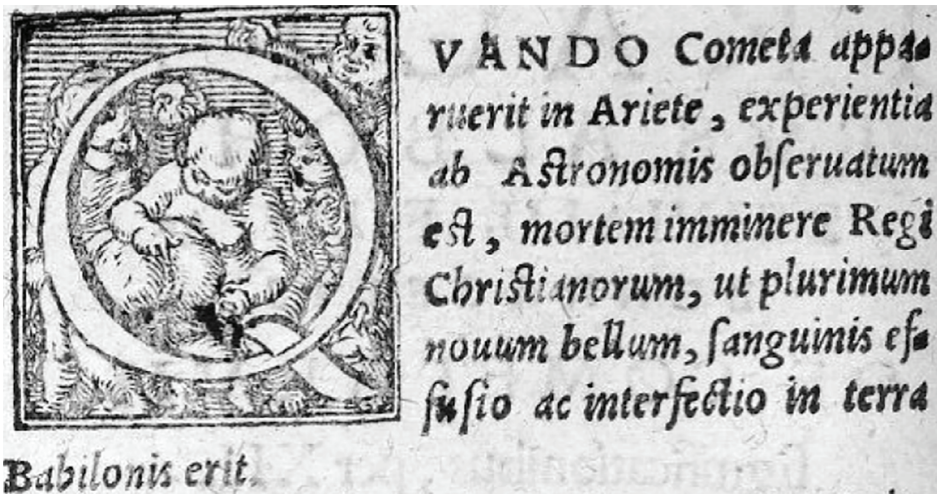


Figure 5, title page of the treatise de *Cometarum significationibus per XII. Signa Zodiaci*, where the author is clearly noted as Albohazhenhalii, filii Abenragelis, followed by the incipit page.



with only reading this announcement went on to assume that the said author was Abū al-Ḥasan ‘Ali [Ibn Riḏwān], and not Abū al-Ḥasan ‘Ali [Ibn Abī al-Rijāl], whose name is indeed spelled out on the title page of the said treatise *De cometarum*, as we see in Figure 5. Here on the front page of the treatise itself the Latin text clearly identifies the author as Albohazhenhalii filii Abenragelis, that is, Abū al-Ḥasan ‘Ali Ibn Abī al-Rijāl.

The contents of the treatise, with its incipit “*Quando cometa apparuerit in Ariete...*” leave no doubt that the said treatise is in essence a translation of the last chapter 41 of *al-Bāri*’.

Modern historians of science added to the confusion by relying heavily on catalogues and title pages rather than reading the books they were documenting. We find, for example, in the often-quoted critical bibliography of Francis Carmody, *Arabic astronomical and astrological sciences in Latin Translations*,⁵² the same treatise *De Cometarum*, attributed to both, Ibn Abi al-Rijāl, p. 152, and Ibn Riḍwān, p. 156, and in both cases referring to the *Catalogus Prodigiiorum of Marcus Frytschius* of 1563 as his main source for this treatise, and in both cases quoting the same incipit. As if this was not sloppy enough, on page 156, where Carmody lists this treatise among the works of Ibn Riḍwān, he not only quotes Frytschius’ catalogue as his source, but adds to it the reference “Houz. 3874,” presumably meaning the 1887 *Bibliographie Générale* of Houzeau.⁵³ But item 3874 of that Bibliographie not only cites Albohazen Halius Aben Ragel as the author of this treatise, and the *Catalogus prodigiiorum* as the main publication source, Houzeau volunteers to say that the treatise was a Latin translation from Arabic but that the original Arabic is unknown “l’original arabe n’est pas connu.”⁵⁴ We now know that Houzeau’s statement was in one sense false since the treatise was simply the translation of chapter 41 of *al-Bāri*’, but on the other hand it was only partially true in the sense that there was no such independent treatise with that title in Arabic. And there is no mention of such a treatise under the works of Ibn Riḍwān, whose other works, like the commentary on the *Tetrabiblos*, was well acknowledged by Houzeau.

This sloppy scholarship was apparently started by Carmody in the middle of the last century. Frytschius should also bear part of the blame for lifting this chapter from the Latin translation of Ibn Abi al-Rijāl’s *Kitāb al-Bāri*’, and publishing it as a separate treatise appended to his work on meteorology. But the sloppiness did not stop there, nor did it remain restricted to such esoteric books as Frytschius’ and Carmody’s. The attribution of the treatise on comets, *De Cometarum* to Abū al-Ḥasan ‘Alī Ibn Riḍwān has by now spilled over to reach such popular electronic sites as Wikipedia, Muslim Heritage, and many others. Wikipedia, for example, takes it for granted when it lists among the works of Ibn Riḍwān the following item: “*Tractatus de cometarum significationibus per xii signa zodiaci* (Treatise on the Significations of Comets in the twelve Signs of the Zodiac), printed in Nürnberg (1563).”⁵⁵ And once the attribution was sloppily confirmed by Wikipedia, without any serious investigation, which is unfortunately in the

⁵² Francis Carmody, *Arabic Astronomical and Astrological Sciences in Latin Translation: A Critical Bibliography*, Berkeley: University of California Press, 1956.

⁵³ Jean-Charle Houzeau and Albert Lancaster, *Bibliographie générale de l’astronomie*, 2 vols., Bruxelles: F. Hayez, 1887-1889.

⁵⁴ Houzeau and Lancaster, *Bibliographie générale de l’astronomie*, vol. 1, 709.

⁵⁵ https://en.wikipedia.org/wiki/Alī_ibn_Ridwan, accessed Oct. 22, 2016.

nature of most of what goes on into such ‘democratic’ knowledge sites these days, sloppiness continued to spill over into other sites. On the Muslim Heritage site, where there is a short synopsis identifying Abū al-Ḥasan ‘Alī Ibn Riḍwān, one finds the following statement: “Among his works: *De revolutionibus nativitatium* (*The Revolutions of Nativities*), edited by Luca Gaurico, printed in Venice (1524); *Tractatus de cometarum significationibus per xii signa zodiaci* (*Treatise on the Significations of Comets in the twelve Signs of the Zodiac*), printed in Nürnberg (1563).” It is now very hard to put a stop to such a confusion and set the record straight. But that too is regrettably in the nature of modern internet ‘knowledge.’

Arabic cometary theories in pre-modern times

Although we can now independently determine that the so-called *Tractatus de cometarum significationibus per xii signa zodiaci* is but a translation of the last chapter from the work of Ibn Abī al-Rijāl, and not a separate treatise as it was quoted in the Latin Renaissance, this does not mean that such elaborate, free-standing treatises did not exist in the Islamic tradition. I have so far located two such treatises, composed during the latter half of the seventeenth century, by one ‘Abd Allāh al-Maqdisi al-Ḥanbali,⁵⁶ who was obviously descended from a Jerusalemite family, and apparently lived in Egypt. Both treatises were occasioned by the appearance of real comets⁵⁷. The first was sighted in the year 1668,⁵⁸ which occasioned the first treatise called *Tuhfat al-albāb fi bayān ḥukm dhawāt al-adhnāb*. The second comet appeared in 1695,⁵⁹ which gave rise to another treatise, entitled *Ithāf dhawī al-albāb fi dhawāt al-adhnāb*.⁶⁰

⁵⁶ Little is known about this author. He is mentioned by Khayr al-Din Zirikli, *al-A‘lām. Qāmūs tarājim li-ashbar al-rijāl wa-l-nisā’ min al-‘arab wa-l-mustasbriqin*, vol. 4, Beirut: Dār al-‘Ilm li-l-Malāyin 2002, 70, as the author of one of the two treatises mentioned here, but with the wrong dates. See also Carl Brockelmann, *Geschichte der arabischen Litteratur*, 3 vols. and 2 Suppl. vols., Leiden: Brill 1898–1939, Suppl. vol. 2, 486, where he is mentioned as living around 1669, which should be corrected to 1695.

⁵⁷ Both of the comets of 1668 and 1695 are classified in the literature within a group of comets known as the Kreutz comets because they passed close to the sun, and thus also called sungrazing. They are also supposed to have been parts of an original comet that first appeared in 1106 and split off then. See, for example, Ichiro Hasegawa and Syuichi Nakano, “Possible Kreutz Sungrazing Comets Found in Historical Records”, in: *Publications of the Astronomical Society of Japan* 53 (2001), 931–949.

⁵⁸ This comet first observed by the author al-Maqdisi on February 24, 1668, is well documented in the literature, and elaborately described by the likes of Alexandre Pingré, *Cométographie ou traité historique et théorique des comètes*, vol. 2, Paris: Imprimerie Royale, 1784, 22–23 and others.

⁵⁹ This comet is also well documented in the literature, and often referred to as a Southern comet because it was mainly geographically observed from places in the Southern hemisphere like Brazil, Cape of Good Hope, and India. See Pingré, *Cométographie*, 33–35. It was first observed by al-Maqdisi on the 30th of October 1695.

⁶⁰ Copies of both manuscripts are accessible from the digitalized collection of Michigan University.

ومن سدة ذلك لا يثبت لظن الانسان ولا يستطيع النظر اليه وفيه شبهة تماثل انسانا وحيث يطلع هذا الكوكب
 بهذه الصفة ويشرح شعاعه يدل على الخبز والخصب في الكون كده وخاصة في الاقليم الذي يطلع فيه ولا سيما اذا كان
 المشتري في السرطان او في العقرب وفي الخوت فانه لخصب كثير والامور تدبها والمساخنة بين الناس واليسر وتكونت
 الاثر في عند الروسما
 محبوبين مكرهين يفتيل
 توهم وينظر الملك بالعدل
 وفذ ذكره العلي البلبون
 معنى في ظهور شعاع هذا
 الكوكب خصوصا في النواحي
 التي يفضلا بها بد واتبه
 من موضع كان اما شرقا
 او غربا او شمالا او جنوبا

القصة

فتعالوا ان معنى هذا الكوكب في خلاف
 معانيها طريا وقصلا وهذا في ولاية
 من دلايا الكوكب كلها على اهلها
 وما فيها من السرور والهم فقول ذلك
 انها كلها دل على الله والسرور والهم
 والخرق والقطر والزلزال والاضواء
 والخرق والقطر والزلزال والاضواء
 الا هذا الكوكب فانها في كل عام
 في ذلك قول يطالعون الذي لم يفصل بينه
 وبين غيره بل قال ان هذه الكواكب في واحد
 وانها لا حاد منها على قدر الصور والصور
 التي تخرجها وهذا صحتها معنى قاله
 البلبون ويخرج من كبره ان الكوكب واحد
 منهم يخرج حصلت له اصلا فيقول ان
 لا يعمل بما قالوا باعتبار ما حصل من
 التجربة في ذلك الا ان لان التجربة
 في ذلك لانهم ما ذكرها من
 دل عليها فهي
 من التجربة
 فهو اصل
 في ذلك يرجع اليه وصورته تقدمت
 في اول هذه القصيدة انظر تجده
 ص ٥٥

واما الكوكب المسمى بالقصعة فهو رجل ولونه لون
 رجل صفرة ليسوا اذ وهو مدور وله شعاع في اسناده عطينة ولهم هيب
 شديد وله ذوايب صفراء تمتد منه ولا تبعد عنه بعدا كثيرا فاذا ظهر
 هاجح الفتل والغنم والحروب والاختران في كل بلد وموت ملوك يكونوا
 عظاما وقوم من اولادهم وخاصة هم وهم الحروب في المدن والضياح والسواحل
 ونواحي القبلة وفي الاكابر وان هذا الكوكب ظهر عند هلاك قوم نوح
 ومن غيرهم ان هلاكهم كان عند طلوع هذه صورة واما الكوكب المسمى
 بالجهة اذا ظهر في وند من اوتا دولة مات الملك وعظيم من عظامه
 ودولته وان كان مما يلي وندا اصلحت الحسار والرجال عليه وان كان
 ساقط عن لونه ابا البقصة والشمس في الارض بين الناس وكات
 اكثر الموت في امة وحكى الناس في ذلك في الدماغ والعقل والمال والربك
 الاقليم فانه يخرج ملك على ملك ويخرج عليه خارج فان غاب فقد
 اضحل الخارجي وان اوقدا وقام ففد جمع وهو على ما هو عليه وان سار
 بسيره يكون من المغرب الى المشرق ويكون من كوسا ففد صا الخارجي
 وهو ناي عن ذلك الاقليم وان لم يسرف ان الخارجي محض الى الاقليم الذي
 طلع فيه وهو منه وعلى هذا فاذا ظهر نجم من ذوات الاذنان وكذلك
 اذا كان هناك خارجي قد ظهر فانه ان مكث هذا الكوكب دل على مكثه
 وان ذهب واضحل ذهب ذلك الخارجي واضحل امره وتسن على ذلك
 كما اشترى اليه ونهنا عليه في فائدة جلييلة وتكذبة لطيفة فاعرف
 قدر ما وصل اليك وهذه صورته واما الكوكب المسمى بالمرور فقيه
 نور يبدق قليلا دون صاحبه ولونه كونه الذهب اذا امتزج بالقصعة
 وهو عظيم ويسمى كوكب الجارية الرعنا وله وجه كوجه الانسان يعلوه
 صفرة وشعاعه موضع الراس منه وهو حلو المنظر حسن بروق المنظر
 فاذا

Figure 6, page 20, from the *Tuhfat al-albāb*, with a marginal note illustrating the types of comets and their indications (courtesy of Michigan University).

Both of al-Maḳḍisī's treatises were written at the request of high dignitaries who asked him to explain the meaning of the comets just observed. With the first treatise, the *Tuhfa*, al-Maḳḍisī says that he was asked by some of the venerable ones (*ba'd al-kirām*) to explain and settle the disputes that had arisen on account of the 1668 comet and determine its importance. In this first treatise, there is also mention of another appearance of a comet in 1681 and/or 1682 (p. 16) which was probably a return of Halley's comet that was observed earlier by al-Kindī in 837. And as he did with al-Kindī's observation, al-Maḳḍisī used this new sighting to simply affirm that such phenomena were natural and made no predictions related to that new comet since apparently no one asked him to do so, nor did he seem to have written a separate treatise for it. The second treatise, the *Ithāf*, was composed at the request of Ismā'il Pāsha (1106-1125/1695-1697), the Ottoman governor of Egypt during the reign of Sulṭān Muṣṭafā II. (1106-1115/1695-1703) and at the time when the 1695 comet appeared. At this time Ottoman forces were involved in extensive campaigns in Eastern Europe, which obviously heightened the anxiety about the meaning of these comets.

In both cases, al-Maḳḍisī, takes a peculiarly ambiguous position. On the one hand he insisted that those comets were simply meteorological phenomena, just as Aristotle had said – and Ptolemy with some ambiguity after him. One would thus imagine that they do not have the same planetary influences astrologers would use for prognostication since they did not belong to the world of the planets. Al-Maḳḍisī even went so far as to cite the book of the Arab philosopher al-Kindī (d. 256/871), who had himself observed Halley's Comet in 837, as we have already stated, and had also concluded that the comet was just a meteorological phenomenon on account of its erratic motion, which in no way resembled the motions of celestial bodies.

But on the other hand, al-Maḳḍisī still cited both Aristotle, who had conceded that even meteorological phenomena can be used for prognostication because of the continuity between the influences of the planets on the sub-lunar region through the stirring up and agitation of the world of the elements engulfing the earth, and a citation of a *ḥadīth* from the prophet, which urged such meteorological prognostication. In the *Tuhfa*, p. 6, al-Maḳḍisī quotes the prophet to have said: "if you see a red column [in the east] during the month of Ramaḍān, then conserve your food supplies for that year as it will be a year of hunger."⁶¹ He then added to that a citation of the famous Qur'ānic verses (Q 37:88-89) which say of Abraham that "he glanced a glance at the stars, and said: Lo! I am sick!"⁶² The citation seems to imply that Abraham was interpreting the stars at the time, and

⁶¹ The *ḥadīth* is indeed reported by al-Ṭabarānī in his 'Middle Dictionary', *al-Mu'jam al-awsat*, Al-Qāhira: Dār al-Ḥaramain 1995, 119, no. 371, but adds: "from the east" to say "if you see a red column from the east during the month of Ramaḍān, [...]" [my translation]

⁶² Marmaduke Pickthall, *The Meaning of the Glorious Qur'an*, 2 vols., Hyderabad: Osmania Oriental Publication Bureau, 1981, continuous pagination, 591.

thus was a believer in their indications, when he said that 'he was sick' only to avoid honoring the stars themselves as his people worshiped them. This interpretation's first implication is heavily disputed in Islamic tradition. In fact, there is another often-quoted prophetic *ḥadīth* which recounts that statement of Abraham as being one of Abraham's three lies, the other two being when he referred to his wife Sara as his sister, and when he was asked who broke the idols, and he responded that it was "the biggest of them who did it" (Q 21:63) when in fact it was Abraham himself who smashed the idols and only left the "big one" undisturbed.⁶³

But al-Maḡḍisī insists and adds further references to both al-Shāfi'ī (d. 204/820) and Mālik b. Anas (d. 179/796) as having interpreted celestial phenomena as well, and made predictions based on their observations, thus making them believers in such interpretations as well. Al-Maḡḍisī concluded this section of the *tuḥfa*, with a general defense of the "knowledge of the stars" by arguing that such knowledge was useful for religious practices since it required extensive computations, among which is the knowledge of the times of prayer and the like, requirements that depended on knowledge of celestial phenomena.

Lest that should be understood that predictions from celestial or meteorological phenomena would lead to a belief in the determinism of the judgment of the stars, which was religiously unacceptable, al-Maḡḍisī interjects at one point that the verse about Abraham and his sickness, "urges one to investigate such phenomena in the manner that stipulates that they were ordained by God's custom and thus there was no harm in believing in such a custom, for to God alone belongs the power to break customs (*kharq al-'awā'id*)."⁶⁴ Al-Maḡḍisī seems to argue that the mere appearance of celestial or meteorological phenomena may even be used as customary signs used by God to forewarn people of future events, as was already stated by Ibn Hibinta. Deriving predictions from them is thus just as commendable as reading God's signs (*āyāt*) in the universe in order to deepen one's knowledge of God.

Still, the main argument in both treatises is that such phenomena were only meteorological and thus could not really be taken as indications of future events in the same way planets could. His general message then is, in the first treatise, to calm people's fears about the appearance of the two comets of 1668 and 1680 mentioned in that treatise, and to assure Ismā'il Pāsha in the second treatise that the comet portends good tidings for the Ottomans who were engaged in wars at the time and that they would be victorious. But if one wished to follow the religious traditions that he had identified as allowing such prognostications, then one can find in each of the two treatises long sections detailing the implications

⁶³ See for example, *Ṣaḥīḥ al-Bukhārī*, vol. 4, Chapter 60.8 - *kitāb al-anbiyā'*, Riyāḍ: Markaz al-Dirāsāt wa-l-ʿIlām, 1979, 110.

⁶⁴ Al-Maḡḍisī, *Tuḥfat al-albāb*, 6.

of each comet when it appeared in such-and-such a zodiac sign, just as was done by Ibn Abi al-Rijāl, but without necessarily using the same predictions as Ibn Abi al-Rijāl.

Conclusion

In this quick survey, I hope to have made the point that prognostications from comets had a long pedigree dating all the way back to ancient Babylonia. The crucial issues that were debated concerned the nature of the comets themselves, and whether they were meteorological phenomena, as Aristotle stipulated, and thus disqualified from having the same influence as the planets on the world of generation and corruption. Aristotle allowed some prognostication from comets, but limited to such predictions as rain, storms, heat waves, etc. – all restricted to the meteorological realm, since comets themselves originated from the dry exhalations from the earth that were sparked into fire when they reached the upper realms of the atmosphere, close to the uppermost sphere of fire. It was Ptolemy, and his medieval followers who attempted to wed the Babylonian omen-type prediction to the rationalization of Aristotle and build a system through which Astrology could have an Aristotelian philosophical and mathematical basis. Astronomers and astrologers of the Islamic tradition fell between the two camps, the Aristotelian – denying the planetary qualities of comets – and the Ptolemaic who used Ptolemy, Hermes, Dorotheus and many others to treat comets as forewarnings and thus indicators either of the climatic conditions that could foretell of storms, famines and the like, or as celestial bodies hidden under the sun's rays, revealed at times by God to forewarn people of future events. In the latter case they could very well be used for prognostication.

In general, the major astronomers/astrologers of the classical Islamic period like Ibn Riḍwān, al-Birūnī, and Ibn Abi al-Rijāl seem to have shied away from such prognostications, and only Ibn Abi al-Rijāl indulged himself at the very end of his book when he added a chapter on comet prognostication. That chapter was apparently well received in the Latin West, and was treated as a separate treatise which generated a confused tradition as to the authorship of that treatise. The mere coincidence of having many people in the Islamic world, called 'Alī, also calling their first sons Ḥasan – following the example of the venerable 'Alī Ibn Abi Ṭālib – thus all becoming in the Latin transcriptions Albuhasan Hali/y caused tremendous confusion concerning authorship, a confusion that spilled into contemporary electronic sources and has become impossible to stop.

The two bona-fide treatises devoted to comet prognostication that were included in this study came from the seventeenth century, and while in both of them the author did not believe that comets could be used for prognostication as planets were, he still went ahead and composed two treatises foretelling only positive outcomes from the appearance of comets. The final twist he added to

his treatment of the significance of comets was to include Qur'ānic and *ḥadīth* statements that seem to encourage prognostications from such phenomena, thus allowing himself to calm his audience and uproot from their minds all the traditions about comets being only harbingers of doom and destruction that seem to have persisted since antiquity.

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Predictions of ‘Natural’ Disasters in the Astro-meteorological *Malḥamah* Handbooks

Kristine Chalyan-Daffner

Introduction

When explaining the causes of natural disasters, pre-modern Arab authors integrated different interpretations into the narrative of their works. Hence, the most striking feature in the discussion of the causes and effects of natural disasters is the mixing of astro-meteorological and physical explanations with a wealth of knowledge taken from religious and literary works. This chapter explores – as one interpretative model – predictions of natural disasters located in the astro-meteorological *malḥamah* texts, which show decisively that natural hazards – triggers of disasters on earth – originated in the heavens. My chapter examines to what extent the ideas expressed in this kind of literature reflected the social needs of *Mamlūk* Egypt. Detailing this process, I also trace the transmission of the ideas expressed in these texts and reveal the motives behind their composition. The objective is thus not only to highlight the intricate entanglement of cultural flows and historical agencies that culminated in the production of a huge number of *malḥamah* manuscripts but to demonstrate their importance to the society and period. As such, I attempt to demonstrate the action of historical and intellectual currents and their impact on, and place in the world.

Development of the malḥamah genre

Building an understanding of the role of *malḥamah* handbooks requires an introductory explanation of the term *malḥamah* itself and its development in several Arabic literary genres. *Malḥamah* is an Arabic word, probably of Hebrew or Aramaic origin, imbued with a number of meanings. In pre-Islamic times, the word *milḥamōt* referred primarily to the Wars of the Lord, the Wars of Yahweh (Old Testament, Samuel 1, 18:17; 25:28) as illustrated in the *Tanakh* (Hebrew Bible, *The Book of Bamidbar* [Numbers], Chapter 21:14 and *Shmuel I* [Samuel I], Chapter 25:28), or to other disastrous events that were thought to take place before the End of Days.¹

No consensus exists regarding when and under what circumstances this elusive concept developed in ancient Israel. The content of the above-mentioned

¹ Haggai Ben-Shammai, “Saadia’s Introduction to Daniel: Prophetic Calculation of the End of Days vs. Astrological and Magical Speculation”, in: *Aleph* 4 (2004), 11-87, here: 16.

Biblical verses is not self-explanatory either. However, there is common agreement that this notion in the *Tanakh* refers to God's wars on behalf of Israel as described, for example, in the book of *Devarim* [Deuteronomy]. This usage best exemplifies the interpretative expression of these 'holy wars', in which God is depicted as fighting for the people of Israel. He helps them protect their national unit and territorial inheritance.²

The prominent Arab lexicographer Ibn Manẓūr (d. 711/1311–2)³ defines *malḥama* pl. *malāḥim* (ملحمة/ملاحم) as 'a great slaughter, battle, war' (*al-waqf at al-ʿazīmah, al-qatl, al-ḥarb*) with many casualties,⁴ and it is seen to belong to the semantic field of the word *lahm* 'meat, flesh', which automatically evokes the metaphorical association of corpses lying in fields of battle. Occasional references in Arab chronicles⁵ also attest to this meaning. In fact, a series of traditions (*ahādīth*) from the end of the Umayyad period (the mid-eighth century A.D.),⁶ reveal the general nature of this old concept, at least in its initial stage. In these traditions,⁷ *malāḥim* were overwhelmingly associated with Arab-Byzantine wars (seventh–eleventh century A. D.) in Syria.⁸ The connection with these specific wars in the formative period of Islam was so exclusive that *malāḥim* became almost synonymous with these wars in *ḥadīth* compilations. Some of the traditions mention that these conflicts were to end with the conquest of Constantinople, which would be the last major eschatological event preceding the appearance of *al-Dajjāl* (the Antichrist) and the sign of the 'hour' before the end of the world.

² See more references to the spectrum of the "holy war", its meaning and function in the Hebrew Bible in Reuven Firestone, "Conceptions of Holy War in Biblical and Qurʾānic Tradition", in: *Journal of Religious Ethics* 24/1 (1996), 99–123, here: 102–107.

³ Johann Fück, "Ibn Manẓūr", in: *The Encyclopaedia of Islam*, 2nd ed., vol. 3, Leiden: Brill 1965, 864.

⁴ Ibn Manẓūr, "*Malḥama*", in: *Lisān al-ʿArab*, vol. 3, Bayrūt: Dār Lisān al-ʿArab 1988, 352.

⁵ Al-Maqrīzī, *Kitāb al-sulūk li-maʿrifat dīwān al-mulūk*, S. ʿĀshūr, ed., vol. 4, 2, al-Qāhirah: Maṭbaʿat Dār al-Kutub 1972, 649. ʿAbd al-Bāsiṭ Ibn Khalīl, *Nayl al-amal fi dhayl al-dīwān*, ʿU. Tadmuri, ed., vol. 2, 6, S aydā: al-Maktabah al-ʿAṣriyah 1422/2002, 27, 337 and vol. 2, 8, 78.

⁶ Ben-Shammai, "Saadia's Introduction to Daniel", 17.

⁷ See the source references to these traditions in Suliman Bashear, "Apocalyptic and Other Materials on Early Muslim-Byzantine Wars: A Review of Arabic Sources", in: *Journal of the Royal Asiatic Society*, 3/1/2 (1991), 173–207.

⁸ Ibn al-Munādī, *al-Malāḥim*, ʿA. al-ʿUqayli, ed., Dimashq: Dār al-Sirah, 1997, 132f. There are some traditions in which other wars in early Islam are also called *malāḥim*. These are 'four *malāḥim*' of paradise on earth, referring to the battles of *Badr*, *Uḥud*, *al-Khandaq*, and *Khaybar*, headed by the prophet; Bashear, "Apocalyptic and Other Materials", 205. Some other traditions differentiate between the "small" and the "great *malḥama*", Bashear, "Apocalyptic and Other Materials", 184, 186 and even between five *malāḥim*. "The two have elapsed and there remain three: the *malḥama* of the Turks in the *Jazīra*, the *malḥama* of the *Aʿmāq* and the *malāḥim* of *al-dajjāl* to be followed by no other *malḥama* [...]."; Bashear, "Apocalyptic and Other Materials", 189.

Later this concept, referring specifically to 'Arab-Byzantine wars' and perceived as apocalyptic, extended its denotation,⁹ and acquired in the Arabic literature the meaning of 'prediction, eschatological prophecy, apocalypse, vision of the future.'¹⁰ Beginning in the early Islamic period, these two variations of the word's meaning – 'malḥamah as an apocalyptic war' versus 'prediction'¹¹ – became distinguishable in at least three literary genres or group of texts, all known as *malḥamah*. For reasons of clarity, the first is called the *malḥamah* heroic poem, which is a collective name of seven classical Arabic poems;¹² the second is usually called the apocalyptic *malḥamah* of pseudo-historical character,¹³ which contains predictions about the duration of the world and Islam, the fate of individuals, dynasties,¹⁴ nations and kings,¹⁵ and is usually associated with the literature announcing the approach of the *Mabdi* ("the rightly guided").¹⁶ Under consideration here are the third group of texts, which I call the astro-meteorological *malḥamah* handbooks, which prophesy wars and other disastrous events.

Methods of prediction used in the astro-meteorological malḥamah handbooks

These highly structured handbooks present both disastrous and non-disastrous events as being dependent upon three types of phenomena – geophysical, astro-meteorological, and hydrological – which were perceived as signs (*āyāt*) or portents (*dalā'il/dalālab/alāmah*) of things to come. To the group of geophysical phenomena belong predictions derived from the occurrence of earthquakes. In the second group of signs we can differentiate between astral and meteorological phenomena, such as the appearance of certain stars and comets observed in relation to the zodiacal signs and planets; the occurrence of solar and lunar eclipses

⁹ Ibn al-Dawādārī, *Kanz al-durar wa-jāmi' al-ghurar*, Ulrich Haarmann, ed., vol. 8, al-Qāhirah: al-Ma'had al-almāni li al-Āthār bi-al-Qāhirah, 1971), 275. Ibn Khaldūn, *The Muqaddimah. An Introduction to History*, Franz Rosenthal, transl., vol. 2, London: Routledge & Kegan Paul, 1958, 219–220.

¹⁰ Ben-Shammai, "Saadia's Introduction to Daniel", 16.

¹¹ Fahd, "Malḥama", 247.

¹² Michael Kreutz, "Sulaymān al-Bustānis *Arabische Ilias*: Ein Beispiel für arabischen Philhellenismus im ausgehenden Osmanischen Reich", in: *Die Welt des Islams* 44/2 (2004), 155–194, here: 162.

¹³ Fahd, "Malḥama", 247. This kind of *malḥamah* often has a moral core and is associated with literature propagating the approach of the *Mabdi* ("the rightly guided"). Barbara Langner, *Untersuchungen zur historischen Volkskunde Ägyptens nach mamlukischen Quellen*, Berlin: Klaus Schwarz 1983, 92.

¹⁴ Ibn Khaldūn, *Muqaddimah*, vol. 2, 209.

¹⁵ Al-Birūnī, *The Chronology of Ancient Nations: an English Version of the Arabic Text of the Athār-ul-Bākiya of Albīrūnī, or, 'Vestiges of the Past', Collected and Reduced to Writing by the Author in A.H. 390–1, A.D. 1000*, E. Sachau, ed. and transl., London: Allen & Co., 1879, 84f. Eva Orthmann, "Astrologie und Propaganda. Iranische Weltzyklusmodelle im Dienst der Fātimiden", in: *Die Welt des Orients* 36 (2006), 131–142.

¹⁶ Fahd, "Malḥama", 247.

as well as lightning, winds and storms. To the last group belong predictions derived from hydrological irregularities, related in particular to the Nile and its annual flow. In all the predictions, the calendar (Coptic, Muslim, and Gregorian) plays an important role. With some variation, these signs or methods of prediction appear in most astro-meteorological texts in the *malḥamah* handbooks.

Structure and content

With regard to the structure of the *malḥamah* handbooks, all predictions share the same outward form, developed from the Assyrian-Babylonian omnia portents. Its opening consists of *if-then* clauses that described the relation between hypothetical causes and their effects: *If* something happens at a specific time, *then* disastrous events such as floods, droughts, earthquakes, famines, epidemics, and wars,¹⁷ or non-disastrous events like prosperity, good harvest, profit for the merchants are to be expected. This structure was rather easy to remember because of its repetitive character, which met the needs of ordinary people who probably wished to understand why calamities afflicted them. The predictions were concerned in particular with the welfare of different regions and sovereigns.

To illustrate this interconnection of signs incorporated in the *if* clause and the earthly events following in the *then* clause, I will present some extracts taken from the unpublished 16th-century manuscript *al-Kitāb naql min kitāb al-qānūn* (An Extract from the Book of the Rules),¹⁸ which incorporates a *malḥamah* text. This manuscript is unique, as its author is the late-Mamlūk astrologer, geomancer, and historian Ibn Zūbul.¹⁹ In contrast, most of the *malḥamah* texts – usually associated with the transcultural pseudo-author Hermes,²⁰ whom Jewish tradition identifies with Enoch, the Persian tradition with Hūshank and the Muslim tradition with Idrīs²¹ – were compiled anonymously.

¹⁷ A. Fodor, “Malhamat Daniyal”, in: *The Muslim East. Studies in Honour of Julius Germanus*, Gyula Káldy-Nagy, ed., Budapest: Loránd Eötvös University 1974, 95.

¹⁸ Apart from *malḥamah*, this manuscript contains chapters on global and local topography, astronomy, a history of Coptic feasts, and other information. Ibn Zūbul, *al-Kitāb naql min kitāb al-qānūn li-l-Shaykh Ahmad Ibn Zūbul al-Maḥalli*, Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, Orientabteilung, MS Petermann I 668 (5889), fols. 121.

¹⁹ See biographical details about this author and his astrological compendium in Kristine Chalyan-Daffner, *Natural Disasters in Mamlūk Egypt (1250–1517): Perceptions, Interpretations, and Human Responses*, PhD dissertation: Heidelberg Univ., 2013, 94f., (access at <http://archiv.ub.uni-heidelberg.de/volltextserver/17711/1/Chalyan-Daffner.pdf>).

²⁰ See the list of the treatises attributed to Hermes in Fuat Sezgin, *Geschichte des arabischen Schrifttums*, vol. 7, Leiden: Brill 1970, 50–58. Manfred Ullmann, *Die Natur- und Geisteswissenschaften im Islam*, Leiden: Brill, 1970, 289–293.

²¹ Martin Plessner, “Hermes Trismegistus and Arab Science”, in: *Studia Islamica* 2 (1954), 45–59, here: 51. See also these manuscripts in the Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, Orientabteilung: Anonymous, *Kitāb Hirmis al-Harāmīsab*, MS or. quart. 657 and MS or. fol. 39.6.

Most *malḥamah* handbooks were compiled anonymously because their authors probably feared the criticism of religious scholars who found any kind of prediction to contradict the message of the *Qurʾān*. However, by using names like Aristotle or Alexander the Great, the compilers ensured the readers' interest. Western literature refers to this collection as the *Arabic Hermetica*,²² although some of the versions bear the names of, or refer to, Aristotle (d. 322 B.C.),²³ Alexander the Great (d. 327 B.C.),²⁴ Ptolemy (d. ca. 100 A.D.)²⁵ and *Dāniyāl* (Daniel),²⁶ suggesting that these world figures or pseudo-authors were their narrators: "If [an earthquake] occurs in Tammūz (July), the Nile will rise that year. Looting and rise in prices will spread in the lands of the Byzantines and Syria."²⁷

Another example illustrates predictions related to astral phenomena such as the heliacal rising of Sirius/*al-Shiʿrā* (Sothis).²⁸ The latter is referred in the *malḥamah* handbooks as the "the birth of the year" (*marwīd al-sanah*),²⁹ probably because the heliacal rising of Sirius determined the beginning of the Coptic year (1st *Tūt*)³⁰ in ancient Egypt.³¹ Moreover, the Copts called this star the "flood-

²² The astrological *Arabic Hermetica* and its forerunners, attributed to Hermes Trismegistos, should not be confused with the *Corpus Hermeticum* having theological and philosophical content. Wilhelm Gundel and Hans G. Gundel, *Astrologumena. Die astrologische Literatur in der Antike und ihre Geschichte*, Wiesbaden: Franz Steiner Verlag 1966, 12, 27. Hermes Trismegistus, *Die griechischen Traktate und der lateinische Asclepius*, J. Holzhausen, ed., vol. 1, Stuttgart-Bad Cannstatt: Frommann-Holzboog, 1997.

²³ See the manuscripts Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, Orientabteilung, MS or. fol. 39.1 (Ahlwardt 5873), fols. 1–38; MS or. fol. 39.6 (Ahlwardt 5914), fols. 85–96. Further manuscripts held at the Egyptian National Library are listed in and will be referred to according to: David King, *Fibris al-makḥḥūtāt al-ʿilmīyah al-mahfūzah bi-Dār al-Kutub al-miṣriyah*, vol. 2, al-Qāhirah: al-Hayʾah al-Miṣriyah al-ʿāmmah lil-kitāb: bi-al-taʿawun maʿa markaz al-buḥūth al-amrīkī bi-Miṣr wa-muʾassasat Smithsūniyān, 1986.

²⁴ See the manuscript: Anonymous, "*Fi al-ḥawādith al-samāwīyah*", The Egyptian National Library, MS Dār al-Kutub miqāt 1156.4, fols. 45–87.

²⁵ Some of these texts are linked to Ptolemy, see for example Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, Orientabteilung, MS Wetzstein II 1155 (Ahlwardt 5916); The Egyptian National Library, MS Dār al-Kutub miqāt 994.

²⁶ Anonymous, "*Hādihā kitāb malḥamat sayyidanā Dāniyāl ʿalāyhi al-salām*", Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, Orientabteilung, MS Sprenger or. 1936 (Ahlwardt 5912), fols. 1–63. See more in Wilhelm Ahlwardt, *Die Handschriften-Verzeichnisse der königlichen Bibliothek zu Berlin. Verzeichnis der arabischen Handschriften*, vol. 5, Berlin: A. Asher & Co., 1893, 272f.

²⁷ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fol. 49b. Cf. also the following manuscript: Anonymous, *Kitāb Hirmis fi al-ḥikmat ṭulūʿ al-shiʿrah*. (*The Book of Hermes about the Wisdom of the Rising of Sirius*), The National Library of Russia, Samaritan collection, MS Фирк. Сам. VII 13, fols. 21b–22a.

²⁸ Sirius/Sothis, also known as the Dog Star, "is the brightest star in the earth's hemisphere just before dawn."; see Yaacov Shavit, "Up the River or Down the River? An Afrocentrist Dilemma", in: *The Nile. Histories, Cultures, Myths*, H. Erlich and I. Gershoni, eds., Colorado: Lynne Rienner Publ., 2000 81.

²⁹ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 38b–44b, 39a.

³⁰ *Tūt* is the first Coptic month, which corresponds to the period between 11 September and 10 October; Cérés Wassef, "Months of Coptic Calendar", in: *Claremont Coptic Encyclopedia*, vol. 2, New York: Macmillan, 1991, 438.

bringer” as its appearance³² indicated the time of the annual rise of the Nile. These kinds of predictions existed since the Hellenistic period³³ and were known as the *Astrologumena*.³⁴

An account on the rising of Sirius in the sign of Gemini (al-Jawzā’)

It is a sign for strong Eastern winds blowing for three weeks [...]. The Nile will rise and become stable; insects will befall the corn and the beans, but the merchants will make profit [...]. Discrepancies, fear, anguish, terrible conflicts, epidemics among the dogs and cats will spread [...]. A king will rise against the lands of the West. Great misery will befall another king. People will fear that he will die. There will be *malḥamah* ‘*azimah* (a great ‘apocalyptic’ war) and while the king might conclude a pact with the other [king], the ships will be exposed to many disasters (*āfāt katbīrah*) [...]. The Byzantines will carry out a raid against Islam. It will be cold and icy. There will be wars (*ḥurūb*) in Egypt. The Byzantines and many creatures will be destroyed [...]. Armies will be moving in the lands of Egypt. There will be a disagreement among the Arabs in Syria and al-Jazā’ir, and some Muslim cities will be deceived by a trick [...]. The summer will be good. But God knows better.³⁵

We can best understand the significance of Ibn Zunbul’s passage in view of the history of the *Mamlūk* Sultanate, and the events, occurring shortly before the Ottoman invasion, which Ibn Zunbul himself witnessed.³⁶ The *Mamlūk* Sultanate was, in fact, unusually preoccupied with wars between great empires – perceived as apocalyptic – with economic problems caused by the shifting of trading routes, and political conflicts within the Sultanate itself.³⁷ The choice of the specific term *malḥamah* to convey its earliest meaning of historical ‘apocalyptic wars’ next to the more general word for a “war” (*ḥarb*, pl. *ḥurūb*), seems to be intentional in this excerpt, and shows a clear distinction between these two concepts, emphasizing in particular the role of “apocalyptic wars” during the *Mamlūk* period.

As David Cook, an expert on apocalyptic literature in Islam, has noted, the majority of apocalyptic texts “reflect (the) historical reality of a certain time peri-

³¹ Huda Lutfi, “Coptic Festivals of the Nile: Aberrations of the Past?,” in: *The Mamluks in Egyptian Politics and Society*, Th. Philipp and U. Haarmann, eds., Cambridge: Cambridge University Press, 1998, 277–280.

³² Terje Oestigaard, *Water, Culture and Identity: Comparing Past and Present Traditions in the Nile Basin Region*, Bergen: BRIC Press, 2009, 147.

³³ Wilhelm Spiegelberg, *Die demotischen Denkmäler, 2: Die demotischen Papyrus. Nos. 30601-31270 und 50001-50022*, vol. 1: *Text* (Catalogue général des antiquités égyptiennes du Musée du Caire), Strasbourg: Dumont Schauberg, 1908, 309.

³⁴ *Astrologumena* is the antique genre, which can be considered equivalent to the Arabic *malḥamah* prognostications. Cf. Gundel and Gundel, *Astrologumena*, 14–15, 56–57.

³⁵ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fol. 40a.

³⁶ Chalyan-Daffner, *Natural Disasters*, Chapter 1.4. Biographical Data on Ibn Zunbul, 94f.

³⁷ John Livingston, “Science and the Occult in the Thinking of Ibn Qayyim al-Jawziyya,” in: *Journal of the American Oriental Society*, 112/4 (1992), 599–600. Qāsim ‘Abduh Qāsim, *‘Aṣṣalāṭin al-mamālik*, al-Qāhirah: Dār al-Shurūq, 1415/1994, 8.

od” and “when they were first put into circulation they reflected what was actually happening (or at least what the apocalypticist saw through the eyes of his very specific world view).”³⁸ As a result, by using the term *malḥamah* ‘*azimah*, Ibn Zunbul not only provided his readers with a revisionist picture of the past disasters – like Arab and Byzantine wars, Crusader raids, and the Mongol invasion that ended the ‘Abbāsīd Caliphate – but also projected them forward as warnings to current and future events. This is reflected in the wars against the Mongols and the Crusaders, which were experienced early in the *Mamlūk* period,³⁹ as well as the increasing fear of an Ottoman invasion in the early 16th century.⁴⁰

This thematic inclusion and the possibility of adapting the structure and content of ancient Assyrian-Babylonian omina⁴¹ predictions to any context, makes the predictions in the astro-meteorological *malḥamah* almost timeless. However, it has to be mentioned here that the comparative analysis of different *malḥamah* texts, in particular the methods used to predict natural disasters, are enmeshed with other traditions: Jewish, Byzantine-Greek, Egyptian-Hellenistic, Egyptian-Coptic. The relatively frequent references to the Nile, for example – which otherwise would be quite inexplicable on the part of an author living somewhere in Mesopotamia – suggest an Egyptian connection.

In fact, the population of Egypt, its prosperity (*tharwāh*) and welfare (*maṣlahah*) has been uniquely dependent on the Nile, with its annual flood in summer bringing huge amounts of water enriched with silt, which was necessary for crop cultivation. This justifies the attribute of “the Blessed” (*al-Nīl al-mubārak*),⁴² so often given to the river. The Egyptians knew the periods when the Nile would start to rise and to decline⁴³ but they did not know what exactly made it rise and how much water it would bring to irrigate their fields.⁴⁴ Therefore, speculations about the causes of the Nile’s annual inundation and predictions about its height were a part of commonly accepted cultural tradition. Under the influence of some ancient explanations – which attributed the Nile’s periodic rise and decline to the influence of different celestial bodies, such as the

³⁸ David Cook, *Studies in Muslim Apocalyptic. Studies in Late Antiquity and Early Islam*, Princeton: The Darwin Press, 2002, 313.

³⁹ Linda Northrup, “The *Babri Mamlūk* Sultanate, 1250–1390”, in: *The Cambridge History of Egypt*, C. Petry, ed., Cambridge: Cambridge University Press, 1998, 248, 252.

⁴⁰ Winter, “The Ottoman Occupation”, 490f. Salah Ziemeck, “The Mamluks in History”, in: *Foundation for Science, Technology and Civilisation* (2004), 1-9, here: 5.

⁴¹ Giuseppe Furlani, “Eine Sammlung astrologischer Abhandlungen in arabischer Sprache”, *Zeitschrift für Assyriologie und Verwandte Gebiete* 33 (1921), 157-168, here: 157.

⁴² Johannes Kramers, “Nīl”, in: *The Encyclopaedia of Islam*, vol. 8, 1995, 37–43. Coptic Abbot Shenoute (fourth–fifth century A.D.) called the annual inundation of the Nile “yearly mercy”. Oestigaard, *Water, Culture and Identity*, 147.

⁴³ See Chalayan-Daffner, *Natural Disasters in Mamlūk Egypt*, 460f.

⁴⁴ John Feeney, “The Last Nile Flood”, in: *Saudi Aramco World* 57/3 (2006), 24-33.

moon,⁴⁵ the sun,⁴⁶ or the stars⁴⁷ – this connection to astral phenomena found its ground in predictions which foretold the height of the Nile during the year. One example, taken from the manuscript *Kitāb gharā'ib al-funūn wa-mulāḥ al-ʿuyūn* (The Book of Curiosities of the Sciences and Marvels for the Eyes)⁴⁸ goes as follows:

Its ascendant is Cancer and its hour is Mars. Knowledge of its inundation comes about from observing Mars at the start of the year: if it is at the largest part of its orbit (*masiri-hi*), the inundation will be excessive; if it is in the middle of its orbit, the inundation will reach a normal level; and if it is retrograde in its orbit, its flow will be deficient. Take note of that.⁴⁹

To gain a further idea of how these predictions appear in astro-meteorological *malḥamab* texts, I present an example taken from a manuscript entitled *Risālah fī maʿrifat ziyādat al-Nīl wa-l-ḥawādith al-mustaqbalah ʿalā ḥasab al-kawākib* (*An Epistle Comprising Knowledge about the Inundation of the Nile and Future Events depending on the Planets*). In it the anonymous author, probably an astrologer, refers to the knowledge of the ‘Wise’ (supposedly Hermes) in compiling general predictions about the maximum level of the Nile’s rise⁵⁰ and its impact during the year. The predictions derive from the position of seven planets and the day of the week, during which the so-called “drop” (*nuqtah*)⁵¹ would occur.

⁴⁵ al-Masʿūdī, *Murūj al-dhahab wa-maʿādin al-jawhar*, vol. 2, Bayrūt: al-Jamiʿah al-lubnāniyyah, 1966, 67, and al-Aqfahsi, *Kitāb Akhbār Nil Miṣr*, L. Muṣṭafā, ed., al-Qāhirah: Dār al-Kutub, 2006, 58.

⁴⁶ Here the gravitation of the moon and the sun is meant. See the detailed explanation of this process in al-Maqrīzī, *al-Mawāʿiz wa-l-ʿtibār fī dbikr al-khiṭāṭ wa-l-āthār* [= *al-Khiṭāṭ*], A. Sayyid, ed., vol. 1, London: Muʿassasat al-furqān lil-turāth al-islāmī, 1423/2002, 142–143; al-Suyūṭī, *Kawakib al-rawḍah fī taʾriḫ al-Nīl wa-Jazirat al-Rawḍah*, M. al-Shishtāwī, ed., al-Qāhirah: Dār al-Āfāq al-ʿarabiyah 2002, 121. Cf. Galileo’s Theory of Tides in Paolo Palmieri, “Re-Examining Galileo’s Theory of Tides”, in: *Archive for History of Exact Sciences* 53 (1998) 223–375.

⁴⁷ See the detailed description of this process in al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 142–143, 147, 145, 181.

⁴⁸ Emilie Savage-Smith, “The Book of Curiosities: An Eleventh-Century Egyptian View of the Lands of the Infidels”, in: *Geography and Ethnography. Perceptions of the World in Pre-Modern Societies*, K. Raaflaub and R. Talbert, eds., London: Wiley-Blackwell, 2010, 291–310, here: 291–292.

⁴⁹ Anonymous, *Kitāb gharā'ib al-funūn wa-mulāḥ al-ʿuyūn*, Bodleian Library, MS Arab. c. 90, fol. 42a. This translation is cited after Emilie Savage-Smith and Yossef Rapoport (eds.), *The Book of Curiosities: A critical edition*. World-Wide-Web publication, (March 2007), (accessed at http://cosmos.bodley.ox.ac.uk/hms/mss_browse.php?reset=1&state=main&act=chunit&unit=18&expand=732,803,#a18).

⁵⁰ See more about the measuring of the Nile’s level in Chalyan-Daffner, *Natural Disasters in Mamlūk Egypt*, Chapter 5.5.1. ‘The Good News’ (*al-Bishārab*), 460f., and different methods for the prediction of the Nile’s rise in Chapter 5.3.2. Explanations about the Causes of Periodical Flood, 437f.

⁵¹ See the explanation of this term below, p. 143.

Mushtari (Jupiter). [...] The Wise said [...]: 'If the "drop" (*nuqṭab*) falls on Thursday night, the blessed Nile will reach that year twenty-two cubits and some fingers.⁵² The Nile will be great and it will be blessed for everything that year [...]. If the planet, which is called *Mushtari* (Jupiter), appears, there will be disasters (*shiddab* 'azīmal), epidemics (*balā*), deaths and destruction (*fanā*) of families during that year [...]. Yet if it falls on Thursday, there is a great catastrophe (*qāsim*) for the servants bringing death and fighting. But God knows better!⁵³

In fact, on the night of 'St. Michael's Feast' on 12 Ba'ūnah/ca. 19 June – which was called "the Night of the Drop" (*laylat al-nuqṭab*)⁵⁴ and which was a popular festive day up until the 19th century – people in the Coptic community believed that the Archangel Michael asked God to make the Nile rise.⁵⁵ Thereafter, during that night,⁵⁶ people thought that a "miraculous drop" was to fall into the Nile, causing its annual rise.⁵⁷ Astrologers used this belief to calculate the precise moment of the 'drop' (*nuqṭab*),⁵⁸ making a variety of predictions about the Nile and its impact during the year.⁵⁹

The late-*Mamlūk* chronicler Ibn Iyās' accounts in the annals of 916 A.H./1510 A.D. and 920 A.H./1514 A.D. attest to the significance of this habit in its historical context, especially for the Copts. He mentions that "the Night of the Drop", which is also known as the day for weighing "the mud" (*al-ṭīnah*)⁶⁰ – another method of predicting the Nile's rise – occurred on a Monday, through which *al-*

⁵² See more about the measurement units in cubits and fingers in Chalyan-Daffner, *Natural Disasters in Mamlūk Egypt*, Chapter 5.2.2. Instrumental Evidence.

⁵³ Anonymous, *Risālah fi ma'rifat ziyādat al-Nīl wa-l-hawādith al-mustaqbalah 'alā ḥasab al-kawākib*, Egyptian National Library, MS Muṣṭafā Fāḍil Miqāṭ 89 (Microfilm 5275), fols. 3r-4v and another copy of the same manuscript: Anonymous, *Risālah tataḍammana al-Nīl wa-l-kawākib wa-ghayr dhālika*, Egyptian National Library, MS Zakiyya 326 (Microfilm 58697), fol. 4.

⁵⁴ William Lane, *The Manners and Customs of the Modern Egyptians*, London: J.M. Dent & Sons Ltd. 1923, 495.

⁵⁵ William Popper, *Studies in Ibn Taghrī Birdī's Chronicles of Egypt*, 1, *The Cairo Nilometer*, (University of California Publications in Semitic Philology, 12), Berkeley: University of California Press, 1951, 68, 64.

⁵⁶ Describing this event in the nineteenth century A.D., Edward William Lane noticed that people in Cairo and its neighbourhood spent the night on the banks of the Nile or at home with friends. Lane, *Manners and Customs*, 495f.

⁵⁷ Lane, *Manners and Customs*, 495. William Popper mentioned that this habit was probably a reflection of the Ancient Egyptian poetical idea. According to it, tears of Isis, as she wept for Osiris, falling into the Nile, caused its rise. Popper, *Cairo Nilometer*, 68.

⁵⁸ Lane, *Manners and Customs*, 495.

⁵⁹ See more ways of predictions in Chalyan-Daffner, *Natural Disasters in Mamlūk Egypt*, Chapter 5.3.2. Explanations about the Causes of Periodical Flooding.

⁶⁰ During this night, a certain amount of mud (sixteen qirāṭ/1 qirāṭ=0,0641) was wetted with Nile water. The mud was weighed the next morning and, on the basis of the increase in weight, the ultimate rise in the height of the Nile that year was predicted; Ibn Iyās, *Badā'ī' al-zubūr fi waqā'ir al-dubūr*, M. Muṣṭafā, ed., vol. 4, Iṣṭānbūl: Maṭba'at al-dawlah 1931, 193–194. Popper, *Cairo Nilometer*, 68. See other methods for predictions connected with this specific day in Lane, *Manners and Customs*, 495–496.

Khamāsin (the springtime period when hot, dust-laden winds blew)⁶¹ passed without harm and no spread of plague in Old Cairo was reported.⁶²

Along with predictions about the maximum height of the Nile, some astro-meteorological *malḥamah* went so far as to use the height of the Nile to make predictions for the year. The anonymous author of the following *malḥamah*, attributed to Daniel and Ptolemy, writes that ‘if someone wanted to know what awaits people during the whole year, then one should read this book’, based on the ancestors’ experience:

If the first day of the Coptic month *Tūt* (which corresponds to *Aylūl*) [11 September–10 October]⁶³ falls [...] on Wednesday, then the level of the Nile will be average and will not remain on the earth as it will recede quickly. The prices will rise [...] there will be famine, children and young boys will die, looting will spread among people, and they will kill each other.[...] Strong winds will blow and earthquakes will occur in the deserts and mountains. [...] But God knows better!⁶⁴

According to al-Maqrīzī and al-^ᶜAsqalānī, in addition to these methods of prediction, other beliefs were widespread for foretelling the Nile’s maximum level and the consequences it had for the year.⁶⁵

In a manner similar to the significance of Ibn Zunbul’s *malḥamah*, presented above, we can understand the role of these predictions in their specific socio-cultural context. As the level of the Nile influenced the price of grain – Egypt’s most important product – and other commodities, people were prone to speculate and to foretell its maximum height, measured annually in the Nilometer on the island of al-Rawḍah since ancient times. These predictions prepared the population psychologically for the year ahead, which, depending on the Nile’s level, promised either fertility (*kbiṣb*) and profit (*rakbāʿ*) or drought (*qaḥṭ*) and high prices (*ghalāʿ*), and which could result in calamity.

The chroniclers use the terms *ghalāʿ* and *rakbāʿ* frequently in connection with the inundation of the Nile and its impact on the prices of basic commodities, in particular grain. The following scenarios show the interconnection of these eco-

⁶¹ *al-Khamāsin* (“the fifties”) are reflected in the Coptic tradition, in particular in the Feast of Pentecost, the fiftieth day after the Resurrection; al-Maqrīzī, *al-Mawwāʿiz wa-l-ʿtibār*, 714f. ʿAbd al-Bāsiṭ, *Nayl al-amal fi dbayl al-durwal*, vol. 2,8, 106. Ibn Iyās, *Badāʿiʿ*, vol. 4, 297. B. Gregorios, “Pentacost”, in: *The Coptic Encyclopedia*, vol. 4, New York: Macmillan, 1991, 1105–1106.

⁶² Ibn Iyās, *Badāʿiʿ*, vol. 4, 307, 375, 445.

⁶³ Wissa-Wassef, “Coptic Calendar”, 438.

⁶⁴ Anonymous, “*Hādibā kitāb qāʿidat al-Nīl wa-mā yaḥduthu min al-kbusūf wa-l-kusūf wa-l-zalāzil wa-l-rāʿd wa-l-ṣawāʿiq wa-mā yaqūu fihā li-Dāniyāl*”, Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, Orientabteilung, MS or. oct. 198 (5915), fols. 3b–4b.

⁶⁵ al-Maqrīzī, *al-Khiṭaṭ*, vol. 1, 180–181, 155. al-^ᶜAsqalānī, *Inbāʿ al-ghumr bi-ʿanbāʿ al-ʿumr*, Hasan Ḥabashī, ed., vol. 4, al-Qāhirah: al-Majlis al-aʿlā lil-shuʿūn al-islāmīyah, lajnat ihyāʿ al-turāth al-Islāmī, 1419/1998, 180; Ibn Iyās, *Nashq al-azbār fi ʿajāʿib al-aqtār*, The Russian Academy of Sciences, Institute of Oriental Manuscripts, MS B 1033, fol. 436. See a practical example of one kind of prediction in Ibn Iyās, *Badāʿiʿ*, vol. 4, 194.

conomic terms with the inundation of the Nile: if the Nile reached sixteen cubits on time, grain prices remained stable or even went down causing welfare (*rakbā*). If the inundation halted, this caused almost automatically a sharp rise of prices (*ghalā*) of grain and other products. The prices usually fell shortly after the Nile had reached sixteen cubits. But if the Nile level was either too high or too low, a deficient crop was anticipated, which resulted in a sharp increase in grain prices lasting until the maturity of the next abundant harvest.⁶⁶

Drawing conclusions, also based on historical sources, we can say that despite theoretical and religious attacks upon astrologers,⁶⁷ and despite their reputations as beguilers, people were inclined to believe their predictions. Therefore, these predictions constituted powerful sociological forces that directly influenced people's worldviews and behaviour, shaping social structures and reflecting the contemporary social needs behind these kinds of popular beliefs. The material's actual function is unknown, however it can be assumed that during times of political crisis or natural disasters, people would believe warnings framed within astro-meteorological *malḥamah* handbooks. They were designed to encourage and warn believers, and show them their place in God's plan. The repetitive nature of predictions supported the deterministic character of this belief and helped them to cope with disasters.

I would like to conclude this chapter with the words of Ibn Khaldūn (d. 808/1406)⁶⁸, who noted in his *Muqaddimah* that "one of the qualities of the human soul is the desire to learn the outcome of affairs that concern [human beings] and to know what is going to happen to them, whether it will be life or death, good or evil."⁶⁹ This desire to predict and possibly avert future disasters ensured both the survival of this ancient tradition and the subsequent development of the Arabic genre of astro-meteorological *malḥamah* predictions.

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Persianate Geomancy from Ṭūsī to the Millennium

A Preliminary Survey

Matthew Melvin-Kousbki

Abstract

The divinatory art of geomancy (*ʿilm al-raml*), Arabic answer to the *I Ching*, was third in popularity only to astrology and oneirography throughout the premodern Islamo-Christian world, and is still widely practiced today from Iran and Yemen to West Africa and Madagascar. Despite its ubiquity among scholarly and ruling elites, however, the reflexive scholarly elision of occultism from Islamic intellectual and cultural history means that this science has been very poorly studied beyond its reception by Europe. This holds especially true for the early modern Persianate world: in the wake of the occultist renaissance that swept the Islamic heartlands from the late 8th/14th century onward, geomancers emerged as influential fixtures at Mughal, Safavid and Ottoman courts, and geomancy, offering detailed knowledge of past, present and future, was widely lionized as a means for controlling history – yet the subject remains almost untouched. And despite its status as a mathematical occult science predicated on a neoplatonic-neopythagorean system and animated by the twin principles of correspondence and secondary causation, its importance to the history of science has likewise only been recognized in its European context. Extending the work of Emilie Savage-Smith, Marion B. Smith and others, I therefore provide the first survey, necessarily tentative, of the development of geomantic theory and practice in the persophone world from the 7th/13th century onward, when Naṣīr al-Dīn Ṭūsī (d. 672/1274) inaugurated a specifically Persianate geomantic tradition for the benefit of his Mongol patron Hülegü. With Ṭūsī as precedent, geomancy went on to exercise some of the best minds of the early modern Persianate world as a mainstream occult-scientific tradition, and enjoyed a crescendo of popularity in the 10th/16th century with the approach of the Islamic millennium. After sketching the development of the eastern geomantic tradition, then, I identify the philosophical-scientific reasons for its great vitality and cultural prestige down to the present, with particular attention to authors on geomancy like Luṭf Allāh Nishāpūri Samarqandī (fl. 812/1409), Sharaf al-Dīn Yazdī (d. 858/1454), Shams al-Dīn Khafī (d. 942/1535) and Hidāyat Allāh Munajjim-i Shīrāzi (fl. 1001/1593), court geomancer to Emperor Akbar at the turn of the millennium.

* * *

This art [of geomancy] is much practiced in all civilized lands.
–Ibn Khaldūn¹

Caput Draconis!
–Gryffindor password²

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¹ *Muqaddima*, Darwish al-Juwaydi, ed., Beirut: al-Maktaba al-ʿAṣriyya, 1995, 108.

Geomancy, the ‘science of sand’ (*‘ilm al-raml*), is a uniquely Arabic and Islami-cate occult science³ that captured the intellects and imaginations of scholarly elites and their royal patrons throughout the premodern Islamo-Christianate world. As a complex divinatory science based on a binary code, geomancy stands precise cognate to the ancient Chinese *I Ching*, but commanded in its prime a far greater territorial spread: it was – and in many cases still is – regularly practiced as a single tradition from Fez, Paris and Timbuktu to Kashgar, Kabul and Delhi, and calved simpler versions throughout sub-Saharan Africa and thence the western hemisphere that remain very much in use. Throughout its Afro-Eurasian domain, geomancy was third in popularity only to astrology and oneiromancy; indeed, due to its early incorporation of astrological correspondences, it was often considered a form of “terrestrial astrology” requiring much less astronomical expertise while remaining richly informative.⁴ This association is exemplified by the fact that in the early modern Persianate east individuals designated *munaj-jims*, or court astronomer-astrologers, increasingly acted as court geomancers as well.⁵ *Raml* and *jafr*, or letter divination, were also often seen as a complementary pair of divinatory techniques based on number theory (*‘ilm al-‘adad*),⁶ the

² J. K. Rowling, *Harry Potter and the Sorcerer’s Stone*, New York: Scholastic, 1998, 130. The Latin names of other geomantic figures are similarly utilized in the Harry Potter series, including Albus, Rubeus and Fortuna Major.

³ The standard Arabic term for the occult sciences, including astrology (*ahkām al-nujūm*), alchemy (*kimiyā’*) and a variety of magical and divinatory techniques, is *‘ulūm ghariba*, meaning those sciences that are unusual, rare or difficult, i.e., elite; less frequently used terms are *‘ulūm khaṣṣa* and *‘ulūm ghāmiḍa*, sciences that are hidden or occult. These terms are routinely used in classifications of the sciences, biographical dictionaries, chronicles, etc. Its 19th-century European flavor notwithstanding, the term occultism is therefore used here simply to denote a scholarly preoccupation with one or more of the occult sciences as discrete natural-philosophical or mathematical disciplines. *Occultism* is thus to be strictly distinguished from *mysticism* and *esotericism*, for all that scholars from Corbin onward have habitually and perniciously disappeared the former into the latter; I discuss this disappearance in the final section of this article. More generally, ‘science’ and ‘scientific’ awkwardly translate the Arabic terms *‘ilm* (lit., ‘knowledge’) and *‘ilmi*, which rather correspond to the broader concept of *scientia* or *Wissenschaft*, including *Geisteswissenschaft*. See Raymond Williams, “Science”, in: idem. *Keywords: A Vocabulary of Culture and Society*, New York: Oxford Univ. Press, 1983, 276–280.

⁴ See e.g. Ibn Khaldūn, *Muqaddima*, 107, 108. Significantly, in his classification of the sciences Ḥājjī Khalifa (d. 1067/1657) categorizes geomancy under the rubric of judicial astrology (Toufic Fahd, *La divination arabe: Études religieuses, sociologiques et folkloriques sur le milieu natif de l’Islam*, Leiden: Brill, 1966, 41).

⁵ Fahd, *La divination arabe*, 200. This blending of geomancy and astrology began early on; one of the first codifiers of the Arabic geomantic tradition, Ibn Maḥfūf (d. before 664/1265), is typically called *al-Munajjim*; Fahd, *La divination arabe*, 201.

⁶ That is, the ‘science of number,’ or arithmetic, particularly as associated with Pythagoras and Nicomachus. The 4th/10th-century group of neopythagorean-occultist encyclopedists known as the Brethren of Purity, for instance, vigorously assert arithmetic to be the basis for all other mathematical, natural, psychological and metaphysical sciences, an ascending epistemological series that culminates in sciences like astrology, alchemy and magic; see

first employing dots (*niqāt*) and figures (*asbkāl*) and the second the letters (*ḥurūf*) of the Arabic alphabet (also derived from a dot), and both equally productive of knowledge of past, present and future.

Knowledge of geomancy entered the Christianate world in the 6th/12th century with Latin translations of Arabic works, its popularity burgeoning from there.⁷ In the Islamicate world, geomancy was typically associated in the first place with the prophets Idris (Enoch or Hermes)⁸ and Daniel and the Indian sage Ṭumṭum, not to mention a number of other standard occultist authorities.⁹ Intellectual genealogies of the science in Arabic and Persian works on the subject thus presuppose a pre-Islamic Near Eastern or Indian origin, as well as an early Berber connection; the otherwise unknown Abū ‘Abd Allāh Muḥammad al-Zanātī (fl. before 629/1230), presumably of the Berber Zanāta tribe, is acclaimed as the first major Arabic exponent of geomancy.¹⁰

While geomancy fell out of mainstream use in post-Enlightenment Europe,¹¹ it experienced no such decline in the “un-Enlightened” Islamicate world, and partic-

e.g. Nader El-Bizri, “Epistolary Prolegomena: On Arithmetic and Geometry”, in: *Epistles of the Brethren of Purity: The Iḥwān al-Ṣafā’ and Their Rasā’il: An Introduction*, Nader El-Bizri, ed., Oxford: Oxford Univ. Press, 2008, 180–213.

⁷ The extant Latin treatises are surveyed in Thérèse Charmasson, *Recherches sur une technique divinatoire: la géomancie dans l’occident médiéval*, Paris: Champion, 1980. After Hugo of Santalla’s (fl. 1145) pathbreaking translations of two treatises from the Arabic under the titles *Ars geomantiae* and *Geomantia nova*, notable examples include Heinrich Cornelius Agrippa von Nettesheim’s (d. 1535) *In Geomanticam disciplinam lectura* (in: *Opera*, 12 vols., Hildesheim: Olms, 1970, vol. 1, 500–526 [repr. Basel 1578]), Christophe de Cattan’s (fl. 1558) *La Géomance* (subtitled *Livre non moins plaisant & recreatif, que d’ingenieuse invention, pour scavoir toutes choses, presentes, passées, & à advenir, Avec la Roüe de Pythagoras*, Paris: Gilles, 1558; English translation by Francis Sparry in 1591) and Robert Fludd’s (d. 1637) *De geomantia* (in: *Fasciculus geomanticus, in quo varia variorum opera geomantica continentur*, Veronae, 1687, 1–170) (Marion B. Smith, “The Nature of Islamic Geomancy with a Critique of a Structuralist’s Approach”, in: *Studia Islamica* 49 (1979), 5–38, here: 8; Stephen Skinner, *Geomancy in Theory and Practice*, 2nd ed., St. Paul, Minn.: Golden Hoard Press, 2011, 112–116).

⁸ In his *Nafahāt al-Asrār* (on which see below), Muḥammad Bāqir Ṭabāṭabā’i Yazdi invokes a statement by Imam ‘Alī attributing the science to Idris as received from Gabriel (lithograph Najaf: Dār al-Kutub al-‘Irāqīyya, 1359/1940, 10).

⁹ These include Imams ‘Alī b. Abi Ṭālib and Ja’far al-Ṣādiq as well as a number of other biblical prophets. On Ṭumṭum al-Hindi see A. Hauber, “Tomṭom (Ṭimṭim) = *Dandamiz* = *Dindymus*?”, in: *Zeitschrift der Deutschen Morgenländischen Gesellschaft* 63 (1909), 457–472.

¹⁰ The best study to date of the Arabic geomantic tradition through the 7th/13th century is Emilie Savage-Smith and Marion B. Smith, “Islamic Geomancy and a Thirteenth-Century Divinatory Device: Another Look”, in: *Magic and Divination in Early Islam*, Emilie Savage-Smith, ed., Aldershot: Ashgate, 2004, 211–276, which expands upon their findings in a similarly titled publication from 1980; in particular, they show that it was fully developed and established by the middle of that century.

¹¹ Geomancy was largely replaced by the *I Ching* as the divinatory art of choice in modern Euro-American occultism, particularly as represented by the Hermetic Order of the Golden Dawn; this Chinese cognate was also the subject of considerable interest to C. G. Jung (along with a number of other occult sciences), who postulated that number regulates both psyche and matter and described divination as the ‘science of synchronicity’ (see e.g. *Jung on Synchronicity and the Paranormal*, Roderick Main, ed., Princeton: Princeton Univ. Press,

ularly its vast Persianate subset, where occultist traditions enjoyed smoother continuity and wider practice. Along with astrologers and experts in *jafr*, geomancers (sg. *rammāl*) were in high demand at imperial and regional courts during the early modern period – witness Ḥaydar Rammāl’s successful and influential career at the court of Sultan Süleymān (r. 926–974/1520–1566) in Anatolia, that of Hidāyat Allāh Munajjim-i Shirāzī at the court of Emperor Akbar (r. 963–1014/1556–1605) in India, or that of Jalāl al-Dīn Munajjim-i Yazdī, author of the *Tārikh-i ‘Abbāsi*, at the court of Shah ‘Abbās (r. 995–1038/1587–1629) in Iran.¹² Well into the modern period we find vigorous testimony that the science was still considered a scholarly staple from the Maghrib to India; in 13th/19th-century Samarkand and Bukhara, for instance, surviving miscellany notebooks kept by judges suggest that they often employed geomantic readings to help them decide court cases.¹³ Geomancy’s popularity remains unabated in Iran today, though frequent abuse by fraudsters has made its practice into something of a social problem; as a result, *rammāli*, ‘geomancing,’ is now legally punishable by a fine and up to seven years’ imprisonment.¹⁴ In its current, flabby Persian usage *rammāli* usually connotes witchcraft or hocus pocus, particularly of the hornswoggle variety, though is not as wholly negative as the term *jādūgari*.¹⁵ (In 2009, for instance, opposition candidate Mir Hossein Mousavi derided Mahmoud Ahmadinejad’s government as one of *kaf-bīni u rammāli*, or palmistry and poppycock.¹⁶) Yet even such infamy is an index of the continued inextricability of geomancy from Persianate culture.

The work of Emilie Savage-Smith, Marion B. Smith and Toufic Fahd in particular marks the indispensable starting point for any inquiry into Islamicate geomancy.¹⁷ Robert Jaulin has explored the mathematical properties of the science from a

1997; Marie-Luise von Franz, *On Divination and Synchronicity: The Psychology of Meaningful Chance*, Toronto: Inner City Books, 1980. More recently, however, geomancy appears to be experiencing a modest revival in the Anglo-American world; witness John Michael Greer’s *The Art and Practice of Geomancy: Divination, Magic, and Earth Wisdom of the Renaissance* (San Francisco: Weiser 2009), a comprehensive and highly usable manual in the early modern occult-philosophical tradition.

¹² On these three geomancers see below.

¹³ They also appear to have regularly used letrist techniques to analyze people’s character on the basis of their names. More generally, biographical dictionaries for 13th/19th-century Transoxania indicate that some five percent of scholars were known to be practicing occultists – the same percentage that are identified as physicians. My thanks to James Pickett for bringing this evidence to my attention; see now our “Mobilizing Magic: Occultism in Central Asia and the Continuity of High Persianate Culture under Russian Rule”, in: *Studia Islamica* 111/2 (2016), 1–54.

¹⁴ Alireza M. Doostdar, “Fantasies of Reason: Science, Superstition, and the Supernatural in Iran”, PhD dissertation, Harvard Univ., 2012, 48 n. 19; and see now his *The Iranian Metaphysicals: Explorations in Science, Islam, and the Uncanny*, Princeton: Princeton Univ. Press (forthcoming 2017).

¹⁵ Doostdar, “Fantasies of Reason”, 46 n. 17.

¹⁶ Doostdar, “Fantasies of Reason”, 4.

¹⁷ See above; other studies include Felix Klein-Franke, “The Geomancy of Aḥmad b. ‘Alī Zunbul: A Study of the Arabic Corpus Hermeticum”, in: *Ambix* 20/1 (March 1973), 26–35;

structuralist standpoint,¹⁸ and a number of anthropologists have conducted surveys of geomantic practice in modern-day sub-Saharan Africa and Yemen, including derivative forms such as *ifa*, *gara* or *sikidy*.¹⁹ What has been almost wholly neglected to date, however, is the *Persianate* geomantic tradition.²⁰ This vital and productive tradition was the driving force behind the florescence of Islamicate geomancy from the 8th/14th century onward, itself part of the great renaissance of occultism throughout the post-Mongol Islamicate world, and appears to begin in earnest in the mid-7th/13th century with the importation to Iran of the Maghribi geomantic tradition associated in the first place with al-Zanāti. This tradition would remain the gold standard for centuries: the 7th/13th-century Shirazi geo-

Valerio Cappozzo, “Libri dei sogni e geomanzia: la loro applicazione letteraria tra Islam, medioevo romanzo e Dante”, in: *Quaderni di Studi Indo-Mediterranei* 2 (2009), 207–226.

- ¹⁸ E.g., Robert Jaulin, *La géomancie: analyse formelle*, Paris: Mouton, 1966; Robert Jaulin, *Géomancie et Islam*, Paris: Bourgois, 1991. Smith’s “The Nature of Islamic Geomancy” is a critique of Jaulin’s studies.
- ¹⁹ E.g., Bernard Maupoil, “Contribution à l’étude de l’origine musulmane de la géomancie dans le Bas-Dahomey”, in: *Journal de la Société des Africanistes* 13 (1943), 1–94; Jacques Faublée, “Techniques divinatoires et magiques chez les Bara de Madagascar”, in: *Journal de la Société des Africanistes* 21 (1951), 127–138; Robert Jaulin, “Essai d’analyse formelle d’un procédé géomantique”, in: *Bulletin de l’Institut Français d’Afrique Noire*, series B, 19 (1957), 43–71; William R. Bascom, *Ifa Divination: Communication between Gods and Men in West Africa*, Bloomington: Indiana Univ. Press, 1969; Philip M. Peek, ed., *African Divination Systems: Ways of Knowing*, Bloomington: Indiana Univ. Press, 1991; Annick Regourd, “Pratiques de géomancie au Yémen”, in: *Religion et pratiques de puissance*, Albert de Surgy, ed., Paris: L’Harmattan, 1997, 105–128; Jan Jansen, “Éducation arithmétique sous forme d’apprentissage: la géomancie dans les Monts Mandingues”, in: *Cahiers d’Études africaines* 51/1, 201 (2011), 9–49; see Smith, “The Nature of Islamic Geomancy”, 9.
- ²⁰ On the almost total neglect of Persianate occultism see Francis Richard and Živa Vesel, “Un domaine méconnu: les écrits occultes en persan”, in: *Bulletin d’Études Orientales* 44 (1993), 211–215. Apart from the early 20th-century surveys of Persian folklore by Henri Massé (*Persian Beliefs and Customs*, Charles Messner, transl., New Haven: Human Relations Area Files, 1954; on *raml* see 249–250) and Bess Allen Donaldson (*The Wild Rue: A Study of Muhammadan Magic and Folklore in Iran*, London: Luzac, 1938; on *raml* see 194–195), which are largely incognizant of more elite, scholarly forms of geomantic practice, the only attention that has been paid to the Persianate geomantic tradition is C. A. Storey’s list of works on the subject (*Persian Literature: A Bio-Bibliographical Survey*, vol. 2, part 3, Leiden: Brill, 1977, 480–489; but as a strictly preliminary foray it is unsystematic and drastically incomplete, and focuses primarily on Indian collections. Emilie Savage-Smith and Marion B. Smith have noted the existence of a healthy Persianate geomantic tradition from Fakhr al-Dīn Rāzi and Naṣīr al-Dīn Ṭūsī onward but have dealt to date primarily with Arabic geomancy, and only to the 7th/13th century. This general neglect has largely to do with the fact that Persian geomantic texts were not transmitted to Europe, as well as the fact that they are an important component of the renaissance of occultism in the early modern Islamicate world, until recently assumed by scholars to have been a mark of terminal cultural decline – the intense occultism of the European Renaissance being an exception to this rule, of course (a classic expression of such whiggish chauvinism is Armand Abel, “La place des sciences occultes dans la décadence”, in: *Classicism et déclin culturel dans l’histoire de l’Islam*, R. Brunschvig and G. E. von Grunebaum, eds., Paris: Editions Bessou, 1957, 291–311). An index of the popular vitality of the Persianate geomantic tradition is its presence in *The Thousand and One Nights*; for a list of the relevant tales see Savage-Smith, and Smith, “Islamic Geomancy”, 220 n. 40.

mancer Nāṣir b. Ḥaydar cleaves to the method of the Berber master, and even three centuries later the Isfahani-Tabrizi geomancer Ḥaydar b. Muḥammad felt it necessary to mention that his brilliant teacher in the science was from the Maḡhrib.²¹ More famously, Naṣir al-Din Ṭūsī (d. 672/1274), the indefatigable philosopher, mathematician and astronomer-astrologer and founder of the Maragha Observatory, wrote one of his two works on geomancy in both Arabic and Persian versions at the request of his Mongol patron Hülegü (r. 654–663/1256–1265), and is frequently cited as an authority in later Persian geomantic works.²² With Ṭūsī as precedent, geomancy went on to exercise some of the best minds of the early modern Persianate world as a mainstream occult-scientific tradition.

When did this science first strike root in the persophone world? How did it acquire such prestige and maintain it over so many centuries? Who were its major exponents? And why has its Persianate iteration been so resolutely ignored in history of science? Such are the questions this article endeavors to answer. This being the first study of the specifically Persianate geomantic tradition, however, I will limit myself to providing a preliminary, tentative survey of that tradition during its heyday between the 7th–10th/13th–16th centuries; I will also attempt to identify the philosophical-scientific reasons for its perennial intellectual appeal and continued vitality down to the present. Before embarking on these tasks, however, it will first be helpful to briefly define geomancy as a practice.

Islamicate geomancy

The various Arabic terms for geomancy, the ‘science of sand’ (*‘ilm al-raml*, *khatt al-raml*, *ḍarb*, *ṭarq*),²³ all refer to its basic procedure of drawing 16 random series of lines in the sand or dirt to generate the first four tetragrams of a geomantic reading. (Confusingly, in modern English usage geomancy can also refer to the Chinese art of *feng shui*, though this is a misnomer; as a system of divining the subtle currents of the earth for the purposes of building or burying, it is more accurately termed ‘topomancy.’²⁴) As with *I Ching* trigrams, the four lines of a geomantic figure (*shakl*) are generated by the odd (*fard*) or even (*zarwaj*) result of each line, creating a binary code represented as either one dot (*nuqta*) or two dots

²¹ MS Majlis 12534, p. 3. On both geomancers see below. Cf. the Persian translation by one Muḥammad b. Manṣūr, made in 673/1275, of an Arabic geomantic text titled *Mafātiḥ al-Asrār*; therein the translator states that he has been sojourning in Anatolia and the Maḡhrib and among the Berbers (MS Mar’ashi 2114).

²² Emilie Savage-Smith, “Geomancy in the Islamic World”, in: *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures*, Helaine Selin, ed., Berlin: Springer, 2008, 998–999; Savage-Smith and Smith, “Islamic Geomancy”, 216; and see below.

²³ Toufic Fahd, “Khatt”, in: *Encyclopaedia of Islam*, 2nd edition, vol. 4, Leiden: Brill, 1991, 1128–1130. *‘Ilm al-raml* is occasionally translated as *‘ilm-i rig* in Persian.

²⁴ Skinner, *Geomancy*, 36. By analogy with *feng shui*, exponents of ley-line theory also adopted the term geomancy for their practice, further muddying the waters.

respectively – hence the science’s alternative name of *‘ilm al-nuqta* or *‘ilm al-niqāt*.²⁵ This binary code is then deployed according to set procedures to capture the flux patterns of the four elemental energies (fire, air, water, earth) as a means to divine past, present and future events. Emilie Savage-Smith summarizes the geomantic method as follows:

The divination is accomplished by forming and then interpreting a design, called a geomantic tableau, consisting of 16 positions, each of which is occupied by a geomantic figure. The figures occupying the first four positions are determined by marking 16 horizontal lines of dots on a piece of paper or a dust board. Each row of dots is examined to determine if it is odd or even and is then represented by one or two dots accordingly. Each figure is then formed of a vertical column of four marks, each of which is either one or two dots. The first four figures, generated by lines made while the questioner concentrates upon the question, are placed side by side in a row from right to left. From these four figures the remaining 12 positions in the tableau are produced according to set procedures. Various interpretative methods are advocated by geomancers for reading the tableau, often depending upon the nature of the question asked.²⁶



Figure 1: A typical geomantic tableau²⁷

From right to left, the first four figures in the top row are termed Mothers (*ummahāt*), which are combined to produce the second four in the same row, termed Daughters (*banāt*); the four figures the Mothers and Daughters produce in the next row are termed Nieces (*ḥafidāt, mutawallidāt*); and the Nieces are combined to produce the *zawā'id* in the rows below: first, the Right and Left Witnesses (*shawāhid*), which in turn produce the Judge (*mizān*) in the 15th position at the bottom of the geomantic tableau or shield chart (*takbt*). In the 16th and final position, usually drawn below and to the right of the Judge or otherwise bracketed off, is the Reconciler (*‘āqiba*), produced by the combination of the first Mother and the Judge.

²⁵ As Stephen Skinner notes in his manual on the subject (*Geomancy*, 35): “In this century when computers now make many of man’s economic, political and commercial forecasts, it is easy to forget that these machines work on the same principle of binary mathematics as the infinitely more ancient machines of the *I Ching* and geomancy.”

²⁶ Savage-Smith, “Geomancy in the Islamic World”, 998.

²⁷ This example is from the margin of Princeton’s copy of Shams al-Din Khafri’s *R. dar Raml*, MS New Series 1177/2, f. 24b. Note that, as here, a line of two dots in a geomantic figure is usually written as a dash.

The number of possible combinations of figures in a geomantic tableau is 16⁴, or 65,536 in all.²⁸ Each of the 16 geomantic figures and the 15 houses of a tableau acquired specific elemental, astrological, calendrical, numerical, lettrist, humoral, physiognomical and other correspondences; detailed information can thus be derived from the figures about virtually any aspect of human experience, whether physical, mental or spiritual, whether past, present or future. And like the data of human experience, a figure's significance can vary depending on the context of the larger reading and the nature of the question asked: negative, constrictive figures such as *'uqla*, or Carcer, can be quite favorable for situations in which binding or limitation is desired, such as in striking a contract, and positive, expansive figures like *ahyān*, or Laetitia, unfavorable for situations requiring stability or the keeping of secrets. The 16 geomantic figures are as follows (with their standard Latin names in square brackets):

⋮	Way (<i>tariq</i>) ²⁹ [Via]	⋮⋮	Group (<i>jamā'a</i>) ³⁰ [Populus]
⋮⋮	Union (<i>ijtimā'</i>) ³¹ [Conjunctio]	⋮⋮	Binding (<i>'uqla</i>) ³² [Carcer]
⋮⋮	Internal help (<i>nuṣra dākhiba</i>) ³³ [Fortuna Major]	⋮	External help (<i>nuṣra kbārīja</i>) [Fortuna Minor]
⋮⋮	Internal seizing (<i>qabḍ dākhib</i>) ³⁴ [Acquisitio]	⋮	External seizing (<i>qabḍ kbārīj</i>) [Amissio]
⋮⋮	Propitious times (<i>ahyān</i>) ³⁵ [Laetitia]	⋮⋮	Inversion (<i>inkis</i>) ³⁶ [Tristitia]
⋮⋮	White (<i>bayāḍ</i>) ³⁷ [Albus]	⋮⋮	Red (<i>ḥumra</i>) ³⁸ [Rubeus]

²⁸ Smith, "The Nature of Islamic Geomancy", 14.

²⁹ Hidāyat Allāh Munajjim-i Shirāzi, on whom more below, translates this as *rāb raftan*, 'going' (*Qavā'id al-Hidāya*, MS Majlis 12563, p. 339).

³⁰ Hidāyat Allāh translates this as *khalq-i bisyār u qaṣr-i bisyār*, 'many people, great restraint.'

³¹ Hidāyat Allāh translates this as *payvastagi bi bar chi maṭlūb bāshad*, 'attainment of whatever is desired.'

³² Alt. *thikāf*, 'straightening instrument, swordfighting'; *shiqāf*, 'clay pots'; *itkāf*, 'withdrawal, seclusion.' Hidāyat Allāh translates this as *band u bastagi*, 'bond and binding.'

³³ Or 'increasing victory,' contrasted with *nuṣra kbārīja* as 'diminishing victory.' Alt. *tashmir*, 'readying'; *al-sultān*, 'the ruler.' Hidāyat Allāh translates the first as *yāri dabanda dar āmadan*, 'giving help in coming,' and the second as *yāri dabanda dar kburūj*, 'giving help in going.'

³⁴ Or 'internal prize,' contrasted with *qabḍ kbārīj* as 'external prize.' Hidāyat Allāh translates the first as *bi dast āranda*, 'bringing into hand,' and the second as *az dast baranda*, 'taking from hand.'

³⁵ Alt. *lahyān*, 'jaw'; *hiyān*, ? (translated by Ibn Maḥfūf as *kathir al-bayba* and *al-rajul al-kabir*); *ḍāḥik*, 'laughing.' Hidāyat Allāh translates *lahyān* as *rish-i darāz*, 'longbeard.'

³⁶ Alt. *mankūs*, 'inverted, overturned, relapsed'; *nakis*, 'inverting'; *rakiza*, 'pole, peg, buried treasure.' Hidāyat Allāh translates this as *sar-nigūn shudan*, 'becoming inverted, depressed.'

³⁷ Alt. *laban*, 'milk.' Hidāyat Allāh translates this as *chiz-bā-yi safid*, 'white things.'

³⁸ Alt. *dam*, 'blood,' or *damm*, 'rouge.' Hidāyat Allāh translates this as *chiz-bā-yi surkh*, 'red things.'

∴	Pure-cheeked [girl] (<i>naqī l-khaddā</i>) ³⁹ [Puella]	∴	[Thin-bearded boy] (<i>javādala</i>) ⁴⁰ [Puer]
∴	Inner lintel (<i>‘ataba dākhiba</i>) ⁴¹ [Caput Draconis]	∴	Outer threshold (<i>‘ataba kbārija</i>) ⁴² [Cauda Draconis]

Table 1: The 16 geomantic figures⁴³

Although many techniques of divination long persisted in the Islamicate world,⁴⁴ *raml*, with *jafr* and quranic bibliomancy (*fāl-i Qurʾān*),⁴⁵ has the distinction of being the most fully Islamicized; this trio soon outpaced the others in prestige and elite patronage as a result.⁴⁶ Geomantic treatises frequently begin by marshaling a number of prooftexts from the Quran and Hadith in defense of the science’s religious legitimacy. The two most cited of these:

Bring me a Book before this, or some trace of a science, if you speak truly (Q 46:4).

There was a prophet [who practiced divination by] drawing lines [in the sand], so one may draw the way he did.⁴⁷

In the case of the first, this ‘trace of a science’ (*athārat^{an} min ‘ilm*), here suggested to be on a par with scriptural revelation, was readily linked to the geomantic

³⁹ Alt. *ashqar*, ‘fair’; *awwā*, ‘modest ones.’ Hidāyat Allāh translates this as *pāk-rūy u sāda*, ‘smooth-faced and beardless, pure.’

⁴⁰ Alt. *kawsaj/kūsaj*, ‘thin-bearded.’ Hidāyat Allāh re-identifies (misidentifies?) this figure with *farah*, aka *‘ataba dākhiba*, which he translates as *shādi u khurrāmī*, ‘joy and gladness.’

⁴¹ Alt. *rāyat al-farah*, ‘banner of joy.’ Hidāyat Allāh translates this as *dākhib l-shudan-i astāna*, ‘entering the threshold.’

⁴² Alt. *rakiza thābita*, ‘fixed pole or peg, fixed treasure.’ Hidāyat Allāh translates this as *birūn raftan az astāna*, ‘leaving the threshold.’

⁴³ For a discussion of these figures and their various names see Savage-Smith and Smith, “Islamic Geomancy”, 233–235.

⁴⁴ Scapulomancy (*‘ilm al-katīf*), for instance, or divination by shoulder blade, was frequently used in Khorezm until the modern period to predict the outcome of caravan journeys, resolve legal cases, etc. (personal communication with James Pickett).

⁴⁵ Bibliomancy, especially in reference to the Quran or the *Divān* of Hāfiz (d. ca. 792/1390), similarly flourished in the Persianate world during the 7th–10th/13th–16th centuries; see e.g. Christiane Gruber, “The ‘Restored’ Shī‘i *muṣḥaf* as Divine Guide? The Practice of *fāl-i Qurʾān* in the Safavid Period”, in: *Journal of Qurʾanic Studies* 13/2 (2011), 29–55.

⁴⁶ Fahd, *La divination arabe*, 204.

⁴⁷ *Kāna nabīyy^{um} mina l-anbiyā’i yakhuṭṭu fa-man wāfaqa khaṭṭa-hu fa-dhāk*. See e.g. Muslim, *Ṣaḥīḥ*, *Kitāb al-Masājid wa-Mawāḍi‘ al-Ṣalāt*, bab 8, no. 1227; Abū Dāwūd, *Sunan*, *Kitāb al-Ṣalāt*, bab 173, no. 931; etc. Some hadith commentators acknowledge this as a prooftext for the licitness of geomantic practice, but a number, including al-Nawawī, al-Khaṭṭābī and al-Qāḍī ‘Iyāḍ, argue for its illicitness during the Islamic dispensation; see e.g. Muḥammad al-Amin al-Urmī, *al-Kawākib al-Wahbāy wa-l-Rawḍ al-Bahbāy fī Sharḥ Ṣaḥīḥ Muslim b. al-Ḥajjāj*, 26 vols., Jeddah: Dār al-Minhāj, 2009, vol. 8, 126–128. Ibn Rushd al-Jadd (d. 520/1126) likewise judges geomancy to be illicit in his fatwa on the subject, attempting to demonstrate that this hadith in fact represents not an endorsement but a definitive prohibition (*Fatāwā Ibn Rushd*, al-Mukhtār b. al-Ṭāhir al-Talīlī, ed., 13 vols., Beirut: Dār al-Gharb al-Islāmī, 1407/1987, vol. 1, 249–261).

procedure of tracing lines in the sand.⁴⁸ And in the second, an authentic (*ṣaḥīḥ*) hadith, the prophet in question was usually taken to be Daniel (or Idris). A third hadith ascribed to ʿAlī b. Abī Ṭālib, fountainhead of sacral power (*walāya*) and patron saint of Islamicate occultism, was likewise popular (*ṭawīl* meter):

Reck you not that God (His praise be exalted)
effluxed upon Enoch a sandy science (*ʿilm^{an} muramma^{lan}*)
and through His grace inspired him with the science of dots (*ʿilm al-niqāt*),
revealing to him what had ere been obscure?⁴⁹

Persianate geomancy

Perhaps the best overview of the premodern and modern Islamicate as well as the specifically Persianate geomantic tradition is that given by Muḥammad Bāqir Ṭabāṭabāʾī Yazdī in his *Nafaḥāt al-Asrār*, written in Damascus in 1277/1861.⁵⁰ This work, while primarily in Arabic, favors Persian sources, though without neglecting the standard Arabic texts on the subject. In the course of two prefaces, ten chapters and two epilogues, Muḥammad Bāqir provides a comprehensive introduction to the science, liberally referencing or quoting his sources; most usefully for our purposes here, the second epilogue is given over to a list of the 54 texts or authors that he drew upon when writing his own book: the geomantic canon. It should be noted, however, that his list is copied almost verbatim from the list of 50 titles given by Hidāyat Allāh Munajjim in his *Qavāʿid al-Hidāya*, adding only three additional works to the end (*Asrār al-Mafātīḥ*, *Irsbād al-Raml* and the *Qavāʿid al-Hidāya* itself); this suggests a lack of new developments in the science between the 11th/17th and 13th/19th centuries.⁵¹ (The list of 49 geomantic

⁴⁸ On this verse see e.g. Muḥammad al-Qurṭubī (d. 671/1272), *al-Jāmiʿ li-Aḥkām al-Qurʾān*, 20 vols., Tehran: Nāṣir-i Khusraw, 1364 Sh./1985, vol. 16, 179–183; the exegete here argues for the licitness of oneiromancy and omen interpretation or bibliomancy (*ṣāʾ*), but the illicitness of other forms of divination, including ornithomancy (*tīra*) and augury (*zajr*) (and presumably geomancy).

⁴⁹ *A-lam tara anna Llāha jalla thanā-hu / afāḍa ʿalā Idrisa ʿilm^{an} muramma^{lan} // wa-albama-hu ʿilma l-niqāṭi bi-faḍli-hi / wa-awḥā ilay-hi mā kāna musbki^{lan}.*

⁵⁰ His full name is Muḥammad Bāqir b. Murtaḍā Ḥasani Ḥusayni Ṭabāṭabāʾī Yazdī (also Ḥāʾiri), resident of Najaf. The *Nafaḥāt al-Asrār* was published in lithograph in Najaf in 1359/1940, my source here.

⁵¹ Ṭabāṭabāʾī Yazdī, or at least the Najaf lithograph of the *Nafaḥāt*, also introduces a few errors into Hidāyat Allāh's list: it mistakenly splits the *Abwāb-i Anwār* into two works, has *Uṣūl* for *Ḥuṣūl* in two titles, drops one title (*risāla-yi Kulab-i Kabūd*), moves the *Jāmiʿ al-Asrār* from its place at the end, and most importantly does not seem to be aware that *al-Wāfi* is the title of Ṭūṣī's treatise. The full *Nafaḥāt* list is as follows, with corrections in brackets (116): *Miftāḥ al-Kunūz*, *Kanz al-Daqāʾiq*, *al-Shajara wa-l-Thamara*, *Shāmil al-Uṣūl* [*al-Ḥuṣūl*], *al-Tuḥfa al-Shābiyya*, *Uṣūl al-Raml*, *ʿAyn al-Raml*, *Shamʿ al-Raml*, *Miṣbāḥ* [*Miftāḥ*] *al-Mafātīḥ*, *al-Wāfi*, *al-Si Bāb*, *al-Fuṣūl*, *al-Abwāb*, *al-Anwār* [*Abwāb al-Anwār*], [the work of] al-Uqlidi, [the work of] al-Ṭarābulṣi, [the work of] al-Rawshani, [the treatise of Kulah-i Kabūd], *Kashf al-Asrār*, *Jāmiʿ al-Asrār*, *al-Talkhīs*, the treatise of Abū l-ʿAbbās al-Būni,

works given by Hājji Khalifa does not appear to be a source.⁵²) Space does not permit a full discussion of these here, and due to the extreme paucity of research on the subject I have been unable to identify the authors of many of the listed titles in any case; I will accordingly limit myself to listing, in chronological order, a number of what appear to be representative authors and works as a basis for further research:

1. Abū ‘Abd Allāh Muḥammad al-Zanāti (fl. before 629/1230), *al-Fuṣūl* and *Shajarat al-Raml*

This Berber scholar, again, would seem to be the most cited of early authorities on geomancy, even in the Persianate east. The first work, also titled *al-Faṣl fi Uṣūl al-Raml*, has remained popular down to the present, as testified to by a number of undated Cairo bazaar editions; one produced by Maktabat al-Qāhira, for example, is paired with a treatise on *jafr* attributed to Ja‘far al-Ṣādiq. A Persian translation was done into Greek by the monk Arsenius in 1266;⁵³ a Turkish translation is entitled *Hulūl al-Asbkāl*.

For its part, the *Shajara* appears to have inspired a long tradition of Persian commentary and supercommentary under the rubric *Shajara u Thamara*. Works by the latter title are also said to be based on a Greek original, attributed to Daniel, which was translated into Arabic by Māshā‘allāh al-Baṣrī and subsequently into Persian; a Turkish translation, entitled *al-Durr al-Manthūr*, was similarly made.⁵⁴ Another Persian commentary, entitled *Kashf al-Shajara*, was produced in 913/1507 by one Maḥmūd Kawtharī b. Ismā‘īl for Muḥammad Shībānī Khan (r. 906–918/1500–1512).⁵⁵

Mimbāj al-Asrār, *Jāmi‘ al-Kifāya*, *al-Kbulāša*, *Kbulāšat al-Baḥrayn*, *al-Tabḍīb*, *al-Dhakhira*, *al-Zubda*, *Natiġat al-‘Ulūm*, *al-Qawā‘id*, *Nuzbat al-‘Uqūl*, *al-Jāmi‘*, *al-Kāmil of al-Ustād Ḥusayn al-Qaffāl*, *Riyād al-Ṭālibīn*, *Shajarat al-Awraq*, *Sā‘ir al-Awliyā‘*, *al-Miṣbāh*, *al-Miftāh*, *Hidāyat al-Nuqta*, *R. Surkhāb*, [the work of] al-Biyābānaki, [the work of] al-Bādkūhi [Bābā Kūhi], *al-Tawḍīh*, *al-Takwīh*, the work of Mullā Shāh, *Taqwīm al-Raml*, *Aṣl al-Mafātiḥ*, *Zayn al-Raml*, *Kāmil al-Uṣūl [al-Huṣūl]*, *Jabān al-Raml*, *Asrār al-Mafātiḥ*, *Irshād al-Raml*, *Qawā‘id al-Hidāya* and the treatise of Fakhr al-Muḥaqqiqīn al-Khwāja Naṣir al-Dīn [= *al-Wāfi*].

⁵² While it accords in the main with those by Hidāyat Allāh and Ṭabāṭabā‘ī Yazdi, Hājji Khalifa’s list is more problematic; it mistakenly alters (*Mafātiḥ al-Kumūz* for *Miftāh al-Kumūz*, *Kifāya* for *Jāmi‘ al-Kifāya*, *Shajara-yi Awzān* for *Shajara-yi Awraq*, *Rawshan* for *Rawshani*), recombines (*Abwāb al-Raml* and the *Anwār of Uqlīdī* for *Abwāb al-Anwār* and an untitled work by Uqlīdī) or duplicates (two *Miṣbāhs*) certain titles, while also adding five new works: the work of Mawlānā Pashsha, *R. Yūnus*, the *Kumūz* of Abū ‘Alī, *Lubāb al-Lubāb* and Ibn Maḥfūf’s *Raml al-Muqawwīm*. See *Kashf al-Zuḥūr ‘an Asāmi l-Kutub wa-l-Funūn*, 2 vols., vol. 1, Beirut: Dār Iḥyā‘ al-Turāth al-‘Arabi, [n.d.], cols. 912–913.

⁵³ Skinner, *Geomancy*, 63.

⁵⁴ Āqā Buzurg Ṭīhrānī, *al-Dharī‘a ilā Taṣānīf al-Shi‘a*, Beirut: Dār al-Aḍwā‘ 1983, vol. 13, 41, no. 131. Note that Māshā‘allāh is not identified as a translator from Greek in the early sources (my thanks to Sonja Brentjes for this observation).

⁵⁵ Storey, *Persian Literature*, vol. 2.3, 480, no. 848; Āqā Buzurg, *al-Dharī‘a*, vol. 18, 40; see MS Malik 5868 and MS Asiatic Society of Bengal 1516.

2. Abū l-ʿAbbās al-Būnī (d. 622/1225?), *risāla*

The provenance of this untitled treatise is uncertain at best; I am not aware of a geomantic work ascribable to al-Būnī. Even the *Shams al-Maʿārif al-Kubrā*, the seminal and otherwise comprehensive 10th/16th-century grimoire loosely based on al-Būnī's authentic works, does not appear to contain any material on the subject.⁵⁶ Nevertheless, that al-Būnī was increasingly cited as an authority on geomancy is testament to the confluence of that science with lettrism in the early modern Persianate world, as will be shown below.

3. Naṣīr al-Dīn Ṭūsī (d. 672/1274), *al-Vāfi fi ʿIlm al-Raml*

This short treatise, dedicated by the author to Hülegü – whose powers of analysis are here described as ‘alchemically potent’ (*kīmiyā-atbar*) –, exists in both Persian and Arabic versions, the first typically titled *al-Vāfi fi ʿIlm al-Raml* and the second *al-Sultāniyya fi l-Raml*. Both versions are well represented in the manuscript record, particularly the Persian (preserved in at least 20 MS copies in Iran alone), and there is little reason to doubt the authenticity of the treatise's ascription to Ṭūsī.⁵⁷ A facsimile copy was printed in *Majmūʿa-yi ʿIlm al-Raml* (Qom/Urūmiye, n.d.). The copy in MS Dānīshgāh 6315 is followed by a brief treatise on the population of *budūh dāʿiras*. A lengthy commentary on the Persian version was written by Nūr al-Dīn Faṭḥ Allāh Abharī (fl. 786/1384), titled simply *Sharḥ-i Risāla-yi Raml-i Khwāja Naṣīr*.⁵⁸ The same commentator states that Ṭūsī originally wrote his treatise in Turkic, after which another scholar translated it into Persian (a rather dubious claim). It was versified in 169 lines by one ʿAzīzī (Mashhad, MS ʿAbd al-Majīd Mawlavī 446).

Another Persian treatise on geomancy is attributed to Ṭūsī under the title *Aḥkām-i Davāzdah Khāna-yi Raml*.⁵⁹ Likewise, an *Asrār-i Mafātiḥ dar Raml* (Prince-

⁵⁶ Savage-Smith and Smith, “Islamic Geomancy”, 39. On the Būnian corpus see Noah Gardiner, “Esotericism in a Manuscript Culture: Aḥmad al-Būnī and His Readers through the Mamlūk Period”, PhD dissertation, Univ. of Michigan, 2014.

⁵⁷ See Muḥammad-Taqī Mudarris Raḍavī, *Aḥwāl u Āthār-i ... Muḥammad b. Muḥammad b. al-Ḥasan al-Ṭūsī Mulaqqab bi Khwāja Naṣīr al-Dīn*, Tehran: Univ. of Tehran Press, 1334 Sh./1955), 295–297: 309 (the Persian and Arabic versions of *al-Vāfi* are here mistakenly treated as different works); Storey, *Persian Literature*, vol. 2, 3, 480, no. 845; Āqā Buzurg, *al-Dharīʿa*, vol. 11, 250, no. 1535; Carl Brockelmann, *Geschichte der arabischen Litteratur*, 3 vols. and 2 supplemental vols., Leiden: Brill, 1937–1942, vol. 1, 676 no. 56; suppl. vol. 1, 933. It should be noted, however, that the Ilkhanid *Safīna-yi Tabriz*, which contains some material on geomancy and various works by Ṭūsī, does not include a copy in its present incomplete state (Živa Vesel, “La représentativité des matériaux scientifiques dans Safīna-ye Tabriz: le cas de minéralogie et des sciences occultes”, in: *The Treasury of Tabriz: The Great Il-Khanid Compendium*, A. A. Seyed-Gohrab and S. McGlinn, eds., Amsterdam: Rozenberg, 2007, 207–220: 213 n. 306).

⁵⁸ Āqā Buzurg, *al-Dharīʿa*, vol. 8, 234, no. 977; see e.g. MS Majlis 12509/2, ff. 19a–139b.

⁵⁹ Mudarris Raḍavī, *Aḥwāl*, 296.

ton, MS New Series 427) is misattributed to ṬŪsĪ under the title *Kitāb-i Shamar-i Shajara* (i.e., the *Shajara u Thamara* discussed above in connection with al-Zanāti); more than one later *Asrār al-Mafātih* is extant. In one copy made for Mirzā Muḥammad Karīm Khān Nūrī (MS Marʿashī 8979/1), a note attributes this work to ṬŪsĪ, while the *Fibrīst-i Mushtarak-i Pākistān* attributes it to ʿAlī b. Khalīl al-Ṭarābulusī, and the Marʿashī catalog attributes the base text *Shajara* (MS Marʿashī 4229/2) to one Mullā Muḥammad Ḥusayn Hamadāni.

4. Nāṣir [al-Dīn b.] Muḥammad b. Ḥaydar Rammāl-i Shirāzī (7th/13th c.),
Maḥmūd al-Raml

Some confusion exists as to this geomancer's name, which variously appears as Nāṣir al-Dīn Muḥammad or Nāṣir b. Muḥammad,⁶⁰ as well as to the title of his most popular work, of which at least nine MSS survive in Iran. *Maḥmūd al-Raml* seems to be used most frequently, but alternative titles include *Nuzbat al-ʿUqūl va Nihāyat al-Uṣūl*, *Irshād al-Raml*, *Tuhfat al-Raml*, *Lubāb al-Raml* and *Nāṣir al-Raml*, or simply *R. Nāṣiri*; the *Irshād al-Raml* cited by Ṭabāṭabāʿī Yazdī is almost certainly the same work. This treatise is presumably an adaptation of al-Zanāti's *K. al-Faṣl* in particular (in the introduction the author assures us that he in no way departs from the method of the Berber master),⁶¹ and was written for one Sayyid Ḥusayn b. ʿAlī ʿAlavī. Nāṣir is also credited with the astrological work *Hidāyat al-Nujūm*, and an *Irshād* on the astrolabe (perhaps a source for the above confusion of titles). Another popular geomantic manual, *Tuhfa-yi Shābi*, was penned by one Aḥmad b. Ḥaydar b. Muḥammad Shirāzī⁶² – perhaps Nāṣir's brother or relative, or even Nāṣir himself. (The currency of this work is testified to by the fact that a copy is preserved in the deluxe geomantic *majmūʿa* MS Majlis 12563/2, on which more below.) Finally, it bears noting in this connection that another Shirazi Rammāl, Saʿd b. Muḥammad, was author of the geomantic work *Maṭālib al-ʿArifin* (MS Marʿashī 1081/4).

The example of Nāṣir, in short, signals the emergence of Shiraz, and Fars more generally, as capital of the emergent Persianate geomantic tradition. It appears to have retained this status until at least the 11th/17th century, moreover; a full half of the geomantic works identified in this list were likely produced in the region or, as with *Hidāyat Allāh*, by Shirazis abroad.

⁶⁰ See Storey, *Persian Literature*, vol. 2.3, 485, no. 856 (17, 21), 486 (33), 487 (38, 39), 488 (52).

⁶¹ See e.g. MS Ganj Bakhsh 1686, p. 3.

⁶² Storey, *Persian Literature*, vol. 2.3, 485, no. 856 (21 n. 2).

5. Muʿin al-Dīn Muḥammad b. Naṣr Allāh Khāqānī, aka Mullā Muʿin (fl. 706/1307), *Zubdat al-Raml*

This modest versified treatise on geomancy is typically identified as the *zubda* of Muʿin.⁶³ Another *Zubdat al-Raml* is ascribed to Mawlavi Sayyid Rawshan ʿAlī Rammāl-i Fayḍābādī, which was printed in lithograph form multiple times: Delhi, 1292/1875 and 1293/1876; India, 1881; Lucknow, 1335/1917, as part of a collection of geomantic texts under the abovementioned name of Nāṣir b. Muḥammad Rammāl. This Rawshan ʿAlī is credited with another printed geomantic work, *Sirāj al-Raml* (Lucknow, 1876; Cawnpore, 1891 and 1908). A *Mujarrabāt dar Raml* is also attributed to a Muʿin al-Dīn, presumably the same geomancer (MS Majlis 1181/3).

6. Ḥasan b. ʿUmar Ṭabasī (fl. 735/1335), *Miftāḥ al-Kunūz fi l-Rumūz*

The *Miftāḥ al-Kunūz* represents a milestone in the development of a specifically Persianate geomantic tradition: Hidāyat Allāh reports that in it Ṭabasī establishes an entirely new method of geomancy based on what he called the Most Complete (*aṣaḥḥ*) cycle, wholly ignoring the three well-known methods of his day, including that associated with al-Zanātī.⁶⁴ It is preserved in at least 13 MS copies and partial copies in Iran, and in the deluxe *majmūʿa* MS Majlis 12563/5 immediately follows the *Qavāʿid al-Hidāya*. As Hidāyat Allāh also reports, Ṭabasī's teacher in geomancy was one Qāḍī ʿAbd al-Raḥmān Jinnī.⁶⁵ His *Aḥkām*, another work on geomancy, was commented on by one Muḥammad Munajjim-i Iṣfahānī.⁶⁶

Āqā Buzurg reports that Ṭabasī wrote the *Miftāḥ al-Kunūz* in Yazd in 735/1335, and in 968/1561 the Safavid shah Ṭahmāsb (r. 930–984/1524–1576) requested of Muḥammad b. Jalāl (or Jamāl) b. ʿAbd Allāh al-Ḥusaynī (or al-Ḥasani) al-Balyānī, a geomancer connected to his court (to be identified with ʿAbd Allāh Balyānī below), that he send him a work on geomancy; Sayyid Balyānī accordingly sent him a copy of the *Miftāḥ al-Kunūz* with a new introduction, as the original was missing.⁶⁷ (Muḥammad-Taqī Dānishpazhūh notes that the *Miftāḥ al-Rumūz wa-Miqlād al-Kunūz* of one Ḥasan b. Zāhid Gharīb-i Kirmānī, written in 726/1326 for the Delhi sultan Muḥammad Shāh II b. Tughluq (r. 725–752/1325–1351), may well be the same work.⁶⁸) Āqā Buzurg also flags the presence of another geomancer at

⁶³ Storey, *Persian Literature*, vol. 2.3, 480, no. 846, and 489, no. 856 (58); cf. Āqā Buzurg, *al-Dharīʿa*, vol. 19, 195, no. 878 (he notes that a work by this title printed in Delhi is attributed to Ibn Sinā).

⁶⁴ *Qavāʿid al-Hidāya*, MS Majlis 12563/4, p. 316.

⁶⁵ *Qavāʿid al-Hidāya*, MS Majlis 12563/4, p. 323.

⁶⁶ See e.g. MS Majlis 12509/3, f. 139b.

⁶⁷ *Al-Dharīʿa*, vol. 21, 344–345, no. 5392. Three MS copies of the *Miftāḥ al-Kunūz* appear to preserve Sayyid Balyānī's version.

⁶⁸ Muḥammad-Taqī Dānishpazhūh, “Yak Parda az Zindagānī-yi Shāh Ṭahmāsb-i Ṣafavi”, in: *Justār-bā-yi Adabi* 28 (1350 Sh./1971), 915–997, here: 993.

Ṭahmāsb's court, one Ramzī Iṣfahānī, though he is not known to have produced a manual on the subject.⁶⁹

7. Anonymous (8th/14th c.?), *R. Surkhāb*

This treatise appears to be associated with the title *Sayr-i Nuqta*, the term for a standard geomantic procedure.⁷⁰ In geomantic lore Surkhāb was the name of the shepherd who became Daniel's first client (see below), and so is associated with the Danielic geomantic tradition in particular.⁷¹ The popularity of this work is confirmed by the fact that it is quoted by Ḥusayn Vā'iz Kāshifī (d. 910/1505), the great Timurid preacher, polymath and occultist, in his own seminal manual of magic, the *Asrār-i Qāsimī*, which in turn assured its currency down to at least the 13th/19th century; the fine copy preserved in the deluxe geomantic *majmū'a* MS Majlis 12563/3, for instance, is dated 1312/1895. It also survives in at least 26 other MS copies in Iran alone, and two at Princeton; a lithograph was thrice printed as *Kulliyāt-i Kitāb-i Mustatāb-i Surkhāb-i Raml-i Mansūb bi Ḥaḍrat-i Dāni-yāl-i Payghambar* (Bombay, 1309/1892 and 1312/1894; Tehran: Shirkat-i Kānūn-i Kitāb, n.d.).⁷² Significantly for our purposes in this survey, Sayyid Muḥsin al-Amin considers *R. Surkhāb* to be the title of a geomantic work by Sayyid Ḥusayn Akhlāṭī, the great Kurdish alchemist-lettrist, on whom see below.⁷³ (The same *majmū'a*, MS Majlis 12563, notably concludes with a long, untitled work by Akhlāṭī on alchemy, further suggesting his connection, at least in its later reception, to the *R. Surkhāb*.)

8. Anonymous, *Miṣbāḥ al-Raml*

This anonymous but oft-cited Persian work in 16 chapters is sometimes associated with one Abū l-Barakāt – presumably Abū l-Barakāt al-Baghdādī (d. after 560/1164), the famed Jewish philosopher identified, probably incorrectly, as Fakhr al-Din Rāzī's teacher.⁷⁴

9. Anonymous, *Sā'ir al-Awliyā'*

This work emphasizes geomancy's status as a natural science, and is cited as a source by Shams al-Din Khafri (d. 942/1535) in particular. (Tellingly, in the Princeton copy, MS New Series 1177/1, ff. 1a–15b, it is immediately followed by

⁶⁹ *Al-Dharī'a*, vol. 9.2, 384, no. 2249.

⁷⁰ Āqā Buzurg, *al-Dharī'a*, vol. 12, 279, no. 1866.

⁷¹ It may be noted in passing that the Kurdish 'Annāzids (4th–6th/10th–12th c.) feature three dynasts with the name Surkhāb, and the Kāvūsi Bāwandids (1st–5th/7th–11th c.) two.

⁷² Storey, *Persian Literature*, vol. 2.3, 488, no. 856 (47).

⁷³ *A'syān al-Sbī'a*, Ḥasan al-Amin, ed., 11 vols., Beirut: Dār al-Ta'āruf, 1983, vol. 6, 94.

⁷⁴ See Ṭabāṭabā'ī Yazdī, *Naḥāḥāt al-Asrār*, 5, 10, 29, 30, 41, 100. I was unable to examine any manuscript copies of this work.

Khafri's own *R. dar Raml*, on which see below.) Hidāyat Allāh identifies it as epitomizing the eastern, i.e., Khurasani-Indian, geomantic school.⁷⁵ Its popularity is suggested by the survival of at least 11 MSS in Iran alone.

10. Zayn al-ʿĀbidin b. Qāsim Rammāl-i Iṣfahānī (8th/14th c.), *Zayn al-Raml*

This geomancer is not to be confused with Zayn al-ʿĀbidin Vāhid al-ʿAyn Rammāl-i Iṣfahānī, whose son Ṣafyā-yi Rammāl carried out a famous poetic insult match (*mubājāt*) with Shah ʿAbbās's personal physician and boon companion, Sharaf al-Dīn Ḥasan Iṣfahānī, aka Ḥakim Shifāʾi Iṣfahānī (d. 1037/1628).⁷⁶ Other titles like *Kanz al-Aḥbāb*, *Thamarāt al-Arwāḥ* and *Sharḥ-i Kitāb-i Shajara* are also associated with the former Zayn al-ʿĀbidin.⁷⁷ The *Zayn al-Raml* survives in at least three MSS in Iran.

11. ʿAbd al-Ghanī Ḥāfiẓ Shirvānī (8th/14th c.), *Anvār al-Raml*⁷⁸

A *Kbulāṣat al-Raml*, attributed to the author as well, is perhaps an earlier version of the *Anvār al-Raml*. The latter treatise survives in at least 11 MS copies in Iran, as well as in one in Cairo dated 1161/1748 (MS Maʿārif al-Asrār Fārisī Ṭalʿat 2), and a number of lithograph printings exist (India, 1293/1876 and 1313/1896; Lucknow, 1335/1917; Lucknow, 1877, ed. ʿAziz al-Ḥasan; Lucknow: Nawal Kishawrī, 1881 and 1896).

12. Luṭf Allāh b. ʿAbd al-Malik Nishāpūri Samarqandi (d. 816/1413?), *Kbulāṣat al-Baḥrayn*

On this work and author see below.

13. Ḥasan Abarqūhī (fl. early 9th/15th c.), *urjūza*

Hidāyat Allāh, and following him Ṭabāṭabāʾī Yazdī, identifies this geomancer as the student of Sayyid Ḥusayn Akhlāṭī – a fact of some significance, as will be seen.⁷⁹ While Ḥasan Abarqūhī is not known to be the author of a geomantic manual of his own, his seven-line *urjūza* on the *istikbrāj al-ḍamīr* procedure⁸⁰

⁷⁵ *Qavāʿid al-Hidāya*, MS Majlis 12563/4, p. 364.

⁷⁶ Vālih Dāghistānī, *Tadbkīra-yi Riyāḍ al-Shuʿarāʾ*, Muḥsin Nāji Naṣrābādī, ed., 5 vols., Tehran: Asāṭir, 1384 Sh./2005, vol. 2, 1195, no. 1206.

⁷⁷ Storey, *Persian Literature*, vol. 2.3, 488, no. 856 (55).

⁷⁸ Storey, *Persian Literature*, vol. 2.3, 483, no. 856 (1); Āqā Buzurg, *al-Dharīʿa*, vol. 2, 427, no. 1682.

⁷⁹ *Qavāʿid al-Hidāya*, MS Majlis 12563/4, 333; *Nafahāt al-Asrār*, 29.

⁸⁰ *Istikbrāj al-ḍamīr* is used to determine the main factor in one's question; in his discussion of geomancy, Shams al-Dīn Āmulī (on whom more below) reports that there is considerable difference of opinion on the subject and gives five different techniques, the second involving, for example, the combination of the first and the sixteenth figures of a tableau on the one hand and the fourth and seventh on the other, then the combination of the two

would seem to be well-known to later specialists. It begins, ‘Take every odd level of a reading’ (*bama-yi marātib-i afrād-i raml-rā bar-gir*), and ends with an assertion of the science’s orthodoxy: ‘In this method as set forth by Ḥājji Ḥasan / nowise may the decree of the Creator be altered.’⁸¹

14. Nizām al-Dīn ‘Abd al-Qādir b. Ḥasan Rūyānī Lāhijī (d. 925/1519),
Miftāḥ-i Mafātīḥ

It is with such figures as ‘Abd al-Qādir Rūyānī that we begin to see the consolidation of the convergence, from Ṭūsī onward, of the professional roles of astronomer-astrologer and geomancer, such that henceforth in the Persianate world the title *munajjim* typically refers to both. This Gilani scholar was first and foremost an astronomer: as a student of ‘Alī Qūshchī (d. 878/1474), he produced a commentary, entitled *Tuhfa-yi Nizāmiyya*, on Ṭūsī’s seminal *Sī Faṣl*; the *Zij-i Mulakkbhaṣ-i Mirzā’i*, an abridged version of the landmark *Zij-i Jadid-i Sulṭānī* produced at the Timurid sultan Ulugh Beg’s (r. 811–853/1409–1449) Samarkand Observatory; and a short almanac key in the established *ma‘rifat-i taqvim* genre (as did Ṭūsī himself). While the first two works were dedicated to Kiyā’ī governors, ‘Abd al-Qādir spent part of his career teaching at the Shāh Madrasa in Herat under Sulṭān-Ḥusayn Bāyqarā (r. 873–911/1469–1506).⁸² The *Miftāḥ-i Mafātīḥ*, of which at least eight MSS survive in Iran, is formally a commentary on the important but brief geomantic text *Mafātīḥ*, whose author I have not been able to identify; while other commentaries seem to have been produced on the original treatise, with titles like *Asrār-i Mafātīḥ* (sometimes ascribed to Ṭūsī) and *Aṣṭ-i Mafātīḥ*, ‘Abd al-Qādir’s was perhaps the most popular.

That the Gilani astronomer-geomancer appears to have been a member of the Samarkand school is highly significant in the history of science context – for his teacher Qūshchī and the latter’s teacher Qāḍizāda Rūmī (d. 835/1432) were responsible for the fateful and unprecedented push to *mathematize astronomy*; they are the first in the Islamo-Christianate astronomical tradition as a whole to do so, and hence in a sense the indirect forebears of Isaac Newton himself, as has recently been shown.⁸³ This project was continued into the Safavid period,

resulting figures (*Nafāyis al-Funūn fi ‘Arāyis al-Uyūn*, Abū l-Ḥasan Sha‘rānī and Ibrāhīm Miyānji, eds., 3 vols., Tehran: Intishārāt-i Islāmiyya 1381 Sh./2002, vol. 3, 548–549).

⁸¹ Ṭabāṭabā’ī Yazdī, *Nafāḥāt al-Asrār*, 29.

⁸² Āqā Buzurg, *al-Dbarī‘a*, vol. 21, 253, no. 4896.

⁸³ See e.g. F. Jamil Ragep, “Copernicus and His Islamic Predecessors: Some Historical Remarks”, in: *Filozofski Vestnik* 25/2 (2004), 125–142; I discuss the immediate lettrist-neopythagorean context of this mathematical turn in Matthew Melvin-Koushki, “Powers of One: The Mathematicalization of the Occult Sciences in the High Persianate Tradition”, in: *Intellectual History of the Islamicate World* 5/1 (2017), 127–199. It should be noted, however, that Newton’s project is rather different: where the Samarkand astronomers sought to “free astronomy from philosophy”, as Ragep puts it (i.e., from aristotelian phys-

moreover, by philosopher-scientists of the caliber of Khafri – who similarly produced geomantic treatises. Mention may also be made of Mir Shams al-Din Muḥammad Khabīši Kirmāni, Safavid ṣadr under Shah Muḥammad Khudābanda (r. 985–995/1578–1587), as well as his colleague Jalāl al-Din Muḥammad Munajjim-i Yazdi, discussed below, who both combined expertise in astronomy-astrology and geomancy in a pattern now familiar.⁸⁴ Geomancy, then, was clearly seen in Iran as a mainstream applied mathematical science by the late 9th/15th century, and often pursued as such in a courtly context – including by the sultan-scientist (*al-sultān al-faylasūf*) Ulugh Beg himself.

15. Shams al-Din Muḥammad Khafri (d. 942/1535), *R. dar Raml*

On this work and author see below.

16. Ḥaydar b. Muḥammad Rammāl-i Iṣfahāni, aka Tabrizi (fl. mid-10th/16th c.),
Kashf al-Asrār

Based on the titles he cites in and the general *imamophilic* tenor of this work's introduction, Ḥaydar b. Muḥammad may be presumed to have flourished in Safavid Iran, where his manual was evidently quite popular (27 MS copies survive in Iran alone). Offering an intriguing glimpse into the career of a professional occultist, he opens the *Kashf al-Asrār* with an autobiographical account of the difficulties he faced in mastering geomancy and other occult sciences. After struggling fruitlessly over a long period, during which he consulted many books and sought out many authorities, one night the would-be geomancer performed a special invocation for guidance to God, Muḥammad, 'Ali and Daniel, together with the appropriate litanies and rituals, then went to sleep; he was accordingly vouchsafed a prognosticative dream. Therein he found himself lost in a vast desert with a bewildering multiplicity of paths, and was unable to tell which would lead to a city. But suddenly he came across a grand caravan led by 'Ali b. Abi Ṭālib himself, the king of saints (*shāh-i awliyā*), who revealed to him the highway to an enormous city; there he traveled, and then awoke. This dream was fulfilled a month later: the author finally found a teacher capable of dispelling all his confusion as to the technical details of geomancy as propounded in the standard works (*kitāb-hā-yi mu'tabar*) on the subject. Here he cites the following titles: the *Shajara*, the *Miṣbāh*, the *Miftāḥ al-Mafātīḥ*, the *Shāmīl*, the *Kāmīl*, *Kbulāṣat al-Baḥrayn* and the *Kashshāf*, together with the untitled treatises (sg. *zubda*) of Mullā Mu'in and Shams al-Din Muḥammad Khafri – the curriculum of a Safavid geomancer-in-training.⁸⁵

ics), the Englishman mathematized celestial physics and dynamics (my thanks to Sonja Brentjes for this observation).

⁸⁴ Iskandar Beg Munshī, *Tārīkh-i 'Ālam-ārā-yi 'Abbāsī*, ed. Īraj Afshār, 2 vols., 3rd ed., Tehran: Amīr Kabīr 1382 Sh./2003, 321.

⁸⁵ MS Majlis 12593/2, ff. 35b–36b; this copy was made in 1078/1668 (f. 81a), the *terminus ad quem* for the composition of this treatise.

While no biographical information is extant on this Isfahani-Tabrizi geomancer, his citing of Rūyānī's and Khafri's works in particular, and his valorization of 'Ali as the *shāb-i awliyā*, suggests a composition date in the early to middle decades of the 10th/16th century. It also suggests that Ḥaydar b. Muḥammad is to be identified with one Ḥaydar b. Muḥammad Munajjim, author of the geomantic work *Zubdat al-Dhakhā'ir fī Istikbrāj al-Damā'ir* (which, like Hidāyat Allāh, identifies distinct Berber, Maghribi, Egyptian, Indian and Rūmi geomantic methodologies),⁸⁶ as well as, perhaps, a *Tuhfa-yi Shāhī* on astronomy (MS Malik 3214/13). The same individual also copied a *majmū'a* (MS Raḍavī 5632) comprising works on astronomy-astrology and geomancy, including the *Rawḍat al-Munajjimin* of Shahmardān b. Abī l-Khayr Rāzī (fl. 477/1084) and an *Asrār al-Raml* consisting of extracts from al-Zanāti's work by the same title.

But most intriguingly, the Tabrizi styling and probable Safavid origin of this geomancer suggest the possibility of his identification with that shadowy Ḥaydar Rammāl (d. btw. 966–972/1559–1565) – Shah Ṭahmāsb's (r. 930–984/1524–1576) tutor in Tabriz – who was to become such an influential fixture at the Ottoman court, though this seems unlikely based on our current knowledge of the latter; see below.⁸⁷

17. Sayyid 'Abd Allāh Ḥusaynī Balyānī, aka Shāh Mullā Munajjim-i Shirāzī
(fl. 963–984/1556–1576), *Jabān (Jibāt) al-Raml*

Dānishpazhūh notes that an early draft of the *Jabān al-Raml* was written in 963/1556 for Shah Ṭahmāsb;⁸⁸ a note at the beginning of one copy of the work states that the author was the Safavid shah's contemporary.⁸⁹ (It will be recalled that Sayyid Balyānī supplied Ṭahmāsb's request for a geomantic manual with a new version of Ṭabasi's *Miftāḥ al-Kunūz*.) This popular treatise, of which at least 15 MS copies survive in Iran alone, appears to have been rededicated to Shah Muḥammad Khudābanda in 984/1576.⁹⁰ Muḥammad 'Ali Mudarris argues that the work was first printed in Bombay under the incorrect title *Jabān al-Raml*,

⁸⁶ Qom, MS Markaz-i Ihyā' 3608/2, 19 ff. (13th/19th c.). Another copy of this work (MS Majlis 130-*fayrūz*, 58 pp. [1248 AH]) attributes it to a Muḥammad b. 'Ali Iṣfahānī.

⁸⁷ While such an identification is further supported by Ḥaydar Rammāl's association in Ottoman sources with Karaca Dağ, just to the west of Tabriz (Cornell Fleischer, "Seer to the Sultan: Haydar-i Remmal and Sultan Süleyman", in: *Cultural Horizons: A Festschrift in Honor of Talat S. Halman*, J. Warner, ed., Istanbul and Syracuse: Syracuse Univ. Press, 2001, vol. 1, 290–299, esp. 296–297), the same placename could refer to Montenegro, especially given Ḥaydar's possession of a *sancak* in Macedonia. More problematic is the question of style: the Persian prose of the *Kashf al-Asrār* is considerably more polished and erudite than that of Ḥaydar's one known Persian work, *Mir'āt al-Kawmayn*, presented to Sultan Süleymān, which suffers from grammatical infelicities (my thanks to Professor Fleischer for these observations).

⁸⁸ Dānishpazhūh, "Yak Parda", 992.

⁸⁹ MS Majlis 2782, 6.

⁹⁰ Thus e.g. MS Majlis 2782.

which has therefore stuck, but the correct title is in fact *Jihāt al-Raml* since the sections are called *jihats* and the subsections *ufuqs*.⁹¹ However, I would suggest that the title *World of Geomancy* seems to better reflect the geographical theme of this work, which features four directions, East, North, West and South, each with multiple horizons. Sayyid Balyāni reports in the introduction that he traveled widely in order to master astrology, geomancy and lettrism, being inspired in Shiraz in 963/1556 by his brother Shams al-Din Muḥammad, an accomplished occultist, with respect to geomancy in particular; he therefore determined to set down (or revise) his findings after 20 years of effort, in 984/1576. He similarly speaks of his brother Shams al-Din as his teacher in a second substantial work on geomancy, titled *Makḥzan al-Asrār*, which has three sections to the *Jabān al-Raml*'s four (preserved only in Qom, MS Masjid-i Aʿzam 2034) – perhaps the first draft of the latter? In the preface to both texts, Sayyid Balyāni states that he therein but expands upon the comprehensive approach of his grandfather ʿAbd Allāh Awliyā (d. ca. 900/1494) in his own *Riyāḍ al-Ṭālibin* – a datum repeated by Hidāyat Allāh.

Most notably, the *Jabān al-Raml* represents the first geomantic manual, Persian or Arabic, to attempt a full synthesis of the various schools of geomancy flourishing throughout the Islamicate world. (As of this writing I have been unable to access any manuscript copies of its older model, the *Riyāḍ al-Ṭālibin*, so cannot say to what extent it follows or departs from that work.) It may also be the first to formally insist on the science's status as an application of the *quadrivium* – and hence a scientific tool for studying the cosmos. That its seventh section is devoted to lettrism – shades of Luṭf Allāh Nishāpūri's *Khulāṣat al-Baḥrayn* – is similarly notable in this context.⁹²

18. Hidāyat Allāh Munajjim-i Shirāzi (fl. 962–1001/1555–1593),
Qavā'id al-Hidāya

This Shirazi geomancer was Sayyid Balyāni's most successful student, and responsible for propagating his teacher's comprehensive synthetic system in Mughal India; I will therefore focus closely on his *Qavā'id al-Hidāya* in what follows, for as a recasting and expansion of the *Jabān al-Raml* it represents the most comprehensive picture of the state of the art throughout the Persianate world in the late 10th/16th century. There are at least seven surviving MS copies in Iran, the earliest two copied in 1003/1595, and include one in the luxury geomantic *majmū'a* MS Majlis 12563, my source here; many more may be presumed to survive in India.⁹³

⁹¹ *Rayḥānat al-Adab fī Tarājim al-Ma'rūfīn bi-l-Kunya aw al-Laqaḥ*, 8 vols., Tehran: Khayyām, 1369 Sh./1990, vol. 3, 174.

⁹² Storey, *Persian Literature*, vol. 2.3, 482, no. 851, 484, no. 856 (9).

⁹³ See Storey, *Persian Literature*, vol. 2.3, 481, no. 850 (2, 4, 5); Āqā Buzurg, *al-Dharī'a*, vol. 17, 195, no. 1034.

19. Jalāl al-Dīn Muḥammad Munajjim-i Yazdī (d. 1028/1619),
Kbulāṣat al-Raml

Also the author of the important chronicle *Tāriḫ-i ‘Abbāsī* (aka *Rūznāma-yi Mullā Jalāl*) and *Tuḥfat al-Munajjimin*, an astrological manual, Jalāl al-Dīn Munajjim-i Yazdī was court astronomer-astrologer to Shah ‘Abbās (r. 995–1038/1587–1629) and famously advised his patron to abdicate the throne for three days to manage the Nuqtavi challenge.⁹⁴ Jalāl al-Dīn wrote the *Kbulāṣat al-Raml* for Khan Aḥmad Ḥusaynī, ruler of Gilān (r. 943–975/1536–1568, 985–1001/1577–1593). Seven MS copies survive in Iran; another work with this title by Sayyid Turāb-‘Alī was printed in lithograph (India, 1854).⁹⁵

* * *

Such, then, are some of the most influential geomancers of the Persianate world through the turn of the 11th/17th century; together they offer a snapshot of the progressive geographical spread and epistemological and technical development of our divinatory science from the Ilkhanid period onward. For later Persian geomancers, moreover, the intellectual prestige of these authorities and their peers remained wholly intact. Thus Muḥammad Bāqir Ṭabāṭabā’ī Yazdī, in compiling his own manual in 13th/19th-century Damascus, depends heavily on the *Miṣbāḥ* and al-Zanāṭī’s *Fuṣūl*, followed by Tūṣī’s *Vāfi*, Hidāyat Allāh’s *Qawā’id al-Hidāya*, the *R. Surkhāb* and Nāṣir b. Ḥaydar’s *Irshād al-Raml*; he also quotes Ḥasan Abarqūhī’s *ur-jūza*.⁹⁶ In one place Muḥammad Bāqir gives a representative list of authorities as follows, testifying to the final fusion of western and eastern geomantic traditions: the author of the *Kashshāf*,⁹⁷ Waḍ‘ (?) al-Dīn al-Maghribī, Afḍal al-Dīn al-Rūmī,⁹⁸ Māshā’allāh al-Miṣrī,⁹⁹ Sulṭān al-Muḥaqqiqīn Naṣir al-Dīn al-Ṭūṣī, al-Imām al-

⁹⁴ See e.g. Kathryn Babayan, *Mystics, Monarchs, and Messiahs: Cultural Landscapes of Early Modern Iran*, Cambridge, Mass.: Harvard Univ. Press, 2002, 350–351; ‘Alī Riḍā Rayḥān, *Āyina-yi Dānisvarān*, Qom: Kitābkhāna-yi Mar‘ashī, 1372 Sh./1993, 661–662; ‘Alī Aṣghar Muṣaddīq, “Khāndān-i Munajjim-i Yazdī u Tāriḫ-nigāri-yi Dawra-yi Ṣafavī”, in: *Kitāb-māb-i Tāriḫ u Juḡhrāfiyā* 37–38 (Adhar 1379 Sh./2000), 4–7.

⁹⁵ Storey, *Persian Literature*, vol. 2.3, 481, no. 849; copies include MSS Majlis 12611/2 and 12543; MSS Mar‘ashī 11532/1 and 6393; and MS Mawlavī Muḥammad Shafī‘ 239/325 (Lahore).

⁹⁶ *Nafāḥāt al-Asrār*, 29.

⁹⁷ Not known to be a title of a geomantic work – perhaps Ḥaydar b. Muḥammad Rammāl-i Iṣfahānī’s *Kashf al-Asrār* is meant here?

⁹⁸ I.e., Afḍal al-Dīn Abū l-Qāsim b. ‘Abd al-Ṣamad b. ‘Abd al-Jalīl (or: ‘Abd al-Malik b. ‘Abd al-Khalīl) al-Rūmī, author of the *Shāmīl al-Ḥuṣūl*, or possibly the *Kāmīl al-Ḥuṣūl*, assuming these are different works; they may also be a single work whose full title is *Shāmīl al-Uṣūl wa-Kāmīl al-Ḥuṣūl*.

⁹⁹ I.e., Māshā’allāh al-Baṣrī (often mistranscribed as al-Miṣrī) (d. 199/815), the famed Jewish astrologer.

Zanāti, ‘Izz al-Dīn al-Abharī,¹⁰⁰ al-Hājj Ḥasan al-Abarqūhī and al-Hājj Ḥasan al-Ṭabasī.¹⁰¹

But such lists give little sense of the actual *texture* or *sociocultural role* of the Persianate geomantic tradition. For reasons of space I accordingly focus on Hidāyat Allāh Munajjim-i Shirāzi, star student of Sayyid ‘Abd Allāh Balyānī and émigré to India, whose *Qavā'id al-Hidāya*, as noted, serves as epitome of that tradition at the moment of its greatest sophistication and vastest synthesis. Its model, the *Jabān al-Raml*, constructs a conceptual framework for the science that is explicitly “international”: it classifies the regional schools of practice into four broad groups – the Geomantic East (India, Khurasan, Transoxania and points east), the Geomantic North (Fars, Iraq, Gilan), the Geomantic West (the Maghrib, Egypt, Syria, Arabia) and the Geomantic South (the most difficult and occult method, invented by Ṭabasī, exclusive to the saintly elite in all regions) – and provides a full treatment of each. At the same time, Sayyid Balyānī imparts to his work a rich Twelver Shī‘i flavor in substantiation of his Safavid patrons’ total identification of Alidism and occultism.

Hidāyat Allāh, his student and fellow Shirazi, chose rather to seek his fortune in India. (Again, the Shirazi stemming of both men is indicative: that city seems to have functioned as the capital of Persianate occultism during the centuries here in view, and was a major supplier of professional occultists to the neighboring Mughal and Ottoman Empires during the 10th/16th century.)¹⁰² To attract Mughal patronage, in 962/1555 he adapted his teacher’s manual to Mughal imperial purposes and dedicated it to Emperor Akbar in celebration of the latter’s impending accession, then rewrote the work in the month of Farvardin in year 37 of Akbar’s Ilāhī calendar – that is, at the spring equinox of the year 1001 (March 1593):¹⁰³ the moment of dawning of the Islamic millennium over the horizon of Akbar’s sacred body, itself effulging forth the talismanic cosmocrator’s eschatological imperium over all of India. The *Qavā'id al-Hidāya* was thus one of the many works the Mughal emperor commissioned to celebrate the millennium’s arrival, including the feted *Ā'in-i Akbarī* and *Tārikh-i Alfī*. Hidāyat Allāh’s claim to comprehensiveness and unprecedented clarity in tackling his occult subject, in other words, is na-

¹⁰⁰ Presumably to be identified with the commentator on Naṣir al-Dīn Ṭūsī’s geomantic treatise, Nūr al-Dīn Faṭḥ Allāh Abharī (fl. 786/1384); see the entry on Ṭūsī above.

¹⁰¹ *Nafāḥāt al-Asrār*, 42. Ṭabāṭabā’ī Yazdī also references Khwāja Abū l-Ma‘ālī l-Nisābūrī’s *R. Miṣṭāḥ al-Mushkilāt* (28), Afḍal al-Dīn Abū l-Qāsim al-Rūmī (identified as a leading authority) (29), Abū Yūsuf Aḥmad al-Maghribī’s *al-Jāmi‘* (38) and Abū Naṣr al-Farāhī (43).

¹⁰² On this occultist diaspora see Matthew Melvin-Koushki, “The Occult Sciences in Safavid Iran and Safavid Occultists Abroad”, in: *The Safavid World*, Rudi Matthee, ed., New York: Routledge, 2018 (forthcoming).

¹⁰³ *Qavā'id al-Hidāya*, MS Majlis 12563/4, p. 316. The *Qavā'id al-Hidāya* was first written for the emperor in 962/1555 just before his accession and reworked in 1001/1593 (Storey, *Persian Literature*, vol. 2.3, 482, no. 850 [4, 5]). Another geomantic work, the *Shajara u Thamarā* cited by Hidāyat Allāh, was also copied for Akbar at the instance of one Kamāl al-Dīn Ḥasan (Storey, *Persian Literature*, vol. 2.3, 487, no. 856 [44, 45]).

edly calculated to reflect and perform his patron's own claims to intellectual-spiritual-political universality and manifestness.¹⁰⁴ The Shirazi geomancer, that is, is to be considered a member of that group of elite scholars described by Abū l-Faḍl 'Allāmi (d. 1011/1602) as being those

who in their stellar brilliance comprehend mysteries both occult and manifest, possessing full command of the two realms by virtue of exalted nature and ample aptitude; yet they account themselves mere passive recipients of the effluxion that emanates from the imperial court.¹⁰⁵

Equally significant in this context is the fact that Hidāyat Allāh replaces the encomium to 'Alī that figures in the preface to his teacher's work with a poem heavily astrological in its symbolism, a design feature sure to catch the fancy of Akbar, who had made planetary worship the basis of his daily court ritual – precisely as a means of sidestepping exclusivist Safavid claims to 'Alī and the *walāya* of the Imams.¹⁰⁶

Nor was the readership of Hidāyat Allāh's geomantic manual confined to Akbar's court; that it can be presumed to have had a ready and eager market among persophone Indian elites more generally is indicated by no less an authority than Abū l-Faḍl, chief architect of Akbar's new Indo-Timurid imperial culture, who explicitly lists the science as part of his ideal core curriculum for all students in Akbar's realm, to be studied even before medicine or logic:

The following sciences should be acquired consecutively: ethics, arithmetic, accounts, agriculture, mensuration, geometry, astrology (*nujūm*), geomancy (*raml*), economics, government, medicine and logic, then [the rest of] the natural and mathematical sciences and metaphysics, then history.¹⁰⁷

As the most comprehensive and systematic Persian geomantic manual circulating in the later 10th/16th century, then, the *Qavā'id al-Hidāya* slotted perfectly into this new imperial curriculum. And despite first being developed for *Safavid* imperial purposes, its universalist approach to the science was likewise in perfect consonance with Akbar's famed, radically ecumenical doctrine of Universal Harmony (*ṣulḥ-i kull*), as well as his claims to talismanic divinity. This fact alone indicates that a higher degree of continuity obtained between competing Safavid and Mughal

¹⁰⁴ Specifically, he asserts that what “had been written in books with extreme laboriousness and allusiveness has now been fully clarified by Hidāyat Allāh, in the event anyone's home”; *Qavā'id al-Hidāya*, MS Majlis 12563/4, 373.

¹⁰⁵ Abū l-Faḍl 'Allāmi, *Ā'in-i Akbari*, H. Blochmann, ed., 12 vols., Calcutta: Asiatic Society of Bengal, 1869–1872, vol. 1, 232.

¹⁰⁶ See Azfar Moin, *The Millennial Sovereign: Sacred Kingship and Sainthood in Islam*, New York: Columbia Univ. Press, 2012; Audrey Truschke, “Translating the Solar Cosmology of Sacred Kingship”, in: *Medieval History Journal* 19/1 (2016), 136–141; Matthew Melvin-Koushki, “Early Modern Islamicate Empire: New Forms of Religiopolitical Legitimacy”, in: Armando Salvatore, Roberto Tottoli and Babak Rahimi, eds., *The Wiley-Blackwell History of Islam*, Malden, Mass.: Wiley-Blackwell, 2017, 353–375.

¹⁰⁷ *Ā'in-i Akbari*, vol. 1, 202.

imperial ideologies than is usually acknowledged: through the simple expedient of replacing ‘Alī with astrology in its proem, a Safavid geomantic manual could and did serve as prop to Mughal imperialism essentially unchanged.¹⁰⁸

In his recent pioneering study on the performance of sacral kingship in Mughal India, Azfar Moin dwells frequently on the various Mughal dynasts’ dependence on occult scientists, particularly astrologers, lettrists and geomancers, for corroboration of their claims to human perfection and eschatological imperialism.¹⁰⁹ This extends to the Subcontinent the findings of Cornell Fleischer and Kathryn Babayan, who have definitively shown the same for the Ottoman and the Safavid courts respectively.¹¹⁰ Most crucially for our purposes here, Fleischer’s studies of yet another Safavid geomancer, Ḥaydar Rammāl, and his long, brilliant career at Sultan Süleymān’s court have made it abundantly clear that Ottoman imperial ideology in the 10th/16th century – and by extension early modern Turko-Mongol Perso-Islamic imperial ideologies as an interactive set – simply cannot be understood without reference to geomancy specifically and the occult sciences generally.¹¹¹ (Attention to the question of occultism at the Uzbek court remains a desideratum.¹¹²) In an important aside, Fleischer notes that Ḥaydar the Geomancer influenced Shah Ṭahmāsb just as deeply before decamping to the Ottoman court:

So much did Tahmasb envy Haydar’s art, and also fear his own dependence on the Geomancer, that he had Haydar tutor him for six years. Apparently the lessons had a profound and lasting effect on Shah Tahmasb, for when Vincenzo degli Alessandri visited the Safavid court of Qazvin some forty years later, he found that the shah had not left his palace for ten years, preferring to seclude himself with his women and constantly cast geomantic figures; when his prognostications might happen to come true, the women lavished praises on him as God’s chosen, the recipient of divine revelation, a true prophet of God.¹¹³

While somewhat extreme, Ṭahmāsb’s singleminded commitment to the Danielic art provided a hospitable framework for the production of such landmark works

¹⁰⁸ On the smooth Irani-Hindustani (and Turani) continuities defining High Persianate culture more generally see Mana Kia, “Contours of Persianate Community, 1722-1835”, PhD dissertation, Harvard Univ., 2011.

¹⁰⁹ Moin, *The Millennial Sovereign*.

¹¹⁰ Babayan, *Mystics, Monarchs, and Messiahs*.

¹¹¹ Cornell H. Fleischer, “Ancient Wisdom and New Sciences: Prophecies at the Ottoman Court in the Fifteenth and Early Sixteenth Centuries”, in: *Fabnama: The Book of Omens*, Massumeh Farhad and Serpil Bağcı, eds., London: Thames & Hudson, 2009, 232–243, 329–330; Cornell H. Fleischer, “Shadow of Shadows: Prophecy in Politics in 1530s Istanbul”, in: *International Journal of Turkish Studies* 13 (2007), 51–62; Cornell H. Fleischer, “Seer to the Sultan”.

¹¹² On the *Kashf al-Shajara* of Maḥmūd Kawtharī b. Ismā‘īl, geomancer to Muḥammad Shībānī Khan, see n. 55 above.

¹¹³ Fleischer, “Shadow of Shadows”, 60. Again, there is the possibility, though slim, that this geomancer is to be identified with the Ḥaydar b. Muḥammad Rammāl-i Iṣfahānī-Tabrizī listed above; if so, the list of works the latter gives in his *Kashf al-Asrār* thus represents the geomantic curriculum Ṭahmāsb likely studied under his and Sayyid Balyānī’s tutelage.

as Sayyid Balyāni's *World of Geomancy*, which synthesized the Persianate geomantic tradition into a cohesive whole – a feature that made it attractive to Safavid, Mughal and Ottoman sovereigns in equal measure. Nor was such enthusiasm limited to the ruling elite; as Jean Chardin (d. 1125/1713), Huguenot sojourner in Safavid Iran under Shah Sulaymān (r. 1077–1105/1666–94), patronizingly observed of Safavid society a century later: “[M]ost [Persians] are dependent on astrologers and other diviners as a child is dependent on its nurse.”¹¹⁴

I do not propose to further examine the political applications of geomancy here, but merely to pack a little flesh onto the bare bones of this new narrative of Islamicate early modernity by supplying specifics as to how the science was ranked and practiced.¹¹⁵ Again, Hidāyat Allāh's geomantic manual is a worthy place to start toward this end, since it is an exceptional specimen of the genre and was doubtlessly widely read, perhaps even at the Ottoman court. (Hidāyat Allāh's elder contemporary Ḥaydar Rammāl, who produced annual prognostications in his official capacity as court geomancer, seems not to have written a manual of his own while in Ottoman employ.¹¹⁶) More importantly, it represents the state of the art and its canon at the turn of the 11th/17th century: like Ṭabāṭabā'i Yazdi, Hidāyat Allāh provides a list, the source for the later author's, of the 50 titles his work effectively summarizes.¹¹⁷

Writing from his privileged vantage point at the dawn of the Islamic millennium, then, how does our Shirazi émigré rationalize and summarize the preceding four centuries of geomantic theory and practice? He begins by restating his teacher's schema as follows:

Know (God aid you) that this noble science is pursued in every corner of the earth, with four main schools of practice. Indians, Khurasanis, Transoxanians and easterners gener-

¹¹⁴ Quoted in Massé, *Persian Beliefs*, 240.

¹¹⁵ On the political applications of the occult sciences in the early modern Persianate world see Matthew Melvin-Koushki, “Astrology, Lettrism, Geomancy: The Occult-Scientific Methods of Post-Mongol Islamicate Imperialism”, in: *Medieval History Journal* 19/1 (2016), 142–150; and my forthcoming *The Occult Science of Empire in Aqquyunlu-Safavid Iran: Two Shirazi Lettrists*.

¹¹⁶ See Fleischer, “Seer to the Sultan”, 296; one such annual prognostication is preserved in the Topkapı Library collection as MS Hazine 1697. If, however, he is to be identified with our Ḥaydar b. Muḥammad, then he was responsible for the *Kashf al-Asrār*, one of the most popular Persian geomantic manuals ever produced.

¹¹⁷ See n. 51 above for a synthetic list combining the two. The list as it appears in the *Qavā'id al-Hidāya* is as follows (MS Majlis 12563/4, p. 323): *Miftāḥ al-Kunūz*, *Kanz al-Daqā'iq*, *Shajara u Thamara*, *Shāmil al-Huṣūl*, *Tuhfa-yi Shābi*, *Uṣūl al-Raml*, *ʿAyn al-Raml*, *Shamʿ al-Raml*, *Miftāḥ-i Mafāṭiḥ*, *Vāfi*, *Si Bāb*, *Fuṣūl*, *Abwāb-i Anvār*, [the work of] Uqlidi, [the work of] Ṭarābulṣi, [the work of] Rawshani, the treatise of Kulah-i Kabūd, *Kashf al-Asrār*, *Talkhiṣ*, the treatise of Abū l-ʿAbbās Būnī, *Minbāj al-Asrār*, *Jāmiʿ al-Kifāya*, *Kbulāṣa*, *Kbulāṣat al-Bahrayn*, *Tabdih*, *Dbakbira*, *Zubda*, *Natijat al-ʿUlūm*, *Qavā'id*, *Nuzhat al-ʿUqūl*, *Jāmiʿ*, the *Kāmil* of Ḥusayn-i Qaffāl, *Riyāḍ al-Ṭālibin*, *Shajara-yi Awerāq*, *Sāʿir al-Awliyā*, *Miṣbāḥ*, *Miftāḥ*, *Hidāyat al-Nuqta*, R. *Surkhāb*, [the work of] Biyābānaki, [the work of] Bābā Kūhi, *Tawdih*, *Tabih*, the work of Mullā Shāh, *Taqvim al-Raml*, *Aṣṭ-i Mafāṭiḥ*, *Zayn al-Raml*, *Kāmil al-Huṣūl*, *Jabān al-Raml*, *Jāmiʿ al-Asrār*.

ally rely on the *ABDĤ* cycle and the methods laid out in the *Shajara* [*u Thamara*] in their practice, a school I here term the Geomantic East. Farsis, Iraqis, Gilanis and the like rely on the Occupation (*sakan*) cycle [developed by al-Zanāti] and the procedure laid out in the *Mafātīh* for deriving their readings, a school I term the Geomantic North. Maghribis, Egyptians, Syrians and all Arabians favor the *BZDĤ* cycle, [established by Luqmān, who named it for his son,] a school I term the Geomantic West. There is a further method, extremely recondite, known as the Most Complete (*aṣaḥḥ*), a school I term the Geomantic South; [it was developed by Ṭabasi in particular], and elite practitioners in every region perform divinations (*kashf*) and miracles (*karāmāt*) [on its basis]. This includes Sayyid Muḥammad Nūrbakhsh and his like; some credit him with teaching this pristine form of geomancy. My own teacher's grandfather, Awḥad al-Din 'Abd Allāh [Balyāni], known as 'Abd Allāh Awliyā (God forgive his sins), composed a work on this last method entitled *Gardens for Seekers* (*Riyād al-Ṭālibin*), and therein summarized all [four] methods on the basis of the holy Shaykh Ḥajjī Hasan Ṭabasi's work (the shaykh being famed for his mastery of *jinn* magic [*taskbir-i jinn*]) ... This book, then, which I have titled *Methods of Guidance* (*Qawā'id al-Hidāya*), offers a summary treatment of these four methods, with some additional material, to enable anyone who reads and achieves a basic understanding thereof to penetrate people's innermost thoughts.¹¹⁸

The various regional schools of geomantic thought are therefore to be distinguished by the 'cycles' (sg. *dā'ira*) they prefer to employ. A cycle, Hidāyat Allāh explains, is simply a specific sequence (*tartīb*) of the 16 geomantic figures, with each sequence featuring different types of correspondences – elemental, humoral, temporal, astrological, letrist, etc. And the four cycles he identifies above are far from the only ones in common use. The geomancer has at his disposal a rather larger number of cycles; which he employs in any given reading depends on the nature of the information being sought and the degree of detail required. Hidāyat Allāh lists seven by way of example:

1. The Occupation (*sakan*) cycle is the most basic; it begins with Laetitia and ends with Via.
2. The Constitution (*mizāy*) cycle tells the querent what day he can expect to realize his desire; it begins with Acquisitio and ends with Cauda Draconis.
3. The *BZDĤ* cycle, aka the Number (*ʿadad*) cycle, is used to tell periods of time; it begins with Puer and ends with Populus.
4. The Letter (*ḥarf*) cycle is used to reveal names (a very popular application of the science); it too begins with Laetitia and ends with Via, with the first twelve figures being assigned two letters each and the last four figures only one.
5. The Arabic Alphabet (*abjad-i ʿarabi*) cycle, aka the Element (*ʿunṣur*) or Interior (*dākḥil*) cycle; it begins with Laetitia and ends with Populus.
6. The *ABDĤ* cycle, aka the Element (*ʿunṣur*) or Arabic Alphabet (*abjad-i ʿarabi*) cycle, which is also popular; it too begins with Laetitia and ends with Populus.

¹¹⁸ *Qawā'id al-Hidāya*, MS Majlis 12563/4, pp. 315–316; I supplement this passage on the basis of pp. 374, 427, 456.

7. The Most Complete (*aṣaḥḥ*) cycle, which has a different organizing principle and procedure; it begins with Laetitia and ends with Via.¹¹⁹

Such cycles, moreover, are typically combined in a standard geomantic reading to provide the fullest picture possible in response to a question:

Know that all geomantic readings (*ahkām*) as to a person's innermost thoughts (*damir*), a judgment (*hukm*), a *jinn*, a name, a buried object (*dafin*), a number or a period of time are derived from these cycles (*davāyir*). And the cycles that are here laid out may be utilized [simultaneously]. For example, say you obtain a reading (*hukm*) based on the Occupation cycle; you then find [information about] number and period from the Number cycle, the name from the Letter cycle, the relevant day from the Constitution cycle, the fruit that will be mentioned from the Fruits (*favākil*) cycle, [and so on]. Every datum, [in short,] must be sought in its associated cycle.¹²⁰

The upshot: geomancy offers the possibility of universal knowledge about events, ideas, entities, identities, objects and locations at the most granular level – even *fruits* can be captured in the trammel of its binary code. This stirring prospect, of obvious utility and appeal to messianic sovereigns and saints, openly invites the geomancer and his royal patron to partake in prophethood. Geomantic tradition associates the science with up to seven prophets in particular:

It is commonly accepted among the practitioners of this art that the science of geomancy is attributable to seven prophets: first, Adam, God's Pure One (*Ṣaḥī Allāl*); second, Seth; third, Enoch (*Idris*); fourth, Jeremiah; fifth, Isaiah; sixth, Luqmān; seventh, Daniel.¹²¹

More specifically, origin stories for geomancy assign it the role of heaven-sent prophetic miracle (*mu'jiza*) that each prophet requires to corroborate his claim: magic for Moses, healing for Jesus, the inimitable Quran for Muḥammad – and geomancy for Daniel. (It should here be noted that the explosion in popularity of the Daniel apocalypses (sg. *malḥamat Dāniyāl*) during the 10th/16th century, particularly among Ottoman elites, is intimately connected to his geomantically-based status as prognosticator *par excellence*.¹²²) In Hidāyat Allāh's rendition of the classic Daniel narrative, emphasis is placed on the miraculous level of detail that the prophet is able to provide his clients as a professional geomancer, as well as the conversion of the *entire world* to Islam by means of this occult art:

¹¹⁹ *Qavā'id al-Hidāya*, MS Majlis 12563/4, pp. 332–333 (paraphrased).

¹²⁰ *Qavā'id al-Hidāya*, MS Majlis 12563/4, p. 456.

¹²¹ *Qavā'id al-Hidāya*, MS Majlis 12563/4, p. 313. Hājji Khalifa reports that the seminal *Miṣbāḥ al-Raml* gives a similar list of six prophets in which Seth is not included (*Kashf al-Zunūn*, vol. 1, 912).

¹²² Cornell Fleischer, "Lawgiver as Messiah: The Making of the Imperial Image in the Reign of Süleymân", in: Gilles Veinstein, ed., *Soliman le magnifique et son temps*, Paris: École du Louvre, 1992, 159–177: 170. On the *malāḥim* genre generally see Mohammad Masad, *The Medieval Islamic Apocalyptic Tradition: Divination, Prophecy and the End of Time in the 13th Century Eastern Mediterranean*, PhD dissertation, Washington Univ., St. Louis, 2008.

Adam the Pure (peace be upon him) was the first person in the world who wished to know his status (*ḥāl*) and that of his children and discover where each one was, and Gabriel taught him [geomancy to this end]. This science was then transmitted from him to the abovementioned prophet, [viz., Seth or Enoch,] after which a long age passed during which it remained obscure [and unknown] to the people of the world until such time as the Lord of Glory revealed it by way of prophetic inspiration to Daniel (peace be upon him). [This prophet] had announced his messengerhood, but since he performed no prophetic miracle (*muʿjiza*) [in support of his claim] his enemies and opponents sought to have him killed. Shamʿūnyā¹²³ (peace be upon him) accordingly fled, and he wandered in the deserts and wastes for three days and nights until weakness and hunger overcame him. He cried out to the Court of Oneness (*dargāb-i aḥadiyyat*), whereupon Gabriel descended and taught him this science by drawing four dots in the sand (or, as some say, one dot with four corners), instructing him to the effect that each dot (or each corner) represents the central node of an element (*ʿuṣur*). That is, the first dot is fire, the second air, the third water, the fourth earth. After fully learning this science from Gabriel, Shamʿūnyā too drew several dots in the sand. He then departed the sandy waste and returned to civilization, taking up residence in a corner of the Egyptian bazaar and keeping some sand nearby.

[One day] a shepherd approached to ask about his status. [The prophet] replied: “Your name is Surkhāb, and you have 1,470 sheep, three head of mountain goat, seven head of cow and 15 head of donkey. You also have a brother who is on a journey, and in the place he now is he has fallen in love with a Khotanese girl named Ṭighān.” Later a merchant came to ask about his missing son. [The prophet] replied: “Your son was trysting with the daughter of someone named Aḥmad in a place of ruins, and when her father found out he killed both of them by throwing them down a well.” [...] ¹²⁴ When news of this [act of divination] reached the king, he summoned Shamʿūnyā and went with him to the well in question and brought out the corpses, whereupon the people believed in [Daniel] mightily

[Daniel] performed such prophetic miracles until a number of notables at court, including the king’s own son, [sought to] learn this science from Daniel (peace be upon him), who thus became the king’s constant companion. One day the king was in an expansive mood and called a private meeting with this same group of notables in which they discussed geomancy and the miracles wrought by earlier prophets. The king then posed this question: “Is there a prophet in the world today?” The group of them having focused their intention on this question, they performed a geomantic reading. The result: “There is indeed a prophet, and he is in our kingdom, nay, in our very garden and in attendance at this very session; he is our teacher and his name is Shamʿūnyā, and his appearance is thus.” The prophet in question was of course the one present, and accordingly everyone professed belief in him and became Muslims. They also summoned the people of Egypt to behold these prophetic miracles, whereupon they too became Muslims, and spread the news of [Daniel’s] prophethood throughout the world until all believed.¹²⁵

¹²³ As *Hidāyat Allāh* later explains, Shamʿūnyā was the prophet’s original name, but after mastering geomancy he adopted the name Daniel to numerologically accord with this science (*Qavāʿid al-Hidāya*, MS Majlis 12563/4, p. 322).

¹²⁴ A reconstruction and full analysis of these geomantic readings here intervenes.

¹²⁵ *Qavāʿid al-Hidāya*, MS Majlis 12563/4, pp. 316–322.

Geomancy as mathematical-natural occult science

The ease and fluency with which Hidāyat Allāh Munajjim was able to depict the universality of geomancy suggest its vitality and cultural prestige during the 7th–10th/13th–16th centuries, particularly in the Persianate east. As the epigram at the beginning of this article testifies, Ibn Khaldūn (d. 808/1406) himself, despite his dedicated though confused anti-occultism, was constrained to admit the prevalence of geomantic practice “in all civilized lands”¹²⁶ – an enviable status that, by all accounts, only improved after the 8th/14th century. How, then, to explain its ubiquity among scholarly and ruling elites over the course of many centuries?

It must first be noted that geomancy was increasingly reclassified as a *mathematical* science from the 5th/11th century onward – a simple but oft-forgotten fact that both reflects and explains its enduring appeal to philosophers, astronomers and mathematicians, including in the first place prominent thinkers like Naṣīr al-Dīn Ṭūsī and Shams al-Dīn Khafri, as well as lesser lights like ‘Abd al-Qādir Rūyānī.¹²⁷ This appeal, in turn, signals its importance to history of science more generally. Most significantly, the mathematicalization of geomancy, together with lettrism, was part of a larger trend in Persianate intellectual history that culminated with the fateful mathematization of astronomy in the 9th/15th century by the members of the Samarkand Observatory, and drove the renaissance of neopythagoreanism in Iran through the Safavid period.¹²⁸

This process began with Fakhr al-Dīn Rāzī (d. 606/1202), the great Ash‘ari philosopher-theologian and committed occultist; his *Jāmi‘ al-‘Ulūm* (aka *Sittīnī*), the most comprehensive and innovative of the early Persian encyclopedias, is the first to formally elevate geomancy from the natural sciences to the mathematical. Specifically, it follows the standard Avicennan epistemological progression in treating the natural sciences (*tabī‘iyyāt*), the mathematical sciences (*riyādiyyāt*) and metaphysics (*ilāhiyyāt*) in that order, and under the rubric of the mathematical sciences includes geomancy (*raml*), together with geometry (*handasa*), mensuration (*masāḥa*), mechanics (*jarr al-atḥqāl*), war machines (*ālāt al-ḥurūb*), Indian arithmetic (*ḥisāb al-Hind*), mental calculation (*al-ḥisāb al-bawā‘i*), algebra (*al-jabr wa l-muqābala*), arithmetic (*arithmātiqī*), magic squares (*a‘dād al-vaḥq*), optics (*manāẓir*), music (*mūsīqī*), astronomy (*ḥay‘a*), judicial astrology (*aḥkām [al-nujūm]*) and astral magic (*‘azāyim*). While he devotes some five pages to our divinatory art, however, Rāzī’s presentation of geomancy is so rudimentary as to be useless to a would-be practi-

¹²⁶ *Muqaddima*, 108.

¹²⁷ Unlike ‘philosopher’ (*ḥaylasūf*), ‘astronomer’ and ‘mathematician’ are here used as terms of convenience: the former denotes a specialist in ‘*ilm al-ḥay‘a*’, while the latter only emerged as a professional term relatively late, and was infrequently used (my thanks to Sonja Brentjes for this observation).

¹²⁸ See Melvin-Koushki, “Powers of One”.

tioner, suggesting that it had not yet entered the intellectual mainstream in the Persianate world.¹²⁹

The *Nafāyis al-Funūn fi 'Arāyis al-'Uyūn* of Shams al-Dīn Āmulī (d. 753/1352), sometime *mudarris* at Sultaniyya under Öljeytü (r. 693–706/1294–1307), represents a second watershed in the Islamicate encyclopedic tradition. It is the most extensive and polished *taṣnīf al-'ulūm* work produced in either Arabic or Persian up to the mid-8th/14th century, and as such came to serve as the primary model for subsequent Persian encyclopedias.¹³⁰ The *Nafāyis al-Funūn* has as its own model Rāzī's *Jāmi' al-'Ulūm*, but it is far more complete and organized than that pioneering work. Most significantly, Āmulī, unlike Rāzī, questions the standard Avicennan hierarchy of sciences so forcefully reiterated a century prior by Quṭb al-Dīn Shīrāzī (d. 710/1311) in his *Durrat al-Tāj li-Ghurra al-Dabbāj*, at times even challenging the latter directly by counterposing what he asserts to be a more consistent classification system and moving toward a new conception of knowledge.¹³¹ At the same time, he concurs with the Maragha philosopher-astronomer in classifying all occult sciences, including alchemy (*kīmiyā*), letter magic (*ṣīmiyā*), oneiromancy (*ta'bir*), physiognomy (*ṣirāsat*) and astrology, as derivative natural sciences – with one pointed and telling exception: geomancy. While Rāzī was the first encyclopedist to treat this form of “terrestrial astrology” as an applied mathematical science (i.e., an instance of the *furū'-i riyādi*) associated with astronomy, then, Āmulī goes further: he dissociates the science from astrology on the one hand and all other divinatory sciences on the other.¹³² Though his motive for making it is not clear, Āmulī's move here may be considered an index of geomancy's increase in prestige in Iran during the Ilkhanid period. Moreover, at 20 pages Āmulī's discussion of geomancy is considerably fuller than his model's and detailed enough to serve as a basis for elementary practice.

The prestige of geomancy only continued to increase in the Persianate world from this point forward, such that by the 10th/16th century geomancy was considered an essential and uncontroversial application of the *quadrivium* in its Avicennan formulation. Hidāyat Allāh Shīrāzī, writing some two and a half centuries later, programmatically states:

Know (God guide you) that philosophy (*ḥikmat*) is divided into three categories: the natural sciences (*'ilm-i ṭabī'i*), the mathematical sciences (*'ilm-i riyādi*) and metaphysics (*'ilm-i ilāhi*). The principal mathematical sciences are four: astronomy (*ḥay'at*), arithmetic

¹²⁹ *Jāmi' al-'Ulūm* ('*Sittīnī*'), Sayyid 'Alī Āl-i Dāvūd, ed., Tehran: Thurayyā 1382 Sh./2003, 432–437. In this list geomancy, the 51st science, follows judicial astrology and precedes astral magic.

¹³⁰ Živa Vesel, *Les encyclopédies persanes: essai de typologie et de classification des sciences*, Paris: Institut Français de Recherche en Iran 1986, 39–42.

¹³¹ Vesel, *Les encyclopédies persanes*, 41; Melvin-Koushki, “Powers of One”.

¹³² *Nafāyis al-Funūn*, vol. 3, 537–556. Here again I use the designation “applied mathematical science” as a term of convenience; it is not to be understood in its strict 19th-century European sense.

(*ʿadaḍ*), geometry (*bandasa*) and music (*mūsīqi*). The mathematical disciplines derived from these are numerous, and include geomancy (*raml*) and astrology (*nujūm*), which are exceedingly noble and useful sciences.¹³³

At the same time, geomancy's central focus on the four elements – fire, air, water, earth – also gave it a strong claim to being a natural science. As the *Shajara u Thamara*, a popular Persian geomantic manual of the period (formally a commentary on a Persian translation of al-Zanāti's *Shajara*), warns:

The modality of this science is a difficult one, for it is a physiological science (*ʿilm-i ṭabāyīʿi*); whoever does not have a firm grasp of physiology will not be able to use this science.¹³⁴

Our divinatory science, in other words, occupied the epistemological intersection between astrology and alchemy.¹³⁵

But geomancy's status as 'the science of the dot,' which allowed precisely for its dual mathematical-natural status, was not entirely unproblematic: the conception of the four-cornered *nuqta* as primordial embodiment of the four elements emerged as a site of doctrinal controversy in the early 9th/15th century, primarily due to claims put forward by the anarchic Hurufis of western Iran. In particular, it was central to Maḥmūd Pasikhāni's (d. 831/1428) reformulation of the teachings of his erstwhile teacher Faḍl Allāh Astarābādī (d. 796/1394), and drove what was seen by critics to be the thoroughgoing *naturalism* or *materialism* of Nuqtavi doctrine.¹³⁶ As a consequence, contemporary manuals like the *Shajara u Thamara*

¹³³ *Qawā'id al-Hidāya*, MS Majlis 12563/4, p. 312. See also Sonja Brentjes, "The Mathematical Sciences in Safavid Iran: Questions and Perspectives", in: *Muslim Cultures in the Indo-Iranian World During the Early Modern and Modern Periods*, F. Speziale and D. Hermann, eds., Berlin: Schwarz, 2010, 1–77.

¹³⁴ MS Majlis 12563/7, p. 820. The *Thamara-yi Shajara* (presumably identical to the *Shajara u Thamara*) was done into Persian verse in 1263/1847 by one Ashraf b. Muḥammad 'Alī Mashhadī, takhalluṣ Ashraf, a minor poet with occultist proclivities (Aḥmad Ḥusayni Ishkavari, *Tadbkīra-yi Shā'irān-i Fārsī-sarā*, Qom: Majma'-i Dhakhāyir-i Islāmi, 1385 Sh./2006, 29). The dual status of geomancy as both a mathematical and a natural science is further suggested by the existence of *majmū'as* like MS Majlis 12574, which contains the popular Persian geomantic treatise *Sā'ir al-Awliyā*, a Persian medical text (versified instructions for the treatment of various diseases) and a translated excerpt from the Ikhwān al-Ṣafā' on a section of Aristotle's *Physics*.

¹³⁵ Klein-Franke, "The Geomancy of Aḥmad b. 'Alī Zunbul", 33, 35.

¹³⁶ See e.g. Ṣādiq Kiyā's classic study of the movement, *Nuqtaviyān yā Pasikhāniyān*, Tehran: Anjuman-i Īrān, 1320 Sh./1941. In his *Durr al-Yatim*, for instance, Muḥammad Dihdār Shirāzi (d. 1016/1607), émigré to Mughal India and son of the important Safavid letrist author Maḥmūd Dihdār Shirāzi (fl. 984/1576), classes the Nuqtavis as an execrable subset of those he calls the mass of deficient naturalist-materialists (*jumbūr-i ṭabī'yyīn u nāqīṣān-i dabriyān*), on a par with sophists, libertines and most of the infidels (*kafāra*) of India (*Rasā'il-i Dihdār*, Muḥammad Husayn Akbari Sāvi, ed., Tehran: Nuqta, 1375 Sh./1996, 131), criticizing their doctrine as follows (Dihdār, *Rasā'il-i Dihdār*, 141): "These [people] who associate themselves with the dot (*nuqta*) mean by it the elemental particles (*ajzā-yi 'unṣurī*) that are in the dot; and their sublimest (*ḥaḳīqi*) dot is the center of the earth (*markaz-i kbāk*). For this reason, whenever their leader [i.e., Maḥmūd Pasikhāni] would

are concerned to carefully define their epistemological position against such perverse materialism:

[The author of the *Shajara*] states that this is a prophetic science, and also that it is called [the science of] the dot (*nuqta*); it must therefore be determined to which dot this refers. According to geometers (*abl-i Uqlīdis*), the dot is that which is indivisible, while astronomers use the same term to refer to the center of a circle, as well as a star [or planet]. In the present book, however, what is meant by the dot is the [primordial four-cornered] single/odd point (*fard*), which is to say fire-air-water-earth. In every technical usage of the term, *fard* is one and double/even (*zarw*) is two. In geomancy, *fard* and *zarw* both apply to the dot. Thus while the dot is a singular point without quality (*kayfiyyat*) or addition (*jabr*) or articulation (*makbraj*), and also dimensionless, when you utter it it becomes a letter – *NQTH* – in the same way that *ALF* (*alif*) is a letter, but also a name (*ism*) composed of the three letters *ALF*. It is therefore evident that *nuqta* is being used in this sense as a word, not as a letter (*harf*) (which according to linguists literally means ‘turning away’ [*bar-zadan*]). So know that *nuqta* has four letters whose values when added come to 164; and this number divided by 16 [i.e., the number of geomantic cells] gives a remainder of four – the elements fire, air, water and earth.

It is in this respect that [the author] exhorts us to keep this science from falling into the hands of the ignorant and unworthy: for they are apt to believe that the dot and the figures formed therefrom are causes (*mu'aththir*) in their own right, thereby damaging their faith. But the educated and intelligent are aware that this is a noble science predicated entirely on the divine will – anything else would contravene the dicta *God does what He will* (Q 3:40, 22:18) and *decrees whatsoever He desires* (Q 5:1). Therefore anyone who believes the dot and geomantic figure to be causes becomes an unbeliever (*kāfir*) – we take refuge in God from such! –, and hence a qualified teacher is necessary to prevent perversion of belief. Otherwise one risks bringing down on oneself divine wrath. Now it may happen that someone who has not had a teacher in the science is able to correctly divine the intentions of a querent (*ḍamir-i sāyil*), this by chance; but such an individual is merely a soothsayer (*az jumla-yi kābinān*), that is, one of those who get their information from *jinn*, [not a geomancer].¹³⁷

Geomancy's status as a *mathematical* occult science appears to have become particularly salient by the early 9th/15th century, when it began to be explicitly associated with lettrism (*‘ilm al-ḥurūf*, *‘ilm al-asmā*), particularly letter magic (*simiyā*) and letter divination (*jafr*), both based on number theory (*‘ilm al-‘adad*). This trend, alluded to in the passage above, is best exemplified by Luṭf Allāh b. ‘Abd al-Malik

mention his own name in his treatises he would say ‘I who have dirt on my head’ – that is to say, ‘I who am the center of the earth!’ [The Nuqtavis aside], however, the science of the dot (*‘ilm-i nuqta*) is a noble science; for the dot refers to the absolute aspect (*ḥaythiyyat-i muṭlaqa*). The treatise *Secrets of the Dot* (*Asrār al-Nuqta*) by Mīr Sayyid ‘Alī Hamadānī (may He sanctify his spirit) is well-known [in this connection]. And according to the felicitating speech of the holy Commander of the Faithful, [‘Alī b. Abi Tālib,] on [the subject of] the dot, *Knowledge is a dot multiplied by the ignorant*, here referring to the ultimate reality (*ḥaqīqat al-ḥaqāyiq*) or first entification (*ta‘ayyun-i avval*).”

¹³⁷ MS Majlis 12546/1, ff. 1b3a; MS Majlis 12563/7, pp. 820821. There are some variations in this passage between these two copies, combined in the translation here.

Nishāpūri Samarqandi's¹³⁸ *Khulāṣat al-Baḥrayn*, written in 812/1409, which treats of geomancy and magic squares (*ā'dād-i vafq*) (the two seas of the title) as complementary sciences.¹³⁹ As he states in the work's introduction:

Know (God grant you felicity) that the science of geomancy and [that of] magic squares are two noble sciences that have been continually pursued with the utmost devotion by kings, sultans and amirs [on the one hand] and by philosophers (*ḥukamā*) and scholars (*ʿulamā*) [on the other]. Proficiency in these sciences gave them knowledge of esoteric matters (*rumūz*), hidden treasures (*kunūz*), people's innermost thoughts (*sarāyir u ḍamāyir*) and the active properties of things (*khavāṣṣ-i ashya*); they thereby attained to high estates indeed.

Now it will be asked, why treat geomancy and magic squares together in a single book, given that each science has been treated separately in [numerous] books – how are they related (*munāsabat*)? I answer: [In the first place], it is perfectly acceptable to treat even a hundred sciences in a single book. And as sciences geomancy and magic squares are especially closely related, for the first delivers prognostications (*ḥukm*) and reveals inner states (*ḍamir*) while the second activates the properties [of things] (*khavāṣṣ*) and confers magical control [over them] (*tadbir*). [Beyond these virtues], geomancy and magic squares possess a very many properties (*ahkām, khavāṣṣ*) [that are mutually complementary]. Moreover, the [geomantic] figures are called evens (*zawjān*) or odds (*fardān*), and fivers (*khumāsī*), sixers (*sudāsī*), seveners (*subāʿī*) or eighters (*thumāni*), [much like magic squares];¹⁴⁰ likewise, magic squares (*murabbāʿāt-i akwāḥ-i ā'dād*) are described as being even-times-even (*zawj al-zawj*), even-times-odd (*zawj al-fard*) or odd-times-odd (*fard al-fard*), [making them similar to geomantic figures], this by way of example. Furthermore, when someone performs a geomantic operation to inquire into the feasibility of a goal, for instance, and learns that it will take considerable time to accomplish what they desire (or that they will not be able to do so at all), and they wish to bring it to pass more quickly, they can then resort to letter magic (*tadbir*) [by way of a magic square]. This procedure involves selecting a divine Name or an invocation (*duʿāʾi*) that seems appropriate to the case and whose active property (*khavāṣṣiyyat*) is said to bring about the desired effect, applying gematria (*hisāb-i jummal*) to the number of letters in that Name or

¹³⁸ He is perhaps to be identified with the celebrated poet Luṭf Allāh b. Sulaymān Shāh Nishāpūri (d. 812/1409), a Khurasan-based encomiast to the Sarbidars and Timurids known for his ascetic character and expertise in astrology; see *Divān-i Luṭf Allāh Nishābūri*, Rasūl Jaʿfariyān, ed., Tehran: Asnād-i Majlis-i Shūrā-yi Islāmī, 1390 Sh./2011, 117–118; Dawlatshāh Samarqandi, *Tadbkirat al-Shuʿarāʾ*, E.G. Browne, ed., Tehran: Asātir, 1382 Sh./2003, 317–325).

¹³⁹ The earliest surviving copy of this treatise (of some 15 in Iran) dates to 1020/1611; an earlier copy is preserved in Hamburg (MS 226/2, copied 971/1563; Storey, *Persian Literature*, vol. 2.3, 481, no. 847). Luṭf Allāh Nishāpūri Samarqandi was also the author of *Khavāṣṣ-i Ḥurūf u ʿAmal-i Ashkāl-i Ramlī*, evidently similar in theme (or simply an extract from the *Khulāṣat al-Baḥrayn*), as well as *Nūr al-Ramlī*, wherein he identifies himself as the student of Zayn al-ʿĀbidin b. Qāsim Iṣfahāni (Rammāl-i Iṣfahāni) and ʿAbd al-Ghanī Ḥāfiẓ Shirvāni (see e.g. Yazd, MS Kāzimayni 62/1 ff. 1b–96b). Tellingly, a copy of his teacher Shirvāni's *Anwār al-Ramlī* is bound together with an anonymous treatise on magic squares, *Kayfiyyat-i ʿĀmāl-i ʿĀdād-i Vafq*, in MS Marʿashi 7142.

¹⁴⁰ I.e., geomantic figures are either even or odd; there is one figure with four dots and one with eight, and the rest have either five, six or seven dots.

invocation, then populating a square (*murabbaʿi*) with the result; if they then carry [the resulting talisman] on their person, they will soon achieve their aim.¹⁴¹

In other words, geomancy tells you the future, and if you don't like what you hear, you can always change the future with letter magic. This prospect, very simply, explains the attractiveness of this and other occult sciences to ruling elites throughout the early modern Islamicate world and their heavy patronage of the same; used in conjunction with lettrism in particular, geomancy promises the direct control of one's political and material fate.¹⁴²

I have shown elsewhere that lettrism was reformulated during this same early 9th/15th-century moment as the primary vehicle of Islamicate neopythagoreanism and philosophical occultism, and advanced as a superior alternative to both mainstream peripatetic-illuminationist metaphysics and sufism.¹⁴³ Significantly, the network of thinkers who accomplished this reformulation appear to have called themselves Ikhwān al-Ṣafāʾ in conscious reference to the shadowy group of 4th/10th-century neoplatonist-neopythagorean encyclopedists of the same name. By the early 9th/15th century this network included most prominently Shaykh Badr al-Dīn of Simavna (d. btw. 819–823/1416–1420) and ʿAbd al-Raḥmān al-Biṣṭāmī (d. 858/1454) in Anatolia¹⁴⁴ and Ṣāʾin al-Dīn Turka Iṣfahānī (d. 835/1432) and Sharaf al-Dīn ʿAli Yazdī (d. 858/1454) in western Iran, with Sayyid Ḥusayn Akhlāṭī (d. 799/1397), famed Tabrizi Kurdish occultist and physician at the Mamluk court in Cairo, standing as the network's pivot.¹⁴⁵ Ibn Turka, in turn, stands as its leading theoretician in the east, being responsible for the systematization of this philo-

¹⁴¹ MS Majlis 12563/1, pp. 2-3. Interestingly enough, in the preface above the author lists ʿUmar Khayyām (d. 526/1132) as an authority on geomancy and/or magic squares (MS Majlis 12563/1, p. 2). Cf. *Majmaʿ al-Uṣūl*, an anonymous work that similarly combines geomancy and lettrism (MS Dānishgāh 2306).

¹⁴² As Maḥmūd Kāshī, *munajjim* to the Timurid Iskandar Sulṭān (r. 812–817/1409–1414), argues for to the necessity of astrology: “The wise soul manages the actions of the heavens, just as the farmer manages the power of nature by ploughing and watering”; Laurence P. Elwell-Sutton, “A Royal Timurid Nativity Book”, in: *Logos Islamikos: Studia Islamica in Honorem Georgii Michaelis Wickens*, Roger M. Savory and Dionisius A. Agius, eds., Toronto: Pontifical Institute of Mediaeval Studies, 1984, 119–136, here: 130. On the need for a functionalist approach to Islamicate occultism see Dimitri Gutas, “Certainty, Doubt, Error: Comments on the Epistemological Foundations of Medieval Arabic Science”, in: *Early Science and Medicine* 7/3 (2002), 276–289, here: 278–279.

¹⁴³ See Matthew Melvin-Koushki, *The Quest for a Universal Science: The Occult Philosophy of Ṣāʾin al-Dīn Turka Iṣfahānī (1369–1432) and Intellectual Millenarianism in Early Timurid Iran*, PhD dissertation, Yale Univ., 2012; Melvin-Koushki, “Powers of One”.

¹⁴⁴ İhsan Fazlıoğlu, “İlk Dönem Osmanlı İlim ve Kültür Hayatında İhvanu's-Safā ve Abdurrahman Biṣṭāmī”, in: *Dīvān: İlmî Araştırmalar* 1/2 (1996), 229–240; Fleischer, “Ancient Wisdom and New Sciences”, 235; see Melvin-Koushki, “The Quest”, 16–19.

¹⁴⁵ See now İ. Evrim Binbaş, *Intellectual Networks in Timurid Iran: Sharaf al-Dīn ʿAli Yazdī and the Islamicate Republic of Letters*, Cambridge: Cambridge Univ. Press, 2016; Melvin-Koushki, “The Quest”, 45–57.

sophical lettrism¹⁴⁶ – the basis of his student and friend Yazdī’s historical and occult-scientific outlook. That this intellectual confraternity’s interests were not confined to lettrism is suggested by the fact that another of Akhlāṭī’s disciples, Ḥasan Abarqūhī, was known strictly as a geomancer, as we saw above. (It will be also recalled that Akhlāṭī himself has been credited as author of the seminal geomantic manual *R. Surkbāb.*)

Unlike the other geomantic authorities surveyed here, Yazdī, a respected mathematician who achieved fame primarily as dynastic historian to the Timurids,¹⁴⁷ produced no manual on the subject. Preserved among his *munsbaʿāt*, however, is a tract that mounts a strong defense of the science on a number of fronts and appears to be conceived of as a rebuttal to his older colleague Ibn Khaldūn’s tendentious and fideistic anti-occultist arguments in the *Muqaddima*.¹⁴⁸ In particular, Yazdī offers two proofs for the validity of geomancy and its pedigree that he clearly holds to be unassailable; these are, of course, lettrist proofs.¹⁴⁹

The correspondence (*tavāfuqī*) between the number of triplicities (*muthallathāt*) that are possible in a geomantic operation and the numerical value of the [divine] name *Nūr* (Light),¹⁵⁰ [i.e., 256], constitutes an intuitive indication as to the benefit and goal of the science of geomancy, that being to obtain information about unknown circumstances and bring clarity to ambiguous or cryptic situations by means of specific methods; and perception comes about solely through the overflowing, knowledge-bearing effulgence of the holy name Light. That is, just as light is the cause and means of the manifestation of things, so too does geomancy constitute a means of lifting the obscuring veils from hidden matters. The fact that the number of geomantic figures multiplied by itself¹⁵¹ as well as the number of these figures multiplied by the number of houses [in a geomantic tableau]¹⁵² are both equivalent to the value [of the name *Nūr*] further reinforces this point.¹⁵³

¹⁴⁶ His *K. al-Mafāḥiṣ* in particular stands as the first *summa* of lettrist neopythagoreanism; see Melvin-Koushki, “The Quest”, 330–378.

¹⁴⁷ On Yazdī as mathematician see Mahdi Farhani Monfared, “Sharaf al-Din ‘Ali Yazdī: Historian and Mathematician”, in: *Iranian Studies* 41/4 (2008), 537–547. It is highly significant in the present context that toward the end of his career he appears to have worked at the Samarkand Observatory (Binbaṣ, *Intellectual Networks*, 65).

¹⁴⁸ For a study of this Ibn Khaldūn-Yazdī debate and a full translation of Yazdī’s tract on geomancy see Matthew Melvin-Koushki, “In Defense of Geomancy: Šaraf al-Din Yazdī Rebutts Ibn Ḥaldūn’s Critique of the Occult Sciences”, in: *Islamicate Occultism: New Perspectives*, Matthew Melvin-Koushki and Noah D. Gardiner, eds., double issue of *Arabica* 64/3 (2017), 346–403.

¹⁴⁹ As Yazdī asserts in his *Nikāt-i Kalimāt al-Tawḥīd*, lettrist proofs are among those immediately and instinctively grasped and admit of no doubt (*az yaqīniyyāt-i fiṭri-st va dar ān bih shakk u shubḥa nist*) (MS Ayasofya 1801, f. 38b).

¹⁵⁰ This value is $50 + 6 + 200 = 256$; there are four triplicities in a geomantic tableau (a triplicity being two Mothers or two Daughters from the first row and the one Niece they produce), so $16 \times 4 \times 4 = 256$.

¹⁵¹ I.e., $16 \times 16 = 256$. The actual phrase here is *murabbaʿ-i ʿadad-i ashkāl-i raml*.

¹⁵² Also 16, including that of the Reconciler.

¹⁵³ “Faṣḥi dar Bāb-i Raml”, in: *Sharaf al-Din ‘Ali Yazdī, Munsbaʿāt*, Īraj Afshār and Muḥammad Riḍā Abūʿi Mahrizi, eds., Tehran: Thurayyā, 1388 Sh./2009, 87–91, here: 89.

He further defends the traditionalist proof, scornfully dismissed by Ibn Khaldūn, which posits the prophet Daniel as the inventor of geomancy.¹⁵⁴ Here again his primary argument in support of his interpretation of the relevant hadith is a lettrist one: geomancy bears a numerological correspondence to the name Daniel, so the association holds.

We must therefore apply ourselves to this art with such purity of intention (*ṣafā-yi niyyat*), unity of purpose (*vahdat-i qaṣd*) and total concentration (*jamʿ-i himmat*) that the soul may thereby achieve a type of correspondence (*munāsabat*) with the all-emanating Source (*mabdaʿ-i fayyād*) that can call forth its effulgence and evoke hidden things to appear as they truly are and as plainly as can be shown. Those who quaff from the flagons of intuition (*kuʿūs-i adbrvāq*) will find their insight confirmed by the fact that the number of dots in all the geomantic figures, [i.e., 96], is equivalent to the value of the name Daniel (Dāniyāl) (God bless and keep him and our own Prophet).¹⁵⁵ From this equivalency based on the method of the secrets of names and numbers it may be understood that the application of this art can only be effective when it occupies the totality of one's attention in singularity of purpose, all centered on the operation to the extent possible, for this science is entirely predicated on mentation and imagination (*pindāri*).¹⁵⁶

As a divinatory methodology based on number theory, then, geomancy fit neatly into the newly resurgent neopythagorean-neoplatonic (*fiṭhāghūrī-aflātūnī*) project that was sweeping the early 9th/15th-century intellectual scene, and served as the primary foundation for the philosophical-scientific and spiritual-political adventurousness that characterized the early modern Persianate world; this conceptual confluence is plainly reflected in Luṭf Allāh Nishāpūrī's innovative marriage of geomancy and letter magic on the one hand and Yazdī's pointedly lettrist defense of the science on the other.

So far geomancy's scientific classification; but what of its primary mechanism? Yazdī alludes to the answer in the last passage above. Geomancy, like all occult sciences as practiced in the early modern Islamo-Christianate world, is predicated on the hermetic principle of correspondence (*munāsaba*): as above, so below. This union of supernal and infernal, of spirit and matter, of eternity and time is governed by the law of (gendered) attraction or love (*ḥubb*, *maḥabba*, *ʿishq*) obtaining between all bodies, from planetary to atomic.¹⁵⁷ The neoplatonists hold

¹⁵⁴ *Muqaddima*, 108.

¹⁵⁵ Dāniyāl is numerically equivalent to 96 (4 + 1 + 50 + 10 + 1 + 30).

¹⁵⁶ "Faṣḥi," 89–90.

¹⁵⁷ Empedoclean love, fused with the erotic motion of Plotinus; see Sajjad Rizvi, *Mullā Ṣadrā and Metaphysics: Modulation of Being*, London: Routledge, 2009, 85. Cf. the *Iḳbrāwān al-Ṣafāʿ*'s 37th epistle on love ('Divine wisdom and solicitude has bound all existents together with a single bond and strung them together in a single arrangement'; 'God is the First Beloved, and the celestial sphere revolves solely out of longing (*shawq*) for Him and love (*maḥabba*) for permanence'), Ibn Sinā's *Risāla fi l-ʿIshq* and Ibn ʿArabī's embrace of the sufi concept of *al-nikāḥ al-sāri fi jamīʿ al-dbarāri* ('the marriage act pervading all atoms'), referred to by Ibn Turka as 'perpetual bonding' (*al-ʿaql al-sāʿir*) and 'pervasive coupling' (*al-nikāḥ al-sāri*) (Melvin-Koushki, "The Quest", 364). Most famously the basis for Isaac Newton's theory of gravitation, this doctrine was ubiquitous in early modern Islamo-Christian thought,

that these two principles erect a hierarchy of being that may be ascended and descended at will; the neopythagoreans hold that number is the only shuttle capable of returning the human intellect to its transcendent, unitary origin. Properly manipulated, then, the primordial virtue of number may be activated in a way that grants knowledge of the unseen – past, present and future, essences and secret thoughts. Geomancy is one such method of number manipulation whose efficacy depends on the correspondence of above to below along the neoplatonic Chain of Being.¹⁵⁸

This point is explicitly stated by no less a figure than Shams al-Din Muḥammad Khafri, prominent astronomer and philosopher under the early Safavids; significantly for our purposes here, George Saliba has called Khafri the most important planetary theorist of the 10th/16th century, and believes him to be the first thinker to redefine mathematics “as a descriptive language of scientific processes,” foreshadowing “the modern conception of the role of mathematics in science in general.”¹⁵⁹ (At this point it is perhaps unsurprising to learn that Khafri was father of the most important lettrist author of 10th/16th-century Iran, Maḥmūd Dihdār Shīrāzī (fl. 984/1576), Shaykh Bahā’rī’s (d. 1030/1621) teacher in the occult sciences.)¹⁶⁰ In a simply titled *R. dar Raml*, one of two Persian treatises he wrote on geomancy, Khafri succinctly explains the philosophical-cosmological framework of

from the political philosophy of Jalāl al-Din Davāni in the 9th/15th century to the millenarian empiricism of Francis Bacon in the early 11th/17th. As the latter memorably describes it in his essay on the subject, “Cupid; or the Atom” (*Of the Wisdom of the Ancients, in The Works of Francis Bacon*, James Spedding et al., eds., 14 vols., Boston: Brown & Taggard 1860–1864, vol. 6, 729–730): “The fable [of Cupid, or Love,] relates to the cradle and infancy of nature, and pierces deep. This Love I understand to be the appetite or instinct of primal matter; or to speak more plainly, the natural motion of the atom; which is indeed the original and unique force that constitutes and fashions all things out of matter ... [T]he summary law of nature, that impulse of desire impressed by God upon the primary particles of matter which makes them come together, and which by repetition and multiplication produces all the variety of nature, is a thing which mortal thought may glance at, but can hardly take in.”

¹⁵⁸ On the Chain of Being theory generally see Arthur Lovejoy, *The Great Chain of Being: A Study of the History of an Idea*, Cambridge, Mass.: Harvard Univ. Press, 1936; on the same in Islamicate thought see Aziz Al-Azmeh, *Arabic Thought and Islamic Societies*, London: Croom Helm, 1986, 2–13.

¹⁵⁹ “Kafri, Šams-al-Din,” in: *Encyclopaedia Iranica*; see also his “A Sixteenth-Century Arabic Critique of Ptolemaic Astronomy: The Work of Shams al-Din al-Khafri”, in: *Journal for the History of Astronomy* 25 (1995), 13–38. While Saliba’s celebration of Khafri is expressly and problematically teleological and positivist, I rely on it here to emphasize the Shirazi thinker’s neopythagorean bent – wholly elided in Saliba’s account; see Melvin-Koushki, “Powers of One”. On Khafri’s position in the school of Shiraz see Reza Pourjavady, *Philosophy in Early Safavid Iran: Najm al-Din Maḥmūd al-Nayrizi and His Writings*, Leiden: Brill, 2011, 37–40 and passim; on his philosophical thought see Firouzeh Saatchian, *Gottes Wesen – Gottes Wirken: Ontology und Kosmologie im Denken von Šams-al-Din Muḥammad al-Ḥafri (gest. 942/1535)*, Berlin: Schwarz, 2011.

¹⁶⁰ See Matthew Melvin-Koushki, “Maḥmūd Dehdār Šīrāzī”, in: *Encyclopaedia Iranica*; and Melvin-Koushki, *The Occult Science of Empire*.

the science (here with reference to the method Hidāyat Allāh terms the Geomantic East):¹⁶¹

Inasmuch as the subject of this science is the dots and the 16 figures [they form which] populate 16 cells (*buyūtāt*), it is necessary to explain the nature and associations (*mansūbāt*) of each. The methodology (*vaḍ'*) of this science is based on correspondence (*munāṣabat*); thus because the world of generation and corruption (*'ālam-i kaḥm u fasād*) is composed of four elements (*'anāšir*), four single dots (*nuqta-yi fard*) are first arranged like so, ⋮, with each standing for a given element. The first dot is called fire (*ātash*), the second air (*bād*), the third water (*āb*), the fourth earth (*kbāk*). And because the natures (*ṭabāyī'*) of these elements are each composed of two qualities (*kayfiyyat*),¹⁶² each of these four dots may be doubled like so, ⋮⋮. This figure is known as Populus (*jamā'at*), while the first is known as Via (*ṭariq*). Because Via is the simplest of the figures it is called the Universal Intellect (*'aql-i kull*), and because Populus features all possible dots it is called the Universal Soul (*naḥs-i kull*). Because the eight [composite] qualities of natures are lower than the four elements and the elements lower than the [Universal] Intellect which occupies the second degree (*martaba*) after God Most High, who occupies the first degree of oneness (*yaki*), it is appropriate (*munāṣib*) that fire be represented by a single dot, air by two dots, water by four dots and earth by eight dots. This arrangement is also referred to with the letters *ABDH*,¹⁶³ with *A* assigned to the first dot, *B* to the second, *D* to the third and *H* to the fourth ... And because the cells are 16 in number, or four times four according to the number of natures, and the sum of the above numbers is 15, it is appropriate that the Universal Intellect be assigned to the fifteenth cell, with the sixteenth cell being assigned to the Universal Soul, the closest of contingent beings (*mumkināt*) to the Universal Intellect immediately above it.¹⁶⁴

Most importantly for history of science, this neopythagorean-neoplatonic framework underlying all occultist practice is itself predicated on the principle of secondary causality vertically cascading down the Chain of Being. Here Yazdī takes to task his anti-occultist, fideist interlocutor, Ibn Khaldūn, who heaps scorn and censure on those who investigate secondary causes,¹⁶⁵ by counterposing geomancy as a science precisely devoted to such investigation:

Now all those who rashly deny the excellence of this noble art appear to do so because they hold to the belief that knowledge of the unseen (*'ilm-i ghayb*) was only vouchsafed

¹⁶¹ The *nisba* Khafīrī is often misread as Khīdri by catalogers, e.g. in Storey, *Persian Literature*, vol. 2.3, 487, no. 856 (40). At least 20 MS copies survive of Khafīrī's *R. dar Raml* in Iran alone, a testament to its popularity; he also authored a second short geomantic treatise entitled *Daḥāzadāh Maṭla'* that cites the *Sā'ir al-Awliyā* and 'Abd Allāh Balyānī (i.e., certainly the *Jahān al-Raml*; see e.g. MS Majlis 12509/1, ff. 1b–5a; this *majmū'a* also includes Nūr al-Dīn Abhari's commentary on Ṭūsī's *Vāfi* and a commentary on Ṭabasi's *Aḥkām*).

¹⁶² Viz., hot or cold and wet or dry.

¹⁶³ I.e., 1-2-4-8.

¹⁶⁴ *R. dar Raml*, MS Majlis 3931/3, pp. 128–129, MS Majlis 15755, ff. 37b–38a, Princeton MS New Series 1177/2, ff. 18b–19a. This helpful if modest-sized treatise (10 folios or 27 pages respectively) is notable for its theoretical and methodical approach to the subject.

¹⁶⁵ *Muqaddima*, 429–431. Yet Ibn Khaldūn cannot simply be dismissed as an Ash'ari occasionalist; it is painfully ironic, to say the least, that he inveighs against the investigation of secondary causes in a masterwork devoted precisely to investigating the causes behind the rise and fall of civilizations (my thanks to Justin Stearns for this observation).

the holy [Prophet], knower of things hidden, and it is impossible for others to attain the same. But it is evident that the geomancer does not in any way claim to have knowledge of the unseen. The most that he claims in this regard is that his art is governed by a number of general principles and rules that were initially discovered through revelation and inspiration (*vahy u ilhām*), then collected and taught from one generation to the next down to the present day, and that it is possible through knowledge of these principles and rules and total concentration (*ṣidq-i andišba*) on the form (*sūrat*) the unseen returns (*radd*) to gain information about how specific situations will unfold at specific times and locations.¹⁶⁶

This is no perversion of belief; to the contrary, it is a clear proof (*dalīl, burhān*) that the order of existents (*nizām-i maʿvjudāt*) in the Chain of Being (*tartīb-i silsila-yi mukavvanāt*) necessarily manifests according to the eternal knowledge and will and wisdom of God. If, hypothetically speaking, it were not so, and events simply happened randomly (*kayfa mā itafaqa*) or on the basis of temporary, corruptible principles, then one could never accurately deduce from the dots and dashes produced by the geomancer's stylus (*kill*) the manner of unfolding of past, future and present events. The truth of this statement will be obvious to the intelligent who know the basis on which geomantic readings are derived.¹⁶⁷

In short: If geomancy can't work, no other natural or mathematical science can. But since geomancy does work, is testable and true, we can know – and control – the cosmos. Nor should it be considered a religiously suspect science; after all, the idea that a binary code underlies and shapes physical reality has long been a staple among logocentric metaphysicians, Muslim, Jewish and Christian alike – a host of whom embraced the Danielic art.¹⁶⁸

Geomancy's claim in the Arabo-Persian tradition to be an *experientially verifiable* (*mujarrab*)¹⁶⁹ and fundamentally *rational*¹⁷⁰ mathematico-natural science, fea-

¹⁶⁶ Cf. the famous dictum of the Pythagorean Alcmaeon (fl. 500–450 BCE) in reference to artificial divination (tr. in Robert Drew Hicks, *Diogenes Laertius*, Cambridge, Mass.: Harvard Univ. Press, 1995, 397): “Of things invisible, as of mortal things, only the gods have certain knowledge; but to us, as men, only inference from evidence is possible.”

¹⁶⁷ Yazdī, “Faṣṣi,” 87–88.

¹⁶⁸ On Judeo-Arabic geomancy see Blanca Villuendas Sabaté, *Judaico-Islamica. La geomancia en los manuscritos judeo-árabes de la Gueniza de El Cairo*, Cordoba: Cordoba Univ. Press, 2015.

¹⁶⁹ *Tajriba*, experiential assaying, became a major theme in Islamic occultism during the 8th–10th/14th–16th centuries in particular; geomancers, letrists, astrologers and alchemists were increasingly emphatic about the *mujarrab* nature of their findings and procedures. As ʿAlī Ṣafī Kāshifī (d. 939/1533), for example, son of the great Timurid polymath and occultist Ḥusayn Vāʿiz Kāshifī, asserts in his letrist treatise *Hirz al-Amān min Fitān al-Zamān*, which cites both Akhlāfī and Ibn Turka: ‘Experiential assaying aimed at manifesting the effects and properties of the letters has often been successfully repeated; and experience is among the forms of proof that produce certainty (*tajriba yaki az itbbāt-i yaqīn ast*)’, (see Melvin-Koushki, “The Quest”, 279). This, it must be emphasized, represents a significant departure from aristotelian precedent, wherein *empeiria* is a mode of general knowledge considerably inferior to *epistēmē*, ‘science’ (my thanks to Nicholas Harris for this observation). As that may be, the empirical nature of occult science was already asserted by such authorities as Abū Maʿshar Balkhī (d. 272/886), father of conjunction astrology, who influentially declared his discipline to be a science founded on analogical reasoning (*qiyās*) and experience (*tajriba*), the latter entailing observation (*muʿāyana*) and direct discovery (*al-*

turing falsifiable truth claims, must therefore be taken far more seriously by historians of science than it has been to date. That such a massive chapter in that tradition's development – the 13th–19th centuries, when it was at the apex of its sophistication and popularity throughout Afro-Eurasia as a primary application of the *quadrivium* – has been left wholly unwritten, while its Arabo-Latin sister has been recuperated as a worthy, if still marginal, object of historiographical investigation, testifies to the *reductionist-colonialist double standard* that still structurally defines history of science as a field.

A positivist case in point is Francis Bacon (d. 1626), roundly hailed as the father of experimental science, and hence precursor of “scientific modernity,” despite his profoundly occultist, perennialist and millenarian outlook. Indeed, some scholars, following Frances Yates (d. 1981), now predicate his revolutionary natural-philosophical project on precisely that outlook. That is, Bacon's occultism did not negate his experientialist rationalism, but drove it.¹⁷¹ Most significantly for our purposes here: he elevated *artificial divination* – considered far inferior to natural divination from Plato onward – to the status of an experimental natural science, pointedly renaming it natural divination to this end.¹⁷² Now geomancy, of course, was with astrology the most popular and technically sophisticated form of artificial divination in the early modern Islamo-Christianate world. And as we have seen, early modern Muslim geomancers asserted much the same experimental status for the science; they too valorized artificial divination over natural.¹⁷³ More, and un-

wujūd al-ḥādīr) (Charles Burnett, “The Certitude of Astrology: The Scientific Methodology of al-Qabīṣī and Abū Maʿshar”, in: *Early Science and Medicine* 7/3 (2002), 198-213, here: 210, 212). An identical argument is made for medicine by Ibn Hindū (d. 410/1019 or 420/1029), who rather uses the terms *raṣād* and *mushābada* for observation and personal inspection respectively (Gutas, “Certainty, Doubt, Error”, 279–280).

¹⁷⁰ I use this descriptor here in a nontechnical sense to signify the philosophically coherent outlook of our occultists. But its technical sense also applies: rational demonstration (*burhān ʿaqlī*) was a key, if contested, element of occult-scientific theory, together with experience, observation and analogical reasoning, especially with respect to astrology. Most notably, al-Kindi (d. ca. 260/873) himself allowed the application of *burhānī* status to predictive sciences, although his student Abū Maʿshar disagreed (Burnett, “The Certitude”, 212).

¹⁷¹ See e.g. Stephen A. McKnight, “The Wisdom of the Ancients and Francis Bacon's New Atlantis”, in: Allen G. Debus and Michael T. Walton, eds., *Reading the Book of Nature: The Other Side of the Scientific Revolution*, Kirksville, Mo.: Sixteenth Century Journal Publishers, 1998, 91–109.

¹⁷² A. P. Langman, “The Future Now: Chance, Time and Natural Divination in the Thought of Francis Bacon”, in: Andrea Brady and Emily Butterworth, eds., *The Uses of the Future in Early Modern Europe*, New York: Routledge, 2010, 142–158, here: 152.

¹⁷³ It should be noted that this formal distinction between natural and artificial divination, as codified by Cicero (d. 43 BCE) in his *De divinatione*, is not as systematically made in the Arabo-Persian tradition. Most famously, however, Ibn Khaldūn – a committed if confused anti-occultist – distinguished between *kāhīns*, who engage in possession divination, and *ʿarrāfs*, who engage in inductive (*taḥakkum*) divination (Melvin-Koushki, “In Defense of Geomancy”). The Tunisian historian's blatant, fideist bias against and ignorance of Islamic intellectual history aside, the pointed reclassification of geomancy as both a mathematical and an Islamic science in the Persianate world was designed to retire this binary.

like their Christian counterparts, they formally elevated geomancy from the natural to the mathematical sciences in recognition of its remarkable ability to empirically demonstrate the validity of neopythagorean cosmology. For if number is the uncreated, all-creative matrix of the cosmos, then the disciplined manipulation of number – in this case even-odd bits – can be expected to give reliable data about that cosmos. Islamo-Christianate geomancy thus exemplifies, in its formal classifications and practical deployments, that early modern brand of “Physico-Mathematicall-Experimentall Learning”¹⁷⁴ which has been so thoroughly investigated and feted in the case of Europe alone.

Islamicate geomancy, in sum, a mainstream and vital *Western* science, represents a uniquely strategic object of investigation in its role as epitome of early modern Western intellection (much of it heavily neopythagorean): its study cannot but neatly undercut the prevailing teleological eurocentrism of the field. But those historians of science wishing to rehabilitate such instances of early modern Islamicate high occultism as expressly rational, experientialist pursuits must navigate between the Scylla and Charybdis erected by post-Enlightenment positivism and the 20th-century reactions thereto. On the one hand, they must refrain from reflexively disappearing mind into matter in modern *materialist-realist* fashion; in a mindless cosmos “occult science” is a flat impossibility, an epistemological travesty, a contradiction in terms. On the other, they must forswear the equally extremist *religionist* approach counterposed by the great antimodernist-Islamicist Henry Corbin (d. 1978), which strives to disappear occult science into the immaterial – and hence apolitical – dumping ground that is mysticism, is religion.¹⁷⁵ (C. G. Jung’s (d. 1961) *psychologization* of occultism initially represented a third if equally ahistorical way, and powerfully restored it as a category to public and scholarly consciousness; but this tack was totalized by his immediate intellectual heirs, then largely commandeered for religionist ends.¹⁷⁶) The paradoxical logic of binaries

¹⁷⁴ Thus John Wilkins’ summarization, in 1660, of the nascent Royal Society’s mission (Peter Dear, *Discipline and Experience: The Mathematical Way in the Scientific Revolution*, Chicago: Chicago Univ. Press, 1995, 2). Needless to say, I use “experimental” here strictly in its early modern sense.

¹⁷⁵ Wouter J. Hanegraaff, *Esotericism and the Academy: Rejected Knowledge in Western Culture*, Cambridge: Cambridge Univ. Press, 2012, 299–302.

¹⁷⁶ Hanegraaff, *Esotericism*, 281–295; on the Jungian concept of *synchronicity* as the engine of all divination see n. 11 above. The temptation to simply fold all forms of divination into the catchall category of *intuition* – the hunch, the gut feeling – must therefore be resisted, for it effectively consigns the study of complex divinatory sciences like geomancy to psychology and anthropology. The most recent example of such a psychologizing approach is that of Peter Struck, who in a programmatic article on the cognitive history of divination in ancient Greece advances an otherwise compelling argument for reconceptualizing the mantic arts as a natural and hence perennial expression of what he terms cognitive intuition (“2013 Arthur O. Lovejoy Lecture: A Cognitive History of Divination in Ancient Greece”, in: *Journal of the History of Ideas* 77/1 (2016), 1–25); this summarizes his larger argument in *Divination and Human Nature: A Cognitive History of Intuition in Classical Antiquity*, Princeton: Princeton Univ. Press, 2016. This is not to deny the central role of intuition,

being what it is, of course, these violently opposed approaches have successfully pursued the same goal: the rendering of “postclassical” Islamicate philosophy a pale, passive, otherworldly, strictly unscientific and utterly un-Western pursuit.

But the examples of Tūsi, Nishāpūri, Yazdi, Khafri and Hidāyat Allāh Shirāzi presented above explode historiographical positivism and religionism alike. As they conclusively show, the elite Muslim (occult) philosopher-scientists of the post-Mongol Persianate world professionally deployed their highly technical, experientialist forms of divination and magic to very *material* ends as a *rational* application of their panpsychist-monist neopythagorean cosmology. And chief among these ends: the occultist construction and maintenance of henological West-East *empire*.

Conclusion

The ‘science of sand,’ as a quintessentially Arabic and thoroughly Islamicized system of divination and precise cognate to the *I Ching*, developed from obscure origins to become, by the 7th/13th century, a mature and mainstream mathematical-natural occult science of wide appeal throughout the Islamo-Christianate world. Predicated on a neopythagorean-neoplatonic system and animated by the twin principles of correspondence and secondary causation, geomancy was of particular and enduring interest to thinkers and rulers throughout the Persianate world during the 7th–11th/13th–17th-century moment most especially. Its great philosophical-scientific virtue lay in its ability to empirically support the neopythagorean cosmology of its scholarly practitioners; its professional virtue lay in its status as magnet for royal patronage. For Mughal, Safavid, Ottoman and other elites, the science became part and parcel of the performance of sainthood and sacral kingship because it promises granular, prophetic-grade insight into, and thus power over, history. That is to say, such sciences of divination, as the very term connotes, were crucial to the quest for *divinization* pursued by many Turko-Mongol Perso-Islamic sovereigns and other messianic claimants in the run-up to the Islamic millennium.¹⁷⁷

Nor is geomancy a strictly premodern fad; it and its offspring remain in common use to the present. Though charlatans may again abound in these latter, darkling, post-millennial days, this to the point that *rammāli*, incompetently done, is now an imprisonable offense in Iran, there is no longer any reason for scholars to deny geomancy and its fellow mathematical occult sciences their rightful place in Islamicate intellectual and imperial history, or for historians of science to deem it a

or *dhawq*, in Islamicate theories of divination; after all, Yazdi asserts geomancy to be entirely predicated on *mentation*. But such mentation must involve the processing of intuitions by means of intellect (*ʿaql*), and that within a rigorous philosophical (neopythagorean-neoplatonic) and experientialist framework.

¹⁷⁷ The English term divination pivots on the Greek conception, from Plato onward, of possession by the divine as sole guarantee of philosophical truth.

“superstitious art” of little philosophical-scientific worth.¹⁷⁸ As Ayatollah Hasan Ḥasanzāda Āmulī (b. 1346/1928) recalls of his famed, departed colleague Ayatollah Ṭabāṭabāʾī (d. 1402/1981):

The esteemed teacher ... was holding a lesson one night when something prompted him to relate the following anecdote: ‘There was a gathering [I attended] at which someone known to have expertise in geomancy was asked to identify a certain person. The geomancer performed a geomantic operation and came up with a name. Those present scoffed that a huge number of people have that name. So he repeated the operation and came up with his father’s name. Those present scoffed that a huge number of people so named have that as their father’s name. So he repeated the operation and came up with his occupation. Those present scoffed that a huge number of people so named and whose father is so named have that as their occupation. Things continued in this vein until the geomancer produced the man’s telephone number. Said those present: “To object at this point really wouldn’t be fair!”¹⁷⁹

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¹⁷⁸ Thus Lynn Thorndike’s (d. 1965) characterization of geomancy in his monumental *A History of Magic and Experimental Science*, 8 vols., New York: Columbia Univ. Press, 1923–1958, which mentions the science often in passing; see e.g. vol. 2, ch. 39.

¹⁷⁹ *Hizār u Yak Kalīma*, 6 vols., Qom: Būstān-i Kitāb, 1381 Sh./2002, vol. 5, 411–412. The same scholar also produced a *R. dar Raml* (Qom, n.d.). As Hidāyat Allāh makes clear, ʿAllāma Ṭabāṭabāʾī’s geomancer thus used at least three distinct geomantic cycles to progressively narrow down the identity of the quesited.

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The Occult Sciences in *Hurūfī* Discourse

Science of Letters, Alchemy and Astrology in the Works of Faḍlallāh Astarābādī*

Orkhan Mir-Kasimov

Occult Sciences, Ontological Hermeneutics and Religious Authority

The aphorism ‘alchemy is the sister of prophecy’¹ expresses the view that the ‘occult’ sciences, including alchemy, astrology, the science of letters and numbers and dream interpretation, address essentially the same kind of knowledge as that obtained by the means of prophetic revelation. However, this does not necessarily entail a rivalry between the occult and prophetic knowledge. Indeed, in Islam, prophetic knowledge is usually connected with the descent (*tanzīl*) of the divine Word into the created universe. As regards the occult sciences, they were associated from early times with the hermeneutical process, and viewed as bringing the Word, revealed through the prophetic missions, back to its divine origin (*taʿwīl*),² in order to discover its innermost metaphysical meaning. From this perspective, the *taʿwīl* does not invalidate the *tanzīl*, but uses it as a starting point and completes the prophetic revelation by disclosing its original metaphysical meaning. The knowledge related to the *taʿwīl* which could be acquired in particular by means of occult sciences potentially endows its bearer with all the power associated with direct divine inspiration without necessarily interfering with the authority of the prophetic message ‘descended’ by means of the *tanzīl*.³ Since, according to Muslim and Shiʿī in particular, eschatological beliefs, knowledge of the ultimate *taʿwīl* is one of the attributes of the Saviour who will eradicate evil and govern mankind at the end of time, the potential of the *taʿwīl*-related religious authority combined with the language of occult sciences can be expected to be reflected in Islamic messianic discourse.⁴

* My thanks to Russell Harris for proofreading this article.

¹ Attributed to ʿAlī b. Abī Ṭālib (d. 40/661). See Henry Corbin’s translation of excerpts from the *Kitāb al-burhān fī asrār ʿilm al-mizān* by Aydamir Jaldaki (8th/14th century), in: Henry Corbin, *L’Alchimie comme art hiératique*, Paris: L’Herne, 1986, 31 ff.

² Because the *taʿwīl*, in this sense, designates not just an ordinary exegesis, but the return to the original divine Word, which is the source of the creation and the universal principle of existence, I commonly translate *taʿwīl* as ‘ontological hermeneutics’ in this article.

³ See Orkhan Mir-Kasimov, “The Word of Descent and the Word of Ascent in the Spectrum of the Sacred Texts in Islam”, in: *Controverses sur les écritures canoniques de l’Islam*, Daniel De Smet and Mohammad Ali Amir-Moezzi, eds., Paris: Les éditions du Cerf, 2014, 297–336.

⁴ On the beliefs associated with the figure of Saviour in various currents of Islam, see Wilferd Madelung, “al-Mahdi”, in: *Encyclopaedia of Islam*, 2nd ed., vol. 5, 1986, 1230–1238.

In this paper, I will focus on one particular example of such a combination in the works of Faḍlallāh Astarābādī, one of the most influent messianic leaders of the 8th/14th century Iran.⁵ The first section of this paper will outline the relationship between the science of letters, dream interpretation, ontological hermeneutics and issues of religious authority. This dimension of Faḍlallāh's doctrine has already received significant scholarly attention and therefore, I will only emphasise the points immediately relevant to our topic. The following two sections contain evidence related respectively to the astrological and alchemical passages of Faḍlallāh's magnum opus, the *Jāwīdān-nāma-yi kabīr*.⁶ To the best of my knowledge, the *Jāwīdān-nāma's* astrology and alchemy have not been succinctly presented in any previous publication, and this volume is a perfect opportunity for providing a summary of the relevant passages.

The science of letters and ontological hermeneutics (ta'wīl)

Faḍlallāh Astarābādī (d. 796/1394) was a remarkable thinker and founder of a mystical and messianic movement which came to be known as the *ḥurūfiyya*, from the Arabic *ḥurūf* meaning 'letters'. The name *Ḥurūfiyya*, found mostly in the bio-bibliographical, historical and heresiographical works written by non-*Ḥurūfi* authors, reflects the prominent role that the science of letters (*ʿilm al-ḥurūf*) played in Faḍlallāh's thought.⁷ The science of letters constitutes, indeed, the backbone of Faḍlallāh's original doctrine. Due to its obvious relation to writing, the science of letters occupies a leading position in Faḍlallāh's hermeneutical theory, according to which the universe is essentially a visible manifestation of the divine ontological writing, summarised and concentrated in the prophetic

The link between messianism and occultism was mutual: if the language of occult sciences can be expected to be found in the doctrines developed by various messianic movements, it is also because the Islamic occultism had a strong eschatological and messianic orientation. For the eschatological and messianic ideas in the corpus attributed to Jābir ibn Ḥayyān, see Pierre Lory, *Alchimie et mystique en terre d'Islam*, Paris: Verdier, 1989, 102–113.

⁵ On Faḍlallāh, his doctrines and followers, see Shahzad Bashir, *Faḍlallāh Astarābādī and the Hurūfis*, Oxford: Oneworld 2005 and Orkhan Mir-Kasimov, *Words of Power: Ḥurūfi Teachings between Shi'ism and Sufism in Medieval Islam. The Original Doctrine of Faḍl Allāh Astarābādī*, London: Tauris, 2015. See also Orkhan Mir-Kasimov, "Astarābādī, Faḍlallāh" and "Ḥurūfiyya", in: *Encyclopaedia of Islam*, online ed.

⁶ On this work, see Orkhan Mir-Kasimov, "Jāwīdān-nāma", in: *Encyclopaedia Iranica*, vol. 14, New York: Encyclopaedia Iranica Foundation, 2008, 603–605.

⁷ For an excellent overview of the Islamic science of letters see Denis Gril's introduction to Part VIII in *Les Illuminations de la Mecque*, Michel Chodkiewicz, ed., Paris: Sindbad, 1988, 385–438. *Ḥurūfiyya* as the designation of the specific group founded by Faḍlallāh Astarābādī should not be confounded with the *ʿilm al-ḥurūf* in general. It seems that Faḍlallāh and his followers usually described themselves as dervishes (*darwīshān*), and also as 'monotheists' (*muṭwāḥḥidūn*), 'people of the truth' (*abl-i ḥaqq*), 'people of the [divine] bounty' (*abl-i faḍl*), as well as using the Qur'ānic expressions like 'possessor(s) of the knowledge of the Book' (*man ʿindahu ʿilm al-kitāb*) and 'the midmost community' (*ummat wasat*).

books.⁸ On the other hand, the science of letters is inseparable from other occult sciences, in particular from alchemy and astrology.

In the works of his followers, Faḍlallāh's spiritual career is described essentially as a progressive initiation into the knowledge of ontological hermeneutics based on the science of letters. This initiation started from the hermeneutics of the compound units, that is to say, words (composed of letters) and corresponding images of objects and beings of the physical universe. In a vision described in the 'books of dreams' of his two close followers, Sayyid Ishāq Astarābādī and 'Alī Nafajī, Faḍlallāh receives the light of a star indicated to him by the Prophet Muḥammad. This light contains the knowledge of the metaphysical meaning of external forms (s. *ṣūra*) of objects and beings. As the metaphysical meanings of physical forms can be separated from their material support and perceived in dreams, this vision conferred on Faḍlallāh the power to understand and interpret the language of dreams (*ta'wil-i ru'yā, ta'wil-i manām*).⁹ Faḍlallāh's competence in dream-interpretation attracted his first followers, and also enabled him to establish relationships with the local ruling dynasties, such as Sarbadārs, Jalāyirids and Muẓaffarids.¹⁰

Faḍlallāh's initiation culminated in another revelatory experience that took place several years after the vision of the star. This time, Faḍlallāh was introduced to the secrets of the simple elements of sound and form, represented respectively by the phonemes and letters of the Arabic alphabet.¹¹ Since these simple elements are the foundation of any compound unit, the second initiatory event extended Faḍlallāh's knowledge well beyond the interpretation of dreams. He was now an accomplished master of ontological hermeneutics, able to discern the primary metaphysical letters and the corresponding elements of ontological meaning in

⁸ For more details on Faḍlallāh's 'scriptural' conception of the universe, see Mir-Kasimov, *Words of Power*.

⁹ The most extensive description of this event is found in the *Khwāb-nāma* by Sayyid Ishāq Astarābādī, MS Istanbul, Millet Kütüphanesi, Ali Emiri Farsça 1042, fol. 18b–19a. A similar description can be found in the *Khwāb-nāma* by 'Alī Nafajī, Vatican Pers. 17, fol. 12b–13b, and some references to this event are contained in the dream diary attributed to Faḍlallāh himself. For Sayyid Ishāq's version, see Bashir, *Fazlallāh*, 10–11. 'Alī Nafajī's description is cited by Hellmut Ritter, in: "Studien zur Geschichte der islamischen Frömmigkeit – II, Die Anfänge der Hurūfisekte", in: *Oriens* 7 (1954), 1–54, here: 12; and Shahzad Bashir, "Deciphering the Cosmos from Creation to Apocalypse: The Hurūfiyya Movement and Medieval Islamic Esotericism", in: *Imagining the End: Visions of Apocalypse from the Ancient Middle East to Modern America*, Abbas Amanat and Magnus T. Bernhardsson, eds., London and New York: Tauris, 2002, 172–173. The original Persian text of both passages together with their English translation can be found in Mir-Kasimov, *Words of Power*, 8–12 (English translation) and 550–551 (Persian text). For the mentions of the star in Faḍlallāh's dream diary see Orkhan Mir-Kasimov, "Le 'Journal des rêves' de Faḍl Allāh Astarābādī: édition et traduction annotée", in: *Studia Iranica*, 38/2 (2009), 249–304, here: 267 (Persian text) and 279 (French translation).

¹⁰ See Ya'qūb Āzhand, *Hurūfiyya dar tārikh*, Tehran: Nashr-i Nay 1369/1990–1991, 6–16.

¹¹ The relationship between the primary elements of sound, associated with the metaphysical meanings of the divine Word, and the corresponding elements of form, the primary 'letters,' will be explained in following paragraphs.

every visible form. In particular, he was initiated into the hermeneutics of the dis-jointed letters of the Qurʾān (*ilm-i taʾwīl-i muqattaʿāt-i Qurʾān*), the secrets of the religious law and Muslim rituals, and the secrets and spiritual stations of the Prophet Muḥammad. According to ʿAli Nafajī, following his second initiation Faḍlallāh received, from a supernatural source, the titles of Master of the Time (*sayyid-i zamān*) and King of all prophets (*sultān-i hame payghambarān*).¹²

Significantly, the two stages of the hermeneutics, that is to say, the interpretation of compound units on the one hand and the knowledge of the simple primary elements of form and meanings on the other, which are discernible in the descriptions of Faḍlallāh's initiation by his followers, can also be found in the fragments concerning the theory of hermeneutics (*taʾwīl*) in Faḍlallāh's principal work, the *Jāwidān-nāma-yi kabīr*. The first stage, exemplified by the Qurʾānic story of Joseph (Q 12) with reference to his ability to interpret dreams, is the *taʾwīl* of compound units, such as dream images or compound lexical units. The second, and ultimate stage of the *taʾwīl* exemplified in particular by the broken tablets of Moses, operates with the simple units, either phonemes, which are the direct expression of the most fundamental metaphysical truths, or letters, which are their visible loci of manifestation (s. *mazhar*, pl. *mazābir*).¹³

At this point, it would be useful to summarise some basic theoretical points of Faḍlallāh's theory of hermeneutics, closely associated with his cosmogony. According to the *Jāwidān-nāma*, the first manifestation of the unfathomable divine essence was the primordial Word (*kalima*), or Voice (*ṣawt*) which contained a limited number of eternal aspects, named 'words' (*kalimāt*). The number of the *kalimāt* is expressed by two numerals, 28 and 32. Depending on the context, either of these numerals as well as their sum can stand for the full Word. The 28/32 exist within the unified divine Word, and appear as separate phonemes after the differentiation of the Word which starts the process of creation. The 28/32 'words' represent the primary, most basic ontological truths (*ḥaqīqa*, pl. *ḥaqāʾiq*), or meanings (*maʿnā*, pl. *maʿānī*) emanated from the divine Word. At some point, there appear their visible counterparts, or loci of manifestation, the named 'letters' (*ḥarf*, pl. *ḥurūf*). These primary 'letters' are simple elements of form (*ṣūra*), each of which corresponds to a specific primary phoneme and expresses the metaphysical truth carried by it.¹⁴ In the following stages of creation, the *kalimāt*

¹² ʿAli Nafajī, *Kitāb-i Kibrāb-nāma*, fol. 66a and 68b–69b. Cf. German summary and partial translation by Ritter, "Die Anfänge", 20; English translation by Bashīr, *Fazlallāh*, 25–26.

¹³ See Mir-Kasimov, *Words of Power*, 260–263, and "Some Specific Features of the Hurūfī Interpretation of the Qurʾānic and Biblical Episodes Related to Moses", in: *Journal of Qurʾānic Studies* 10 (2008), 21–49.

¹⁴ This correspondence between the invisible 'words' or phonemes and the primary letters is based on the principle of Balance (*istiwāʾ*). For more detail, see Mir-Kasimov, *Words of Power*, Glossary. In some passages of the *Jāwidān-nāma*, the 'words' and 'letters' are identified with the phonemes and letters of human languages, in particular with the 28 letters of the Arabic and 32 letters of the Arabo-Persian alphabets. However, the sounds and letters

compose the ontological names of things, which constitute their innermost meaning and principle of existence, while the corresponding *ḥurūf* compose their visible forms and ensure that these forms are the loci of manifestation of the names that brought them into existence. The name and bodily form of any existent object or being are produced by the combination of few *kalimāt* and corresponding *ḥurūf*, with only one exception. The human bodily form is the locus of manifestation of the complete set of the 28/32 *kalimāt*, corresponding to the totality of the original divine Word and to the Supreme Name of God. The human body therefore contains the complete ontological alphabet.

This description presents creation essentially as a linguistic process, where groups of primary phonemes come together to compose meaningful words in a kind of ontological speech emanated from the original divine Word, while the letters of the ontological writing produce the bodily forms of the corresponding entities. Considered from this perspective, the universe is a book, in which every object is a word.¹⁵ Everything contained in the universe is also contained in the book of the human body, which is the pinnacle of creation. The prophetic books revealed in the course of history represent a particular case of this ontological writing, they realise the gradual revelation of the divine Word in human languages and in human writing. Therefore, the method of ontological hermeneutics leading to an understanding of the metaphysical meaning of both universe and prophetic books is essentially the same. The basic idea of this hermeneutics is to access the metaphysical meanings expressed by the ontological 'letters', whether the latter are represented by the actual letters in human Scriptures or by the primary elements of form discerned in the compound forms of objects.¹⁶ The science of letters is thus at the heart of Faḍlallāh's hermeneutical theory.

This short outline gives us an idea of a tremendous religious authority associated with the knowledge of the science of letters and of ontological hermeneutics. This authority is inherent in the title 'master of hermeneutics' (*ṣāhib-i ta'wīl*) attributed to Faḍlallāh by his followers. A claim to such a knowledge is in fact potentially tantamount to the claim of leadership of Islamic community. It is significant that knowledge and hermeneutical power of this kind were ascribed to the Shi'ī Imāms and especially to the last of them, the *Qā'im* or *Mahdī*, the eschatological Saviour, who is also expected to disclose the ultimate truth of all prophetic revelations to all of mankind, the truth upon which his universal rule of justice should be founded.

of the human languages are only one of manifestations of the 28/32 fundamental elements of the primordial divine Word.

¹⁵ Although this outlook is common for Islamic thought, and based on the Qur'ān, it receives a specific flavour in the context of the *Jāwīdān-nāma*.

¹⁶ As mentioned, the broken tablets of Moses express, in the *Jāwīdān-nāma*, this idea of a compound shattered in order to manifest its most basic indivisible elements of form. See note 13. The disjointed letters (*al-ḥurūf al-muqatta'a*) that appear at the beginning of some Qur'ānic *suras* are interpreted along the same lines.

Not limited to the spiritual sphere, the knowledge of the science of letters and the related procedure of ontological hermeneutics thus contained great potential for social and political action. In the case of Faḍlallāh and his followers, the transition from the spiritual to the socio-political sphere was most probably conditioned by the messianic dimension of Faḍlallāh's doctrine. Indeed, both the *Jāwidān-nāma* and the dream diary attributed to him, as well as indications in the works of his followers, suggest that Faḍlallāh believed that his initiation into the science of letters and the knowledge of ontological exegesis revealed to him effectively charged him with the mission to introduce a new era in the history of Muslim community and that of the mankind, that is, the final era leading to the direct revelation of the original divine Word to mankind by the eschatological Saviour.¹⁷ If this is true, then it seems understandable that his intense awareness of historic mission pushed Faḍlallāh to seek social and political recognition of his ideas.¹⁸ A detailed discussion of the political activity of Faḍlallāh and his followers is beyond the scope of this chapter.¹⁹ However, it is worth noting that Faḍlallāh's case provides another example of the role of the occult sciences as potent source of legitimacy for religious authority as well as for social and political activity.²⁰

In the following two sections, I will discuss Faḍlallāh's astrological and alchemical views which are closely interrelated with his interpretation of the science of letters.

¹⁷ For a discussion of the idea that Faḍlallāh might have had of his mission, see Mir-Kasimov, *Words of Power*, 12-15.

¹⁸ In addition to Faḍlallāh's links with the local dynasties mentioned above, the dream diary attributed to him contains a dream where he asks to marry the daughter of Toqtamish (d. 807/1404-5 or 808/1405-6), *khān* of the Golden Horde. In another dream, he sees himself praying with Tamerlane (d. 807/1404). See ms. Cambridge Ee 1.27, fol. 406b, 407a, and Mir-Kasimov, "Le *Journal de rêves*", Persian text 268-269, translation 281-282. For a discussion of these dreams, see Edward G. Browne, *A Catalogue of the Persian Manuscripts in the Library of the University of Cambridge*, Cambridge: Cambridge Univ. Press, 1896, 84-85; Ritter, "Die Anfänge", 23-24, and Bashir, *Fazlallah*, 30-31. On the political activity of the *Hurūfīs* after the death of Faḍlallāh see Bashir, *Fazlallah*, 85-108; Mir-Kasimov, *Words of Power*, Introduction, and "Hurūfiyya".

¹⁹ On this topic, see Mir-Kasimov, *Words of Power*, 15-23.

²⁰ While the science of letters appears to be at the core of Faḍlallāh's initiation narrative which seems to be the implicit foundation of his charisma, authority, and socio-political activity, other occult sciences, such as alchemy or astrology, were widely connected with the socio-political sphere throughout the history of Islam. For example, alchemy founded the exceptional authority of the *Imām* in *Shī'i* Islam and was regarded as a means of messianic transformation and purification of society; see Lory, *Alchimie et mystique*, 102-119. Astrology, and especially conjunction astrology, was used to legitimise rulers such as Tamerlane, Sulayman the Magnificent and Shah Akbar; see Azfar Moin, *The Millennial Sovereign: Sacred Kingship and Sainthood in Islam*, New York: Columbia University Press, 2012, index, "Lord of Conjunction", and Cornell H. Fleischer, "Mahdi and Millennium: Messianic Dimensions in the Development of Ottoman Imperial Ideology", in: *The Great Ottoman-Turkish Civilisation*, Kemal Çiçek, ed., vol. 3, Ankara: Yeni Türkiye Yayınları, 2000, 42-54.

*Astrology**

As mentioned, the human figure, defined as locus of manifestation and the visible form of the complete divine Word, occupies a central position in the *Jāwidān-nāma*'s doctrine. From this anthropocentric perspective, astrology describes the correspondence between the human body and the heavenly spheres. According to the *Jāwidān-nāma*, the human bodily form and the universe are essentially identical, they are both loci for manifestation of the complete divine Word.²¹ As a passage in fol. 267a puts it:

All things of the three worlds... are loci of manifestation of the [original] Word, and the human being (*insān*) is the locus of manifestation of [all] that [is contained in the universe], in actuality and in potentiality... Any locus of manifestation and any [expression of the ontological] knowledge that exists in the heavens [exists also] in [every] single human being... All the creation, with the infinite [multitude of] objects [contained in it], is a single human person. All visible objects are the parts and attendants (*ajzā' wa-hawāshī*) [of this person].²²

This identity between the human microcosm and macrocosm, reflected in corresponding details of their respective structures, is the basis of their mutual influence.

It is worth emphasising that the relationship between the microcosm and the macrocosm is described in the *Jāwidān-nāma* as reciprocal. The heavenly spheres and bodies influence the fate of humans because the structure of the macrocosm, and in particular, the eighth heaven, that is, the sphere of constellations, reproduces the structure of the divine Word originally embedded in the constitution of the cosmic human body represented by the primordial couple Adam/Eve. The identity of the human body with the heavenly sphere is in particular supported by references to traditional accounts that mention details of constitution of Adam's body, such as its 360 articulations, or 60 cubits of height.²³ The number 60 is highly significant in the *Jāwidān-nāma*, because it symbolises the sum of the 28 and 32 primordial 'words' which constitute the original Word. Both series of 28 and 32 are thus represented six times in 360 articulations of the human body and in 360 degrees of the heavenly sphere, reflecting their fundamental equivalence to the original Word.²⁴ The following citation illustrates the anthropomorphic outlook on the

* In this and the following section I use some material from the Chapters 1, 2 and 6 of my monograph *Words of Power*.

²¹ The third cosmic entity which, like human body and universe, reflects the totality of the original Word, is time. See Mir-Kasimov, *Words of Power*, Chapter 5.

²² The *Jāwidān-nāma-yi kabīr* is still unpublished and only available in manuscripts. All references to the numbers of folios in this chapter are made according to Ms. Or. 5957 of the British Library.

²³ For the references to *ḥadīth* material cited in the *Jāwidān-nāma*, see Mir-Kasimov, *Words of Power*, Inventory I: *Ḥadīths and Sayings*.

²⁴ Cf. Astarābādi, *Jāwidān-nāma-yi kabīr*, fol. 80a.

structure of the universe characteristic of the *Jāwidān-nāma* and is essential for its approach to astrology:

The [bodily] form (*ṣūra*) of Adam is close to God. The seven planets travel within the form of Adam. All heavenly spheres under and above the sphere of constellations are divided in accordance [with the sphere of constellations which is equivalent to the form of Adam]. They have therefore all the form of Adam. The four natural elements within the form of Adam are divided similarly into 28 and 32 parts... The division of the heavenly spheres and [in particular] of the sphere of constellations [is made in accordance with the division of Adam's body] because their ominous or auspicious influence (*badhāli wa-nikhāli*) affects Adam and his descendants.²⁵

This primordial, cosmic dimension of the human body is symbolised by the archetypal ontological writing of the well-preserved Tablet (*lawḥ-i mahfūz*), and by the divine Throne and Footstool (*ʿarsh/kursī*).²⁶ Several passages state that the Throne and Footstool existed before the creation of the universe in six days as mentioned in the Qurʾān. From this perspective, the Throne and Footstool, as well as the well-preserved Tablet, are sources of the fundamental Balance (*istiwāʿ*) and Measure (*andāza*) which, being introduced into the universe, made it a perfect reflection of the original Word as the form of the human body. To use the *Jāwidān-nāma*'s vocabulary, the universe was thus transformed into the Book of ontological writing, a copy of the well-preserved Tablet initially represented by human facial lines and bodily form, to which every object and being contributes its words and lines.²⁷

Starting from the original nature (*khilqa*) of Mother (*umm*) [i.e. Eve] and from the face of Adam, the line of balance (*khatt-i istiwāʿ*) [spreads] upon all things and the heavens, because they all [constitute] the single body of Adam. This is why [Eve and Adam are respectively] the Footstool (*kursī*) and the Throne (*ʿarsh*) of God.²⁸

On the other hand, in its historical dimension, the human body was created last in the order of creation.²⁹ The structural similarity which constitutes the basis of the mutual influence between the human body and cosmic entities remains valid in this perspective, but the order of primacy is inversed. The heavenly spheres, harmonised with the original Word through the action of Throne and Footstool,

²⁵ Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 8b-9a.

²⁶ Cf. Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 82a, 126a, 272b-273a, 276a-b, 367a-b.

²⁷ Balance and Measure are principles that govern the correspondence between the metaphysical meanings of the divine Word and the visible forms of the objects and beings, in order to ensure that all these forms are loci of manifestation of metaphysical meanings. The latter constitute, according to the *Jāwidān-nāma*, the ontological basis of any form: no form can exist unless it is a locus of manifestation of some meaning. Because, as we have seen, any form is composed of primary letters, the visible universe is essentially an ontological writing.

²⁸ Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 273b.

²⁹ This is an allusion to the Biblical story of Genesis, which places the creation of Adam and Eve in the last, sixth day, Friday (*jumʿa*) according to the Muslim tradition.

are now responsible for the emergence and fate of individual human beings over the course of time, including their spiritual education and eventual salvation.

The influence of the heavens is transmitted by their effusions (*fayḍ*, pl. *fuyūḍ*). The cosmic human form, symbolised by the divine Throne, and identified with the eighth heaven, receives the first effusion of the divine Word and transmits it to the rest of creation. Effusions coming from the heavenly spheres, constellations and planets affect human beings as well as all other objects and beings. The character of the effusions varies depending on the disposition of planets in the spheres. Every heavenly degree and its every fraction is the source of a particular effusion.³⁰ In some passages, the action of the heavenly spheres and bodies, mediated by their effusions, on human beings is described as ‘education’ (*tarbiyya*). The heavens, in their continuous revolution around the world of earth, are educators, or patrons (s. *murabbi*) of humans. This ‘education’ reflects the organisation initially introduced into the heavens through the mediation of the primordial cosmic human being.³¹

In several passages, the heavenly effusions affecting humans in positive or negative ways are associated with the divine attributes of Grace (*lutf*) and Rigour (*qabr*), and personified as angels who fill the heavens and accompany every atom of the universe, fulfilling the divine command and decree.³² The expression of Grace or Rigour should probably be linked to the auspicious or ominous influence of heavenly effusions: “Every planet, reaching in its course one of the constellations, produces an influence (*taʿthir*), a deficiency (*nuqṣān*) or bad fortune (*badḥālī*)”.³³ Since the heavenly spheres are structured in accordance with the division of the original Word into 28/32 ‘words’, and since the 360 degrees of the heavenly sphere equal six times 28 plus six times 32, every degree is in front of an ontological ‘word,’ and possesses special characteristics which are activated when a planet passes through this degree. It then emits an effusion, with properties which can be auspicious or ominous depending on the properties of the given degree and on those of the planet which activates its influence:

The seven planets move in the 360 degrees of the heavenly sphere. Every degree is a *locum tenens* (*qāʾim-maqām*) of an [ontological] ‘word’ (*kalima*) from the [28/32 ‘words’] of the divine Word (*kalām-i ilāhī*), the [complete] locus of manifestation (*mazhar*) of which is Adam. Every degree and every minute [of the heavenly sphere] conveys [to the planets] a specific condition (*ḥāl*), dignity (*sharaf*), affluence (*bāl*) or decline (*hubūt*), so that [the properties of the planets’ trajectories] are divided in accordance [with the division of the heavenly sphere]. In this manner, the planets actualise the condition (*ḥāl*) corresponding to the part of the seven heavenly spheres which they reach.³⁴

³⁰ Cf. Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 104b–105a.

³¹ Cf. Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 8b, 97b, 288a, 294a.

³² Cf. Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 99a–b.

³³ Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 132a.

³⁴ Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 129b–130a.

The structural equivalence between the original Word, the human body and the universe is also reflected in the 28 phases of the moon which convey auspicious or ominous heavenly influences:

Another way of division is the division of the 12 constellations of the sphere of constellations by the mansions of the moon: 'And the moon – We have determined it by stations' [Q 36:39].³⁵ [The sphere of constellations] is thus divided into 28 parts, in accordance with the number of the 28 [ontological] 'words' of [the revelation received by] the Messenger [Muḥammad].³⁶ From these 28, 14 are always hidden under the sphere of earth (*kurra-yi kbāk*), while [the other] 14 are always visible from the surface of the earth. Similarly, there are 14 visible lines of hair on the face of Adam, and 14 hidden [lines]. Since the sphere of constellations is divided into 28 parts by the mansions of the moon, in every mansion it [the moon] produces good (*sharafī*) or bad (*muqṣānī*) fortune.³⁷

The heavenly sphere covers all domains of human life. This follows naturally from the perfect correspondence between the human body and the heavenly sphere. The influences affecting particular aspects of the human life come from the corresponding astrological houses (*kbāna*). The following passages describe the astrological houses in some detail:

Adam was created [in accordance with the proportion]: 'his length is 60 cubits'..., which consists of 28 and 32, extended [as the multiples of 60] to the 360 degrees. From the point of view of this proportion, Adam is equivalent to the heavens. Adam, peace be upon him, is the surface of the earth (*adīm-i ard*). The earth (*kbāk*) and the four natural elements reflect, in [every] particular place, a [particular heavenly] image (*šūra*). Thus, at the moment of birth (*ma'wjud*) [of a human being], one constellation is related to the personality (*nafs*), the second to the possessions (*māl*), the third to something else, as well as the fourth and the fifth, and until the eighth, which is the house of death (*kbāna-yi murg*), the ninth, which is the house of knowledge (*ilm*) and travel (*safar*), the 10th [related to] authority (*salṭana*), the 11th [related to] expectations (*umīd*), and the 12th [related to] enemies (*adū*)... If a child [is born] with the ascendant in Aries (*tālī-yi ḥamal*), [this constellation] will be related to his or her personality. The second [house] of his or her [horoscope], which is the house of possessions, will be in Taurus (*thawr*). And if a child is born with the ascendant in Taurus, the second house of his or her [horoscope, related to] possessions will be in Gemini (*jawzā*). Thus, every constellation from among the 12 constellations [of the Zodiac can potentially convey] the meanings [related to] the personality of the ascendant, to the house (*bayt*) of possessions, house (*kbāna*) of life time (*umr*) and honours (*jāl*), house of knowledge, house of authority, or house of enemies and expectations. [This demonstrates the principle of] Unity (*tawḥīd*): all [constellations] are fundamentally one.³⁸

³⁵ The translation of all Qur'ānic verses in this paper is that of Arthur J. Arberry, *The Koran Interpreted*, London: Allen and Unwin; New York: Macmillan, 1955, with some occasional modifications when required by the context.

³⁶ This is an obvious allusion to the 28 letters of the Arabic alphabet in which the Qur'ān is written.

³⁷ Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 410a.

³⁸ Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 127a-b.

The ‘auspicious’ and ‘ominous’ heavenly influences are defined in the *Jāwidān-nāma* with regard to spiritual growth. Good fortune rewards and helps spiritual progress towards the knowledge of the divine Word encoded in the human bodily form, while the ominous stars hinder this progress. The stars also create impenetrable barriers in order to protect the heavens, and the supreme knowledge of the human form contained in them, from the demons:

An auspicious star (*kaṣṣab-i sa’d*) is the cause (*mūjib*) of the effusion (*ḥayd*) which, when it affects someone, provides [to this person] education (*tarbiyya*), leading to the station where he or she [needs] no [further] education. An ominous star (*kaṣṣab-i naḥs*) is the cause of the [obstacles] preventing (*man’*) [access to] such a station. Powerful and moving, they truly burn any thief (*sāriq*)³⁹... ‘And we stretched towards heaven, but we found it filled [with terrible guards and meteors]’ [Q 72:8], because [the heavens] are divided into 360 degrees, [in accordance with the number of 28 and 32 names of the divine instruction when] ‘He taught Adam the names, all of them’ [Q 2:31].⁴⁰ This is why it is said: ‘They listen not to the High Council, for they are pelted from every side, rejected’ [Q 37:8], because [the demons] are rejected [from the heavens].⁴¹

After affecting humans, the effusions and influences of the heavenly bodies are further transmitted to the lower levels of the universe. This is possible because of the homogeneous structure of the universe: anything existing within the universe is shaped in accordance with the same standard of the original Word. The only difference between the human body and the external form of any other particular object is that the former contains the whole set of 28/32 original letters and is thus in a perfect harmony with the heavenly spheres, while the latter contains only a fragment of the ‘ontological alphabet’ and its receptive and expressive capacities with the regard to the heavenly influences and the ontological words are therefore limited.

Another important statement which regulates the relationship between the human body as the form of the complete Word and the forms of particular objects within the universe is the idea that every object is a part of the cosmic body of Adam. The following passage describes the diffusion of heavenly influences through humans to the lower levels of existence:

[The heavens are divided into 28 and 32 degrees] in accordance with the innermost reality of the human being (*ḥaqīqat-i insān*). [Both heavenly degrees and human bodily form] possess (*khudāwānd*) [the complete set of] the 32 [ontological] ‘words’. [By virtue

³⁹ This is an allusion to the demons mentioned in relation with the Qur’ānic verses further in this passage. The demons try to access the heavens as thieves, but are driven away by meteors.

⁴⁰ According to the *Jāwidān-nāma*, this Qur’ānic verse alludes to the 28/32 primordial ‘words’ that God taught to Adam after having created his body as their perfect locus of manifestation.

⁴¹ Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 53b.

of this similarity], every catastrophe (*nakba*), trouble (*zahma*) and passion (*ihtirāq*)⁴² that affects [the heavens and heavenly bodies] also affects humans. [From the latter this influence] is conveyed to plants, animals and minerals, because all plants, [animals] and minerals are identical to them [i.e., to the ontological ‘words’]. This proves that ruin and prosperity (*kharābi wa-ābādāni*) reach plants, minerals, humans and animals from the heavenly degrees and stars, [divided in accordance with the number of] 28 and 32 [ontological ‘words’]. All heavenly things (*falakiyyāt*) are divided [according to the measure of the] 28 and 32, in parts of 60 [units], as well as the things [composed of] four natural elements (*chabār tabā’i*); and the original nature (*khilqa*) of humans [follows this same division].⁴³

The ultimate goal of the revolution of the heavenly spheres and their effusions is to reproduce the perfect form of the Cosmic Human being at the end of time, that is, to generate Adam who represents the form and the knowledge of God:

The heavens and the heavenly bodies, together with the inhabitants of the heavens, which are the angels-cherubim (*malā’ika karrūbiyān*), turn from pre-eternity around the point of earth (*nuqta-yi khāk*) in ritual prayer and circumambulation (*tawāf*). They will continue [this movement] eternally, because this is in their original nature (*khilqa*). They face the point of earth, which is the origin (*aṣl*) of Adam... From pre-eternity to post-eternity, their effusion (*ḥayḍ*) reaches the point of earth continuously, without interruption (*mutawātir wa-mutā’āqib*), in order to produce [Adam, for] ‘God created Adam in His form’.⁴⁴

Alchemy

If astrology refers to the relationships between the human form and the heavenly spheres, alchemy addresses the same kind of relationships between the human form and the spheres of the four natural elements. It will be recalled that, in the context of the *Jāwidān-nāma*, writing is essentially the manifestation of the invisible truths emanated from the supreme divine reality. In the technical vocabulary of the *Jāwidān-nāma*, the visible manifestation of metaphysical truths which makes them knowable in the physical world is defined as their ‘science’ (*ilm*). Therefore, writing is fundamentally ‘science.’ Just like the ink and the material support on which the Qur’ān is written, the human bodily form is constituted by four elements. But, while the Qur’ān contains a revelation given to one particular prophet, the human bodily form represented by Adam is the heavenly book written with the universal divine writing, the Book which is the source of any prophetic message:

⁴² This term refers also to ‘the disappearance or immersion of a planet on account of its nearness to the sun’; see Francis J. Steingass, *A Comprehensive Persian-English Dictionary*, New Delhi and Madras: Asian Educational Services, 2008, 20.

⁴³ Astarābādi, *Jāwidān-nāma-yi kabir*, fol. 235a.

⁴⁴ Astarābādi, *Jāwidān-nāma-yi kabir*, fol. 258b.

Both the [heavenly] writing and the writing of the Qurʾān are referred to as the Book of God. The visible writing of the Qurʾān contains the four natural elements: earth, air, water and fire. It cannot exist without them... And this is so because the divine writing, which is Adam, contains these four elements.⁴⁵

The cohesion between the natural elements is maintained by the omnipresent force of love:

[Similar to the members of the human body], the ‘members’ (*ajzāʾ*) of water and earth are like lover and beloved (*ʿāshiq wa-maʿshūq*), inseparable from each other. The same [holds true] for earth, air, water and fire: how could they be united if they were not in love with each other?⁴⁶

The sphere of earth, the principal element in the constitution of the human body, is located at the lowest level of the universe. Earth is, indeed, the coarsest of the four elements. But, due to the concentric structure of the universe, the lowest location is also the central one. According to the *Jāwīdān-nāma*, this location confirms the superiority of earth over all other elements. Because it is the coarsest of all elements, earth is the only element able to maintain a given form. Because it is the most opaque, and does not allow any light to pass through, Earth produces shadow and blackness, the blackness of ink and writing, closely related to the ‘science’ of the divine Word: ‘The coarsest and darkest bodies (*ajrām wa-ajsām-i kathīftar wa-zulmānītar*) become the shape (*shakl*), figure (*paykar*) and science of the divine Word (*ʿilmīyyat-i kalima-yi kbudāʾī*).⁴⁷ Many passages underline that earth is therefore the element of ‘science’ of the divine Word *par excellence*, the only element able to express the science: ‘The earth has the aptitude to receive (*qābīliyyat*) the science of the [divine] ‘words’ (*ʿilmīyyat-i kalimāt*).⁴⁸

The following fragment emphasises the exceptional position of the earth among the natural elements:

Earth is the place where humans dwell (*maqarr-i insān*)... A part of earth (*juzʾ-i zamin*) and human body (*ʾaḥd-i insān*) [both] receive the distinctive marks (*ʿalāma*) of the 32 [ontological] ‘words’. [Satan] said: ‘and him Thou createdst of clay’ [Q 7:12], because water, air and fire do not possess the aptitude (*istīʿdād*) to receive the form [which bears] these [marks].⁴⁹

Like a precious treasure, the earth is locked in the centre of the heavenly and elementary spheres. Though it is the grossest element, it is also the most subtle with regard to its property to manifest the forms of the Creation. This is why the earth is in the centre of the universe, and all heavens and planets turn around the earth in a ceaseless ritual of circumambulation and worship:

⁴⁵ Astarābādī, *Jāwīdān-nāma-yi kabīr*, fol. 248a-b.

⁴⁶ Astarābādī, *Jāwīdān-nāma-yi kabīr*, fol. 101a-b.

⁴⁷ Astarābādī, *Jāwīdān-nāma-yi kabīr*, fol. 259a.

⁴⁸ Astarābādī, *Jāwīdān-nāma-yi kabīr*, fol. 364a-b.

⁴⁹ Astarābādī, *Jāwīdān-nāma-yi kabīr*, fol. 167b-168a.

Consider the forms of creatures (*ṣuwar-i makhlūqāt*) from the point of view of the original nature and disposition (*kbilqat wa-jibillat*). You can see that the point of earth (*nuqta-yi kbāk*) is surrounded by water, water is surrounded by air, air is surrounded by the heavenly sphere (*ḡalak*), and the heavenly sphere is surrounded by another sphere, and so on.⁵⁰ It is the custom of kings and treasurers to keep the most precious gem of their treasury in a chest, put in another chest, and that chest in a third, and so on without limit, because of the nobility, splendour and perfection of this gem. Earth is this precious gem. Though it is the coarsest (*kathifstar*) [among the four elements], it is the most subtle with respect to [its capacity to produce] the external manifestation [of forms] (*zubbūr*) and to its receptive aptitude (*qābiliyyat*)... God [created] earth with the purpose of [producing] the form of [His] vicegerent (*kbālifa*), Adam: 'God created Adam in His form'. By their essence (*dhāt*) and their nature (*ṭab'*), and by virtue of their creation (*kbilqā*), from pre- to post-eternity, all objects and beings of the heavenly bodies face the world of the dot of earth (*‘ālam-i nuqta-yi kbāk*), and [permanently] turn in ritual circumambulation (*ṭawāḡ*) around the point of earth, without being distracted from this circumambulation even for the time of a wink of an eye. And they will never [be distracted]. [They are] the angels who dwell in the heavens, the spirits of cherubim, of prophets and saints (*anbiyā' wa-awliyā'*) in the heavens.⁵¹

Earth is the source of darkness, just as the heavens are the source of light. This darkness is the basis of the science of the Word and of divine ontological Writing recorded on the face of Adam:

It is earth and parts of earth that are loci of manifestation (*mazhar*) of the divine [ontological] 'words' and of the 'science' (*‘ilm*) of the divine 'words', [they possess] the aptitude to receive the writing of the divine words... This writing appears on the face of Adam, and is expressed by his tongue, in accordance with: 'He taught Adam the names, all of them' [Q 2:31]... The grandeur of the world of earth lay [in the fact] that every part among its parts covers the light of the moving heavenly bodies (*ajrām-i sayyārāt*), that of the heavens, sun, moon and stars. No light coming from the heavens penetrates inside the world of earth. Earth produces darkness just as the heavens [produce the light, because they] are the world of light.⁵²

According to a *ḥadīth* frequently cited in the *Jāwidān-nāma*, the body of Adam was created from the dust coming from different parts of the earth. Earth is also the place where Adam appeared. Therefore, earth has the capacity to generate the human form as well as the form of any other object or being:

If you imagine that anything is one Adam, or one Eve, or a single curl of hair of Adam or Eve, or one member of Eve or Adam, this is true. The perfection and power of the world of earth are such that it is able [to produce] the body of any existing animal.⁵³

Since earth represents the 'science' of the Word, it is only natural that the direction of spiritual orientation during the prayer is the *Ka'ba*, made of clay:

⁵⁰ Fire is omitted from this passage, which is probably a scribal error.

⁵¹ Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 258a-b.

⁵² Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 92a.

⁵³ Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 36a-b.

You turn your face in the direction of the house of clay (*khāna-yi gil*), not in the direction of fire, water or air. Because it is earth that has the capacity to receive the ‘science’ of the 28 [ontological] ‘words’ of the divine Word. Therefore, the face must be turned in the direction of earth, not in the direction of fire, water, or air.⁵⁴

The heavenly effusions reach the body of Adam, made of the earth, through the spheres of fire, air and water. Adam is the focal point of the universe, the ‘point of earth’:

Adam is created from earth, as well as from air, water and fire. The earth [which enters in] his [constitution] is a point (*nuqta*) in the middle of water, and water in the middle of air, and air in the middle of fire, and fire in the middle of the heavenly sphere, and the heavenly sphere in the middle of stars and planets. All countless things [contained at all levels of the universe] face the world of earth, [which is the centre] of their ritual circumambulation. They send their effusions (s. *ḡayd*) to the centre of earth and seek similarity with the world of Adam and of earth. [Adam] is the reason of their movement. In this sense all [things existing in the universe] are the parts of Adam’s body [made] of earth, bound to his body, reaching his body by their effusions, performing the ritual circumambulation around the centre of his earth. All [things] are created in his form (*shakl*).⁵⁵

Earth communicates to other elements the capacity to express the divine words:

God gave the capacity of receiving the form (*shakl wa-ṣūra*) to earth, which He made the locus of manifestation (*mazhar*) of the distinctive signs (*a’lām*) of the divine Word (*kalimat Allāh*). In accordance with the model of earth (*bi-tab’iyyat-i khāk*), He brought the bodies of air, fire and water in likeness (*dar mithāl*) to the distinctive signs of the divine Word.⁵⁶

It is because it was structured in accordance with the model of earth that the fire was able to speak to Moses from the Burning Bush: ‘The fire that Moses saw had been divided in accordance with the [division] of earth (*bi-tab’iyyat-i khāk*). This is how it [was able to] speak’.⁵⁷

While earth is without doubt the central element in the *Jāwidān-nāma*’s alchemy, water, air and fire also have a specific role in the text. Each natural element has its particular role and symbolic meaning: Water symbolises in the *Jāwidān-nāma* the undifferentiated condition of the Word and its germinal potential. Water is the element which was at the origin of the Creation. More specifically, through the identification with sperm, water is the origin of life. Sperm is further likened to the ontological ‘ink’ with which Creation is written: ‘It is said in the Torah that [God] created a pearl (*javhar*), and when He looked at it with the look of His Glory (*‘izza*), it became water. From [this water] were creat-

⁵⁴ Astarābādī, *Jāwidān-nāma-yi kabir*, fol. 211b-212a.

⁵⁵ Astarābādī, *Jāwidān-nāma-yi kabir*, fol. 351a.

⁵⁶ Astarābādī, *Jāwidān-nāma-yi kabir*, fol. 193a.

⁵⁷ Astarābādī, *Jāwidān-nāma-yi kabir*, fol. 213a.

ed heavens and earths.⁵⁸ Water is the origin (*mabdāʿ*) of Creation. The clot of blood [of the embryo] is produced by sperm (*nutfā*), which is water (*āb*).⁵⁹

[Just as] the substance (*mādda*) [by the means of which] the visible lines [of writing are produced] is dark water (*āb-i tira*) [i.e. ink], the substance [by means of which] He engraves (*naqsh*) [His ontological writing] is water, which becomes sperm: ‘and of water [We] fashioned every living thing’ [Q 21:30]. This is the same water on which [is established] the Throne.⁶⁰ It is by the knowledge [of the Throne] that life manifests itself in any [being] because, among all creatures, [only] he [i.e. the Throne symbol of Adam], as the locus of manifestation of God (*mazhar-i kbudā*), possesses the complete ‘science’ (*‘ilm*) and the complete [set] of ‘words’ (*alfāz wa-kalimāt*).⁶¹

Another symbol of undifferentiated condition is smoke, which, like sperm, is associated with ink and writing. Smoke (*dukhān*) is described in the *Jāwidān-nāma* as the substance from which the seven heavens were created.

Water is the support of the divine Throne, which in its turn is the support of the divine Balance. The Throne, as we have already seen, symbolises Adam and the element earth:

If someone asks... why God created the Throne and water on Friday, outside the six days [of the Creation]... the answer is that [the Throne] is the support (*maqarr*) of the Balance of the divine essence (*istirwāʿ-yi dbāt-i ḥadrat-i aḥadiyya*), and water is the support of the Throne. It is this water that is part of Adam’s body (*badan*).⁶²

In some passages, water and earth are opposed to air and fire, which are not able to maintain a given form and have no relation to the category of form at all:

“I was a prophet when Adam was between water and clay”: ... air and fire are not mentioned, because they have no capacity to receive form.⁶³

The ritual ablution (*wuḍūʿ*) is carried out with water or earth. One of the meanings [of this regulation] is that in the form (*ṣūrat wa-naqsh wa-paykar*) taken by Adam’s body (*wujūd*), the parts of earth and water are predominant, not those of fire and air. And it is this form that is the copy of the ‘science’ of the 32 [ontological ‘words’ of the divine Word].⁶⁴

Earth is the most excellent part (*juzw-i aʿzam*). It is followed by water, because it is with water that earth can be kneaded: ‘I kneaded the clay of Adam with my two hands [for] forty days,’ and His Throne was upon the waters’ [Q 11:7], not ‘upon the fire’ (*alā al-nār*) or ‘upon the air’ (*alā al-riḥ*).⁶⁵

⁵⁸ This is allusion to a number of traditions which can be found in *ḥadīth* literature and in the ‘Stories of the prophets’ (*qiṣaṣ al-anbiyāʿ*). For detailed references, see Mir-Kasimov, *Words of Power*, Inventory I.

⁵⁹ Astarābādī, *Jāwidān-nāma-yi kabir*, fol. 101a.

⁶⁰ Allusion to Q 11:7.

⁶¹ Astarābādī, *Jāwidān-nāma-yi kabir*, fol. 201b.

⁶² Astarābādī, *Jāwidān-nāma-yi kabir*, fol. 94b.

⁶³ Astarābādī, *Jāwidān-nāma-yi kabir*, fol. 183b-184a.

⁶⁴ Astarābādī, *Jāwidān-nāma-yi kabir*, fol. 171b-172a.

⁶⁵ Astarābādī, *Jāwidān-nāma-yi kabir*, fol. 311b-312a.

Indeed, according to the traditional accounts, the body of Adam was kneaded with the addition of water. The water is therefore as essential to the body of Adam as earth, which is the element of form and structure. Earth, air and fire, which take part in the constitution of the human body, were kneaded with water: “Earth, air and fire were kneaded with water, while “His Throne was upon the waters” [Q 11:7]⁶⁶. It is by the mediation of water that the form and structure inherent to earth and, with them, the aptitude to receive and to express the science of the divine Word are conveyed to air and fire. Also, the water has the property to reflect and show, like a mirror, the form of Adam.⁶⁷

Fire is an ambiguous element in the *Jāwīdān-nāma*. In its positive aspect it represents the light, which is the manifestation of the original Word. This light contains all possible knowledge of the divine essence and attributes, and is the source of the prophetic revelation: ‘It is the unique light (*nūr*) of theophany that shines in all loci of manifestation. It comes in the appearance (*mazhar*) of prophets (*anbiyāʾ*) and saints (*awliyāʾ*) in order to bring tidings of the divine essence and attributes of the resurrection, origin and return (*dhāt wa-ṣifāt-i khudā wa-qiyyāma wa-mabdāʾ wa-maʿād*).⁶⁸

Through the symbol of smoke representing the undifferentiated science of the Word, fire is also associated with science and its principal element earth. This fire enters, together with other three elements, into the constitution of the human body. It also reveals the features of human face, where the complete science of the divine Word is written: ‘Those who worship fire (*ātaṣh and nār*) and the sun... it is in their [light] that the children of Adam can contemplate the face of Adam and thus read the writing of [the human] face’.⁶⁹

The topic of similarity between fire and the human body is also developed with reference to the symbolism of the tree, which brings together several Qurʾānic images, including the Lote tree of the Boundary, the Burning Bush of Moses, and the parable of the good word likened to the good tree. ‘Moses heard the speech (*khiṭāb*) of God [coming] from the fire and the tree, and the good word is a tree.’⁷⁰ The tree of the Boundary that Muḥammad reached on the night of his heavenly ascension indicates Adam. And the fire [of the Burning Bush] is the fire of Adam’s body (*ātaṣh-i wujūd-i Adam*).⁷¹

But fire also has a negative aspect, which makes it the exact opposite of earth. This aspect is much more present in the text of the *Jāwīdān-nāma*, and we have already had several opportunities to mention it. Fire is the most-subtle of the

⁶⁶ Astarābādī, *Jāwīdān-nāma-yi kabīr*, fol. 129a.

⁶⁷ Astarābādī, *Jāwīdān-nāma-yi kabīr*, fol. 88a–b.

⁶⁸ Astarābādī, *Jāwīdān-nāma-yi kabīr*, fol. 168a.

⁶⁹ Astarābādī, *Jāwīdān-nāma-yi kabīr*, fol. 244a.

⁷⁰ Allusion to Q 14:24: ‘A good word is as a good tree – its roots are firm, and its branches are in heaven.’

⁷¹ Astarābādī, *Jāwīdān-nāma-yi kabīr*, fol. 72a.

four elements, and the least able to take on an unchanging form. Thus, if earth, the coarsest element, is the element of the ‘science’ of the divine Word expressed through form, fire is the element of ignorance, associated with the rebellious attitude of Satan:

Satan can take human form (*ṣūrat-i insān*) because his part of fire is subordinated to earth, which is the science of the 32 [ontological] ‘words’, and [can therefore] enter into the constitution [of a body of] earth. Satan said: ‘Thou createdst me of fire, and him Thou createdst of clay’ [Q 7:12]. This means: ‘I am luminous (*nūrānī*), while he is dark (*zulma*), and I do not possess the capacity to receive form (*shakl wa-paykar*), while he does.’ But it is precisely this capacity (*qābiliyya*) that is the source of the perfection (*‘ayn-i kamāl*).⁷²

Water, air and fire do not have the aptitude to become the science of the 32 [ontological] ‘words’. Satan said that this person [i.e. Adam] was created of earth, and not of fire. But he [i.e. Satan] was not created as locus of manifestation of the 32 [ontological] ‘words’. Necessarily, whoever is not the locus of manifestation of the original nature of the science (*mazhar-i kbilqat-i ‘ilm*) of the 32 [ontological ‘words’] belongs to the world of Satan and to his original nature. Among four natural elements, there is no more remote [from the aptitude to express the science of the Word] than fire.⁷³

As stated in this passage, not only is fire the element of ignorance, but ignorance also leads to the fire that is the original element of Satan, i.e. to Hellfire. Fire has the capability of deleting the lines of divine writing on the human face.

The fourth element, Air, is usually associated in the *Jāwidān-nāma* with the breath of God, which conveys spirit and soul, identified with the ontological names, into the created objects and beings. This idea is expressed in the following passage:

‘And [I] breathed My spirit in him’ [Q 15:29]: in the same manner, the [ontological] names reach the exterior and the interior of all things by the means of attribution of names (*bi-ḥasb-i ismiyyat*). They realise the manifestation [of the divine truth] (*tajallī*) inside all things (*dar bātin-i ashyā*), and [therefore] all things are their loci of manifestation (*mazhar*).⁷⁴

From this citation, it can be concluded that, in the alchemy of the *Jāwidān-nāma*, Air/Breath is the medium through which the ontological names, combinations of some numbers from the total set of 28/32 original words or phonemes, attain the sensible forms which are their loci of manifestation. The form of any particular object or being is therefore a visible expression of the original letters which compose its name. These letters, and the metaphysical truths represented by the corresponding phonemes, or ‘words’, can be known through the physical shape of the object. Any given object or being is therefore the ‘science’ of the ontological name which was blown into it and brought it into existence.

⁷² Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 149b.

⁷³ Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 390b.

⁷⁴ Astarābādī, *Jāwidān-nāma-yi kabīr*, fol. 21b.

Conclusion

The language of occult sciences permeates the doctrinal discourse of Faḍlallāh Astarābādī and links various themes of his thought, including epistemology, cosmology, anthropology, prophetology and eschatology. This language also establishes a link between the metaphysical dimension of Faḍlallāh's doctrine and the empirical evidence of the physical world. The most ordinary measures and proportions, such as the numbers of 28 and 32 letters, the fact that the heavenly sphere is divided into 360 degrees and that an hour contains 60 minutes, receive a specific meaning in the context of *Jāwidān-nāma*'s alchemy, astrology and science of letters and are thus incorporated into its theoretical framework.

On the other hand, the language of the occult sciences supports the messianic ethos of Faḍlallāh's thought. His doctrine of the cosmic cycles leading to the apocalyptic generation of Adam, who represents the prototype of the perfect human being, and his theory of universal ontological hermeneutics based on the science of letters suggest that the era when the ultimate truth of all prophetic messages will be disclosed and which will culminate with the appearance of an eschatological Saviour has already begun. As mentioned, it is very likely that initiation in the science of letters was the main factor behind Faḍlallāh's belief in his special mission, and he most probably regarded himself as the person who is called to inaugurate the apocalyptic era. The language of the occult sciences thus played a central role in formulation and articulation of Faḍlallāh's messianic ideology.

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Lettrism and Magic in an Early Mughal Text

Muḥammad Ghawth's *Kitāb al-Jawābir al-Khams**

Eva Orthmann

Muḥammad Ghawth's (d. 1563) *Kitāb al-Jawābir al-khams* is among the most popular books on magic from the Indian subcontinent.¹ It is especially renowned for its invocations of the planets. These invocations form only a very small part of the book, however, which mainly belongs to the tradition of lettrism. The great names of God, integrated into diverse forms of *dhikr*, or recited in long, complicated invocations, are at the core of the book.

Such invocations were widespread in Muḥammad Ghawth's time, especially in Sufi circles. They were not only used for private ends or within the limits of mystical practices, but also in political contexts.² This political dimension is especially obvious for Muḥammad Ghawth and his brother, who were both imperial advisors at the Mughal court. Spiritually, they belonged to the mystic order of the *Shattāriyya*.

The following chapter begins with a summary record of the *Shattāriyya* and an outline of Muḥammad Ghawth's life as well as his connection with the Mughal court. It will then turn towards the history and content of the *Kitāb al-Jawābir al-khams*. The main concern of this study is, however, to shed some light on the lettrist ideas in Muḥammad Ghawth's book, and explain the structure and workings of his invocations. Astonishing as they are in their presumed far-reaching effects, they may help in understanding the extent of spiritual power one hoped to acquire via recitation and prayer, and thus, the need for monarchs to retain such specialists in their entourage.

The Shattāriyya

The mystic order of the *Shattāriyya* developed in Central Asia during the 15th century. The *silsila* of the order strongly resembles that of the *Naqshbandiyya*, both

* This chapter is a further developed version of a contribution to the workshop "Magie im Islam" in Göttingen (July 11th - 13th 2012) the proceedings of which are forthcoming in German.

¹ Carl W. Ernst, "Jawāher-e Kāmsa", in: *Encyclopaedia Iranica*, Ehsan Yarshater, ed., vol. 14, New York: Encyclopaedia Iranica Foundation, 2008, 608–609.

² Azfar Moin, *The Millennial Sovereign: Sacred Kingship and Sainthood in Islam*, New York: Columbia University Press, 2012, 101. A long chapter on the political dimension of lettrism is included in Matthew S. Melvin-Koushki, *The Quest for a Universal Science: The Occult Philosophy of Ṣā'īn al-Dīn Turka Iṣfahānī (1369-1432) and Intellectual Millenarianism in Early Timurid Iran*, PhD dissertation, Yale University, 2012, 285–314.

tracing back their origins to Bayāzīd Bisṭāmī (d. 261/875).³ The founder of the *Shattāriyya*, Shāh ʿAbdallāh (d. 890/1485), claimed to be a descendant of the great Sufi master Shaykh Shihāb al-Dīn ʿUmar Suhrawardī (d. 632/1234). He began his spiritual career as a member of the *ʿIshqīyya*, a Sufi order of some importance in Transoxania in the early 15th century.⁴ His title *shattār*, “the one who quickly draws close to God”, is said to have been bestowed on him by his master because he rose in the spiritual hierarchy astonishingly quickly.⁵ In the second half of the 15th century, Shāh ʿAbdallāh emigrated with his followers to Northern India, probably to escape the growing influence of the *Naqshbandiyya* in Central Asia. He won new adherents in Bengal and Jaunpur and finally settled down in Mandu where he gained the favor of the local ruler. Shāh ʿAbdallāh henceforth stayed in Mandu and was buried there after his death in 890/1485.⁶

Subsequently, the *Shattāriyya* spread in Bihar, Bengal and Gujarat.⁷ Its importance distinctly grew in the time of Bābur and Humāyūn, the first two Mughal emperors. This development was mainly due to the influence of Shaykh Phūl and Muḥammad Ghawth Gwāliyārī, two brothers who both were closely connected with the Mughal court. Towards the end of the 16th century, the *Shattāriyya* expanded from Gujarat to the Arabian Peninsula. From there, it came to Indonesia during the 17th century, where it is still of some importance.⁸

Muḥammad Ghawth Gwāliyārī and Shaykh Phūl

Muḥammad Ghawth Gwāliyārī was born in 907/1501. In his youth, he spent more than thirteen years meditating in a cave close to Chunar⁹, following a specifically

³ A description of the *silsila* from Muḥammad up to Sibghat Allāh, the translator of the text into Arabic, is contained in Muhammad Ghawth al-Hindī, *al-Jawābir al-khams*, Aḥmad ibn al-ʿAbbās, ed., 2 vols., al-Qāhira: Muḥammad Rifʿat ʿĀmir, 1973, vol. 2, 53.

⁴ Fazle Ahmad Qadri, “Abū Yazīd Bisṭāmī and *Shattāri* Sufi Thought”, in: *Islamic Culture* 75 (2001), 79-95, here: 79; Saiyid Athar Abbas Rizvi, *A History of Sufism in India: From Sixteenth Century to Modern Century*, vol. 2, New Delhi: Munshiram Manoharlal, 1978, 151-52; Marc Gaborieau, “*La Chattāriyya*”, in: *Les voies d’Allah: Les ordres mystiques dans l’Islam des origines à aujourd’hui*, Alexandre Popovic and Gilles Veinstein, eds., Paris: Fayard, 1996, 479; Scott Kugle, “ʿAbdallāh Shattār” in: *Encyclopaedia of Islam*, 3rd edition, Kate Fleet et al., eds., Brill Online, 2014.

⁵ Fazle Ahmad Qadri, “Mughal Relations with the *Shattāri* Sufis: Abu’l-Faḍl’s Treatment of Shaikh Muḥammad Ghawth Gwāliori”, in: *Islamic Culture* 73 (1999), 63-93, here: 64; Qadri, “Abū Yazīd Bisṭāmī”, 82. For the meaning of “*shattār*”, cf. Qadri, Abū Yazīd Bisṭāmī, 80-82; Gaborieau, “*La Chattāriyya*,” 497; Edward W. Lane, *An Arabic-English Lexicon in Eight Parts*, vol. 4, London: Williams and Norgate, 1872, 1551 (sh - ṭ - r).

⁶ Gaborieau, “*La Chattāriyya*”, 497; Rizvi, *History*, vol. 2, 153.

⁷ Qadri, “Abū Yazīd Bisṭāmī”, 83; Gaborieau, “*La Chattāriyya*”, 497.

⁸ Gaborieau, “*La Chattāriyya*”, 499.

⁹ A city next to Varanasi.

challenging way of fasting, the threefold *arba'in* method.¹⁰ His spiritual master at that time was Shaykh Ṣuhūr al-Ḥājj Ḥuḍūr (d. 930/1524), a Sufi shaykh of the *Shaṭṭāriyya*.¹¹ Shaykh Ṣuhūr introduced him to the art of invocation of names (*da'wat al-asmā*). According to his own writings, Muḥammad Ghawth gained access to the supernatural world (*'ālam al-mughayyabāt*) and the realm of spiritual entities (*'ālam al-arwāḥ*) because of his master's teaching and his own long solitude.¹² He continued his ascetic exercises after these thirteen years, and some disciples started following him.¹³ Due to a vision, he moved to Gwalior, and attended there the conquest of the fortress by Ibrāhīm Lodhī, the last ruler of the Lodhī dynasty (r. 923–32/1517–26). Muḥammad Ghawth's relationship with Lodhī was, however, rather strained.¹⁴ When Bābur (r. 932–37/1526–30) marched from Delhi to Gwalior in 933/1526, Muḥammad Ghawth participated in the negotiations for a peaceful surrender of the fortress.¹⁵ In the following period, he, and more his brother Shaykh Phūl, gained influence at court. Shaykh Phūl became a close adviser of Bābur's son Humāyūn (r. 937–47/1530–40 and 962–63/1555–56). In the course of the internal struggles among Humāyūn and his brothers, Shaykh Phūl was killed in 945/1538–39 by Humāyūn's opponents.¹⁶ When Humāyūn went into exile in Iran in 947/1540, Muḥammad Ghawth moved to Gujarat. His stay there turned out to be difficult, since he suffered persecution because of his writings. His *Awrād-i Ghawthiyya* ("Ghawthian worships"), in which he described an ascension experience, provoked much hostility.¹⁷ After Humāyūn's return to Agra, Muḥammad Ghawth set out to meet the emperor, but reached the court only after Humāyūn's death.¹⁸ In the time of Humāyūn's successor Akbar (r. 963–1014/1556–1605),

¹⁰ One chapter of the *Kitāb al-Jawābir al-khams* is dedicated to the description of this method and its benefits: Muḥammad Ghawth al-Hindī, *Kitāb al-Jawābir al-khams*, Aḥmad ibn al-'Abbās, ed., vol. 2, al-Qāhira: Muḥammad Rif'at 'Āmir, 1973, 47–52.

¹¹ Rizvi, *History*, vol. 2, 154–55; Qadri, "Mughal Relations", 65–66; for a biography of this Shaykh, see Muḥammad Mandawī Shaṭṭāri Ghawthī, *Gulzār-i abrār: Tadhkira-yi Ṣūfiyā wa-'ulamā'*, Patna: Khodabakhsh Oriental Library, 1994, 198–201.

¹² Ghawth al-Hindī, *Jawābir*, vol. 1, 90.

¹³ Scott Kugle, "Heaven's Witness: The Uses and Abuses of Muḥammad Ghawth's Mystical Ascension", in: *Journal of Islamic Studies* 14/1 (2003), 8–12; Rizvi, *History*, vol. 2, 157; Carl W. Ernst, "Persecution and Circumspection in *Shaṭṭāri* Sufism", in: *Islamic Mysticism Contested. Thirteen Centuries of Controversies and Polemics*, Frederick de Jong and Bernd Radtke, eds., Leiden, Boston: Brill, 1999, 418.

¹⁴ Ghawth al-Hindī, *Jawābir*, vol. 2, 49; Ernst, "Persecution and Circumspection", 418; Gaborieau, "*La Chattāriyya*", 498; Qadri, "Mughal Relations", 67; Kugle, "Heaven's Witness", 27–28.

¹⁵ Kugle, "Heaven's Witness", 29; Ernst, "Persecution and Circumspection", 418; Qadri, "Mughal Relations", 67; Moin, *Millennial Sovereign*, 97–98.

¹⁶ Gaborieau, "*La Chattāriyya*", 498; Qadri, "Mughal Relations", 67; Moin, *Millennial Sovereign*, 98–102; Rizvi, *History*, vol. 2, 157.

¹⁷ Comprehensive information on these events are given by Ernst, "Persecution and Circumspection", esp. 419–26, 431–35; and Kugle, "Heaven's Witness", 29–36; cf. also Moin, *Millennial Sovereign*, 103–104; Rizvi, *History*, vol. 2, 157–158.

¹⁸ Kugle, "Heaven's Witness", 34.

Muḥammad Ghawth settled down in Gwalior and continued his activities as Sufi master there. The political influence of the *Shaṭṭāriyya* decreased subsequently.¹⁹ After his death in 1563, Muḥammad Ghawth was buried in a magnificent tomb which still exists in Gwalior and attracts pilgrims until today.²⁰

Muḥammad Ghawth is the author of several works.²¹ Besides the already mentioned *Awrād-i Ghawthiyya*,²² his Persian and Arabic translations of the *Amrtakunḍa*, an Indian treatise on Yoga,²³ deserve specific attention. These works belong to the broader range of translated texts from Indian languages into Persian (and to a much lesser extent Arabic), which testify to the transfer and adaptation of non-Muslim ideas and knowledge to a Muslim context on the subcontinent. His most famous book is however *al-Jawābir al-khams*.

The Kitāb al-Jawābir al-khams: Genesis, title and structure

The genesis of the *Kitāb al-Jawābir al-khams* is closely related to the biography of its author Muḥammad Ghawth. The first version of it was finished in 929/1522–23 during his stay in Chunar.²⁴ According to his own information, he recorded in this book his personal experiences and exercises there. This personal involvement is especially obvious in the description of his fasting methods, but also of some invocations.²⁵ When Muḥammad Ghawth left his solitude at the age of 22, he showed the book to his spiritual master Shaykh Ṣuhūr al-Ḥājj Ḥuḍūr. The latter immediately recognized the book's value and singularity.²⁶ We cannot say much about the diffusion of the book at that time, though, since Muḥammad Ghawth composed in 956/1549–50 a revised version of the *Kitāb al-Jawābir al-khams*. He declared this second version the only valid one and summoned people to correct the earlier version according to the new model. Allegedly, the changes concerned only the arrangement of chapters and the elimination of some ambiguities.²⁷ His appeal for correcting the earlier versions, however, arouses suspicions about the real motives

¹⁹ Gaborieau, "La Chattāriyya", 498; Qadri, "Mughal Relations", 69–73; Moin, *Millennial Sovereign*, 103–104; Ernst, "Persecution and Circumspection", 423–424; Rizvi, *History*, vol. 2, 158–159.

²⁰ Rizvi, *History*, vol. 2, 159; Ram Nath, "The Tomb of Shaikh Muḥammad Ghawth at Gwalior", in: *Studies in Islam* 15/1 (1978), passim.

²¹ Qadri, "Abū Yazīd Bisṭāmī", 84–85; Qadri, "Mughal Relations", 66; Rizvi, *History*, vol. 2, 159.

²² A summary of this book is given by Rizvi, *History*, vol. 2, 15–24.

²³ Carl W. Ernst, "Sufism and Yoga According to Muhammad Ghawth", in: *Sufi* 29 (1996), 9–13; for the history of that text, see also Carl W. Ernst, "The Islamization of Yoga in the 'Amrtakunḍa' Translations", in: *Journal of the Royal Asiatic Society* 13 (2003), 203–206; Kugle, "Heaven's Witness", 1–2.

²⁴ Ghawth al-Hindī, *Jawābir*, vol. 1, 13; Ghawthī, *Gulzār-i abrār*, 268; Rizvi, *History*, vol. 2, 160.

²⁵ Ghawth al-Hindī, *Jawābir*, vol. 2, 49; for the invocations, see below, xxx

²⁶ Ghawth al-Hindī, *Jawābir*, vol. 1, 13; Ghawthī, *Gulzār-i abrār*, 268; Ernst, "Jawāher-e Kamsa".

²⁷ Ghawth al-Hindī, *Jawābir*, vol. 1, 13; Ghawthī, *Gulzār-i abrār*, 269–70; Ernst, "Persecution and Circumspection", 425; Rizvi, *History*, vol. 2, 160.

for this revision, which was made during Muḥammad Ghawth's stay in Gujarat. Although reports on the problems he encountered there refer only to the *Awrad-i Ghawthiyya* and do not mention the *Kitāb al-Jawābir al-khams* as further source of criticism and opposition,²⁸ we may still wonder if the revision of the latter was also due to some of its contents. The most suspicious chapter of the book would be the description of a specific invocation that causes the praying person to be carried to heaven, and is thus an ascension.²⁹

The book's title is frequently translated as "the five jewels" – a translation which seems likely at first, but presents a problem if we look at the exact wording of the title both in Persian as well as in Arabic. The Persian title *Jawābir-i khamsa* does mean the "Jewels of the Five" rather than "the five jewels", which would be *Panj jawābir*. The Arabic title is problematic insofar as it contains a grammatical mistake: either the "al-" of "*al-jawābir*" is incorrect, or "al-khams" has to be changed into "*al-khamsa*". The actual meaning of the title remains therefore ambiguous.

The book consists of five chapters, *jawābir* (jewels), which are the jewels mentioned in the book's title. These five jewels are prayer (*'ibāda*), ascetics (*zuhd*), invocation (*da'wa*), recitation (*dhikr*) and action (*'amal*).³⁰ As Muḥammad Ghawth explains, there exist altogether seven jewels, but since he has obtained only five of them, he has to limit his book to them.³¹

Language issues

The *Kitāb al-Jawābir al-khams* exists both in Arabic and Persian. Although no copy of the first version from 929/1522–23 is known to exist, we can safely assume that it was in Persian, similar to the revised version from 956/1549–50, since Muḥammad Ghawth does not mention that the text has been translated for the revision.³² The revised Persian version has been preserved in several manuscript copies, but no edition of it has yet been prepared. Already in the 16th century, however, the text was translated into Arabic by Şibghat Allāh from Bharoach (d. 1015/1606). This Şibghat Allāh was a member of the *Shattāriyya* who emigrated to the Arabian Peninsula and attracted new disciples for his order there.³³ His name is included in the list of *Shattāri* shaykhs given in the Arabic

²⁸ Ernst, "Persecution and Circumspection", 425, also footnote 40.

²⁹ The details of this prayer will be dealt with on p. xxx

³⁰ Ghawth al-Hindī, *Jawābir*, vol. 1, 14; Rizvi, *History*, vol. 2, 160; Ernst, "Jawāher-e Kamsa".

³¹ Ghawth al-Hindī, *Jawābir*, vol. 1, 201.

³² Zubaid Aḥmad, *The Contribution of Indo-Pakistan to Arabic Literature, from Ancient Times to 1857*, Lahore: Sh. Muhammad Ashraf, 1968, 94. Gaborieau assumes that the first version had been written in Arabic, but provides no evidence for this assumption: Gaborieau, "*La Chattāriyya*", 498.

³³ Ahmad, *Contribution*, 94, 352; Qadri, "Abū Yazid Bisṭāmī", 85; Khaled El-Rouayhab, "Opening the Gate of Verification: The Forgotten Arab-Islamic Florescence of the 17th

version of the text, where he refers to himself as the last member of the *silsila*.³⁴ The Arabic version of the *Kitāb al-Jawābir al-khams* has been printed twice.³⁵ The text has also been commented upon several times, but none of these commentaries has yet been edited.³⁶ There furthermore exist several Urdu translations.³⁷ This chapter refers to the Arabic edition from Cairo; all terms as well as the title of the book are therefore given as in the Arabic version. Only when explicitly mentioned, a manuscript of the Persian version has been considered, too.

In both the Persian and the Arabic versions of the *Kitāb al-Jawābir al-khams* the texts of all prayers and invocations are in Arabic. The letters used in the context of letter magical operations are Arabic only, without the additional four Persian letters. This is obvious in the list of “letter angels”³⁸ as well as in the table giving an overview of the correlation between letters, zodiacal signs and elements.³⁹ With regard to the pronunciation of single isolated letters, the Arabic version specifies that it is possible to say “ta” or “te” and “ba” or “be” to design them. The Persian pronunciation is however regarded as more effective.⁴⁰ The same is true for invocations of the great names. They can be read either in Arabic or Persian. Here again, the Persian reading is regarded as more efficient, and should be used if the effect is retarded after the Arabic reading. This instruction is only contained in the Arabic version of the text.⁴¹ The Persian pronunciation of isolated letters is further used for calculating specific alphanumerical values.⁴²

Lettrism

The calculation of alphanumerical values and the care with which the pronunciation of single letters is observed in the *Kitāb al-Jawābir al-khams* is a typical phenomenon of lettrist writings. Lettrism (*‘ilm al-ḥurūf, simiyā’*) denotes various sciences, which attribute specific relevance to the letters and their numerological value.⁴³ Generally speaking, letters are considered as intermediaries between the

Century”, in: *International Journal of Middle Eastern Studies* 38/2 (2006), 271–272; Ernst, “*Jawāber-e Kamsa*”.

³⁴ Ghawth al-Hindī, *Jawābir*, vol. 2, 53.

³⁵ First edition: Morocco 1904; second edition: Cairo 1973–75.

³⁶ Ahmad, *Contribution*, 276, 352; Qadri, “Abū Yazid Bisṭāmī”, 85–86.

³⁷ Ernst, “*Jawāber-e Kamsa*”.

³⁸ An explanation of the letter angels will be given below.

³⁹ Ghawth al-Hindī, *Jawābir*, vol. 1, 98, 102; Ghawth al-Hindī, *Jawābir* (Persian), 142, 148. The Persian version does not contain a table on p. 142, but has a similar table on p. 139, where Persian letters are also not included.

⁴⁰ Ghawth al-Hindī, *Jawābir*, vol. 1, 98; cf. Ghawth al-Hindī, *Jawābir* (Persian), 143, where this information is missing.

⁴¹ Ghawth al-Hindī, *Jawābir*, vol. 1, 138; Ghawth al-Hindī, *Jawābir* (Persian), 190.

⁴² Ghawth al-Hindī, *Jawābir*, vol. 1, 128–29; Ghawth al-Hindī, *Jawābir* (Persian), 178–79.

⁴³ Matthew S. Melvin-Koushki, “‘Imami’ Letter Magic in Safavid Iran: The Life and Works of Maḥmūd Dihdār ‘Iyānī, Shirazi Occultist”. Unpublished article draft presented at the

Upper and the Lower World⁴⁴ and are held to be “keys to deciphering (and manipulating) all levels of physical and spiritual reality”.⁴⁵ In Islamic lettrism, specific emphasis is placed on the isolated letters of the Qurʾān and the divine names.⁴⁶ The knowledge of this science is attributed to the saints and the imams.⁴⁷

The origins of lettrism go back to late antiquity and its hermetic and gnostic traditions.⁴⁸ The first traces of lettrism in Islamic contexts are contained in writings of Shiite extremists (*ghulāt*). The Shiite connection of this science was later taken up by the *Ismāʿīliyya*. The Epistles of the *Ikhwān al-Ṣafāʾ* also contain several sections on languages and letters, although for them, the ontological significance of numbers was higher than that of letters.⁴⁹ Other early lettrist thoughts are found in traditions attributed to Jābir, pointing to their relation with alchemy.

From the 3rd/9th century on, lettrism developed a close connection with Sufism. This connection is first apparent in the writings of al-Ḥakīm al-Tirmidhī (d. 318/936 or 320/938) and Sahl al-Tustarī (d. 283/896), and was further elaborated in the following centuries. In the 7th/13th century, with Ibn ʿArabī (d. 635/1240) and his nearly contemporaries al-Būnī (d. 622/1225?)⁵⁰ and Saʿd al-Dīn Ḥamuwayī (d. 649/1252), the connection between Sufism and lettrism became firmly established. Lettrism also thoroughly influenced the *Ḥurūfiyya* movement founded in the 8th/14th century by Faḍlallāh Astarābādī (d. 796/1394), who based his doctrine on a combination of different occult sciences.⁵¹ In the 9th–10th/15th–

Workshop on Occult Sciences in Princeton, February 2014, 15; Pierre Lory, “La Magie des lettres dans le Šams al-maʿārif dʾal-Būnī”, in: *Bulletin des Études Orientales* 39/40 (1987), 99, 102. For an earlier and different use of the term *simiyāʾ*, see Jean-Charles Coulon, *La magie islamique et le corpus bunianum au Moyen Âge*, PhD dissertation Sorbonne 2013, vol. 1, 311–15, 382–83.

⁴⁴ Denis Gril, “Ésotérisme contre hérésie: ʿAbd al-Rahmān al-Bistāmī, un représentant de la science des Lettres à Bursa dans la première moitié du XVe siècle”, in: *Synchrétismes et hérésies dans l’Orient seldjoukide et ottoman* (XIVe–XVIIIe siècle). Actes du Colloque du Collège de France 2001. Sous la dir. de Gilles Veinstein, Paris: Peeters, 2005, 188.

⁴⁵ Melvin-Koushki, *The Quest*, 28; see also Lory, “La Magie des Lettres”, 99; Pierre Lory, *La science des lettres en Islam*, Paris: Éditions Dervy, 2004, 43.

⁴⁶ Melvin-Koushki, “‘Imami’ Letter Magic”, 15; Denis Gril, transl., “The Science of Letters”, in: *Ibn al-ʿArabī, The Meccan Revelations*, Michel Chodkiewicz, ed., Cyrille Chodkiewicz and Denis Gril, transl., vol. 2, New York: Pir Press, 2004, 105–219, here: 136.

⁴⁷ Gril, “The Science of Letters”, 123; Melvin-Koushki, “‘Imami’ Letter Magic”, 14–15.

⁴⁸ The following two paragraphs are based on Gril, “The Science of Letters”, 123–147, and Melvin-Koushki, *The Quest*, 171–204.

⁴⁹ For the *Ikhwān al-Ṣafāʾ* and the importance attributed by them to numbers and letters, see the chapter of Nader El-Bizri in the present edited volume; as well as Lory, *La science des lettres*, 65–74.

⁵⁰ For lettrism in the writings of al-Būnī, see also Lory, “La magie des lettres”, 105–111.

⁵¹ For the *Ḥurūfiyya* movement, see the chapter of Mir-Kasimov in the present edited volume.

16th century, that is during the lifetime of Muḥammad Ghawth, lettrism flourished in the entire Iranian World.⁵²

Lettrism is reflected in the *Kitāb al-Jawābir al-khams* in the importance attributed to letters and names which pervades the entire book. It is especially accentuated in the third and the fourth *maqāla*, which contain specific invocations of the divine names and an explanation of the *Shattārī* set of beliefs (*masrab al-shattār*).

Muḥammad Ghawth's understanding of letters is directly related to his understanding of the world and the different grades (*marātib*) of which it consists. The first and innermost grade of the world is the eternal *ahadiyya* (~ oneness), the last and outmost is the grade of sense perception, *martabat al-ḥiss*. In total, his scheme is as follows:

ahadiyya – *waḥda* – *waḥdāniyya* – *arwāḥ* – *mithāl* – *ḥiss*.⁵³

Each grade – except the first – is subdivided into three subgrades. They are associated with different states of being: the innermost with pure existence (*wujūd al-ṣirf*), and the outmost with the existing beings in our world (*‘ālam al-khalq*).

The letters also have different forms of existence, which are related to the aforementioned states of being. Letters are at the heart of the universe, since their origins or roots (*aṣl*) belong to the realm of *ahadiyya*:

فاعلم أنّ أصل الحروف كان في الأحدية شؤوناً

“Know that in the *ahadiyya*, the letters originally are qualities.”⁵⁴

In the *al-‘ayān al-thābita* – one of the other grades of existence – they are divine names, in the *malakūt*, they are angels, and in the *mulk*, which is the existing world, they have the form and shape of the 28 letters of the alphabet.⁵⁵ These letters are closely associated with numbers as expressed in the *abjad*-system.⁵⁶

The essence (*mābiyya*) of the letters are the angels of their *malakūt*-stage which can be addressed by adding “-il” to the letter: *yā ā’il*, *yā tā’il* etc.⁵⁷ These angels are responsible for their respective letter (*muwakkal bi-dhalika l-ḥarf*).

From the divine names associated with the letters emerged the lunar mansions.⁵⁸ Both the 28 letters as well as the 28 lunar mansions are considered univer-

⁵² Melvin-Koushki, “Imami’ Letter Magic”, 1–2, 17.

⁵³ Ghawth al-Hindī, *Jawābir*, vol. 2, 120. There is a second scheme, arranged in inverse order and not entirely congruent with the first, on page 119.

⁵⁴ Ghawth al-Hindī, *Jawābir*, vol. 1, 101.

⁵⁵ Ghawth al-Hindī, *Jawābir*, vol. 1, 101, also 104.

⁵⁶ Ghawth al-Hindī, *Jawābir*, vol. 1, 90; Lory, “La magie des lettres”, 99. Nader El-Bizri shows in his chapter within the present edited volume that the *abjad*-system has also been used by the *Ibrwān al-Ṣafā* to produce magic squares. Their *Rasā’il* deal with magic in Epistle 52, and especially refer to earlier practitioners of magic in this context.

⁵⁷ Ghawth al-Hindī, *Jawābir*, vol. 1, 101–102; a similar association of letters with angels can be found in the writings of Ibn ‘Arabī: Lory, *La science des lettres*, 30–31, 117–118.

⁵⁸ Ghawth al-Hindī, *Jawābir*, vol. 1, 104.

sal cosmic names (*asmā' kaḥniyya kullīyya*). Everything in the world comes from these universal names.⁵⁹ The entire universe is thus informed and permeated by letters and names; they are prior to the created world, the spheres and the elements.⁶⁰

In the created world, the elements, planets and spheres are each assigned a signature combination of letters, a practice called “*taksīr al-ḥurūf*”.⁶¹ This practice is based on the notion that the letters are “matrices of numerological, astrological, alchemical and other correspondences of the world”;⁶² all physical conditions are thus dependent on them. We find similar tables with many letrists,⁶³ and these are also described by Ibn Khaldūn.⁶⁴ The correlation between letters, elements, planets etc. is not uniform in all treatises, however, a situation surmised by Ibn ‘Arabi to be a precaution against people unworthy of this science.⁶⁵

For Muḥammad Ghawth, not all letters are equal, but some of them are more important than the others. This is especially the case with أَلِف (*alif*) and لَم (*lam*), which constitute for him the essence of the *Shaṭṭāriyya*.⁶⁶ أَلِف is according to Muḥammad Ghawth the pole of the world as well as the pole of all letters and the divine and cosmic names (*al-asmā' al-ilābiyya wa-l-kaḥniyya*)⁶⁷. It points to God.⁶⁸ The لَم and the مِم indicate God’s *jalāl* and *jamāl* aspects, that is, his awesome majesty (= *jalāl*) and his benevolent beauty (= *jamāl*). *Jalāl* and *jamāl* are mutually interwoven, God being covered by his majesty and apparent in his beauty.⁶⁹ They are aware of the knowledge of God (*al-dbāt*) and the source of all names and properties.⁷⁰

⁵⁹ Ghawth al-Hindī, *Jawābir*, vol. 1, 104; cf. also Kugle, “Heaven’s Witness”, 19–20.

⁶⁰ For related ideas in the writings of Ibn ‘Arabi, see Lory, *La science des lettres*, 117–118.

⁶¹ Ghawth al-Hindī, *Jawābir*, vol. 1, 97–98; Sabine Dorpmüller and Muḥammad ibn Yūsuf Sanūsī, *Religiöse Magie im “Buch der probaten Mittel”: Analyse, kritische Edition und Übersetzung des Kitāb al-Muḡarrabāt von Muḥammad ibn Yūsuf as-Sanūsī* (gest. um 895/1490), Wiesbaden: Harrassowitz, 2005, 31. See also Lory, “La magie des lettres”, 103.

⁶² Melvin-Koushki, *Quest*, 28.

⁶³ E.g. with al-Būnī: Dorothee Anna Maria Pielow, *Die Quellen der Weisheit: Die arabische Magie im Spiegel des Uṣūl al-Ḥikma von Aḥmad ‘Ali al-Būnī*, Hildesheim, New York: Olms, 1995, 71; Aḥmad Ibn ‘Ali al-Būnī, *Manba‘ uṣūl al-ḥikma: al-mushtamil ‘alā arba‘a rasā‘il muhimma fi uṣūl al-‘ulūm al-ḥikmiyya min al-‘ulūm al-ḥarfīyya wa-l-wafqīyya wa-l-da‘awāt wa-ḡair dhālika*, al-Qāhira: Muṣṭafā al-Bābī al-Ḥalabī, 1951, 253ff.

⁶⁴ Ibn Khaldūn, *Shifā’ al-sā’il li-tabḍīb al-masā’il*, Ignace-Abdo Khalifé, ed., Beirut: al-Maṭba‘a al-Kāthūlikiyya, 1959, 53; Ibn Khaldūn, *The Muqaddimah: An Introduction to History*, Franz Rosenthal, transl., vol. 3, New York: Pantheon Books, 1958, 172–173.

⁶⁵ Gril, “The Science of Letters”, 124; cf. also Dorpmüller, *Religiöse Magie*, 48, especially table 2.

⁶⁶ Ghawth al-Hindī, *Jawābir*, vol. 2, 52–53, 76. Instead of أَلِف, he also sometimes writes ʾ.

⁶⁷ Ghawth al-Hindī, *Jawābir*, vol. 1, 98. For the importance of the *alif*, see also Lory, *La science des lettres*, 45–46.

⁶⁸ Ghawth al-Hindī, *Jawābir*, vol. 2, 76.

⁶⁹ Ghawth al-Hindī, *Jawābir*, vol. 2, 76.

⁷⁰ Similar ideas had already been expressed by al-Hallāj, for whom the knowledge of letters resides in *lām-alif*, and for whom the dot of the *alif* is connected with the original knowledge: Gril, “The Science of Letters”, 139.

The Divine names

The knowledge of the letters and their cosmic correspondences provides the basis for Muḥammad Ghawth's explanation of implorations (*da'wa*, *taskbīr*) and recitations (*dhikr*) of the divine names.

The notion of the divine names is of great importance in the Islamic World. The best-known divine names are the so-called *asmā' Allāb al-ḥusnā*, or the 99 beautiful names of God. These beautiful names are adjectives describing the attributes of God, like *al-raḥmān* (the merciful) or *al-ṣabūr* (the patient). It is however not generally agreed on which adjectives belong to the divine names, so that different lists of the 99 names exist.⁷¹ Muḥammad Ghawth uses the expression 'descriptive names' (*asmā' al-ṣifāt*) to designate them.⁷² In keeping with his attribution of the aspects of beauty and majesty to God, he divides these names into *jamālī*- and *jalālī*-names, thereby following a standard classification of the divine attributes that was especially widespread in Sufi circles,⁷³ and sets a third category for names adhering to both aspects.⁷⁴

Besides these descriptive names, Muḥammad Ghawth introduces two other categories of names: *af'ālī*-names and *dhātī*-names, that is, names related to actions and names related to the essence.⁷⁵ The designation *af'ālī* is sometimes found in the context of lists of divine names;⁷⁶ according to the *Kitāb al-Jawābir al-khams*, they do not exist on their own, but are related to the *dhātī*-names.⁷⁷ The latter have an independent existence and are closely related to God or the truth (*al-ḥaqq*)⁷⁸. This is the case given that not only God has a *dhātī*-name, but also the prophets carried such names up to the time of the last prophet. Then, the proper names of the prophets were turned into descriptive names of God. Since the proper names are the greatest or the most powerful names, they are called the "great" or "greatest" names, *al-asmā' al-'iẓām*.⁷⁹

This denomination is somehow confusing, since there usually exists only one greatest name of God, which is known solely by the saints and prophets.⁸⁰ The

⁷¹ For the most important of these lists, some of them also shorter, see Daniel Gimaret, *Les noms divins en Islam: Exégèse lexicographique et théologique*, Paris: Editions du Cerf, 1988, 51–83.

⁷² Cf e.g. the nomenclature of 'Abd al-Jabbār in Gimaret, *Les noms divins*, 97.

⁷³ For this division, see e.g. Carl Ernst, *Rūzbihān Baqlī: Mysticism and the Rhetoric of Sainthood in Persian Sufism*, Richmond: Curzon Press, 1996, 44–45; Soraya Khodomoradi, "Sufi Reform and the Mystical Ideology of Divine Unity", in: *Peshawar Islamicus* 4 (2012), 4 and Fabrizio Speziale, *Soufisme, religion et médecine en Islam indien*, Paris: Karthala, 2010, 213. Gimaret mentions other ways of thematic classification: Gimaret, *Les noms divins*, 97–117.

⁷⁴ Ghawth al-Hindi, *Jawābir*, vol. 2, 112–116.

⁷⁵ Ghawth al-Hindi, *Jawābir*, vol. 1, 98 and vol. 2, 89.

⁷⁶ Gimaret, *Les noms divins*, 98–99.

⁷⁷ Ghawth al-Hindi, *Jawābir*, vol. 2, 89.

⁷⁸ Ghawth al-Hindi, *Jawābir*, vol. 1, 89.

⁷⁹ Ghawth al-Hindi, *Jawābir*, vol. 1, 138.

⁸⁰ E.g. Lory, "La magie des lettres", 106–107.

mystery surrounding this greatest name of God is related to the notion that the knowledge of a name provides power over its bearer.⁸¹ How can it thus be that in the *Kitāb al-jawābir al-khams*, there are several greatest names, which are, in addition to that, even known?

I assume that this is due to the just-mentioned distinction between descriptive and essential names. The great or greatest names that are given here to God constitute descriptive names and are not His essential names. In other words, what is usually known as God's greatest name is, according to Muḥammad Ghawth, his *ism al-dhāt*, while the great or greatest names he mentions do not belong to this category with regard to God; their imploration therefore does not affect him.

The greatest names are composed of a sequence of adjectives, nouns and prepositions, using quite frequently similar roots as the adjectives from the beautiful names. The first name is thus:

سيحانك لا إله إلا أنت يا رب كل شيء و وارثه و رازقه و راحمه.

And the third:

يا الله المحمود في كل فعاله.

Similar to the beautiful names, the great names are categorized according to *jamāl* and *jalāl* and names containing both aspects. Their total number oscillates in the *Kitāb al-Jawābir al-khams* between 40 and 41. This inconsistency is due to the fact that there are only 40 prophets,⁸² but 41 names used for invocation.⁸³ The 41st is therefore not the personal name of a prophet, but has been used by all of them.⁸⁴

The knowledge of these names provides power to the one who invokes them, and they can be used to summon all kinds of spiritual beings.

The invocation and subjugation of spiritual beings

The belief in the existence of spiritual beings populating the created world and the spheres, combined with the idea that these beings can be influenced, form the basis for exercising various magic activities.⁸⁵ In the Islamic World, such be-

⁸¹ Mohamed M. El-Gawhary, *Die Gottesnamen im magischen Gebrauch in den Al-Buni zugeschriebenen Werken*, PhD dissertation, Bonn University, 1986, 9; Pielow, *Quellen der Weisheit*, 84; Edmond Douuté, *Magie et religion dans l'Afrique du Nord*, Alger: Jourdan, 1908, 130, 206–207; Gimaret, *Les noms divins*, 85–86. This widespread notion is best exemplified in the tale of Rumpelstiltskin.

⁸² Ghawth al-Hindi, *Jawābir*, vol. 1, 138.

⁸³ Ghawth al-Hindi, *Jawābir*, vol. 1, 118, 145–146, 204.

⁸⁴ Ghawth al-Hindi, *Jawābir*, vol. 1, 146.

⁸⁵ Pielow, *Quellen der Weisheit*, 4, 23–26.

liefs originated both from pre-Islamic Arabic roots and from Hellenistic influences. This is particularly true of Neo-Platonist concepts that were adopted in the Islamic World, which promoted the idea of cosmic interrelations and correspondences.⁸⁶ The belief in the existence of such spiritual beings and/or of the *jinn* was generally not condemned by Islamic scholars.⁸⁷

Due to the already mentioned notion that the knowledge of a name provides power over its bearer, the use of names and their invocation plays a major part within the scope of magic activities. In the Islamic World, the specific importance of the Divine names further supported the recurrent mentioning of names in magic practices. Both the beautiful names of God as well as speculations about his greatest name are therefore recurrent in the context of magic.⁸⁸ By invoking the divine names, one could ask for God's help and – maybe – even be under the impression of exerting some pressure on him.⁸⁹ Other spiritual beings were also meant to be invoked or dominated through these magical practices.

For Muḥammad Ghawth, the knowledge of the letters and their correlation with numbers, planets, zodiacal signs, elements (= *taksīr*) etc. constituted the basis for magical invocations. In the first subchapters of chapter three of *Kitāb al-Jawābir al-khams*, he explains the *abjad* system⁹⁰ as well as other correlations of the letters, following the common concepts of *taksīr*.⁹¹ To expand these correlations to the case of the names, he further explains how the corresponding element, sign, and planet can be determined for a given name.⁹²

The knowledge of these correlations for each name is important, since they determine the best timing for invocations, given that these are not supposed to happen at any time and at any place, but in specific moments and places, and after specific preparations by the praying person. The *Kitāb al-Jawābir al-khams* contains detailed information on these exterior as well as interior conditions that are typical for the enactment of magic invocations. Other magical treatises like the *Ghāyat al-ḥakīm* or the writings of al-Būnī contain similar instructions.⁹³

⁸⁶ Pielow, *Quellen der Weisheit*, 4, 27–37.

⁸⁷ Pielow, *Quellen der Weisheit*, 4, 43; for the religious stance towards magic more generally, see Pielow, *Quellen der Weisheit*, 38–47 and Anatoly Kovalenko, *Magie et Islam: Les concepts de magie, (sīḥr), et de sciences occultes, (ʿilm al-ḡayb) en Islam*, Genève: Impr. Minute, 1981, chapter I (72–295).

⁸⁸ Gimaret, *Les noms divins*, 85–92; Pielow, *Quellen der Weisheit*, 51, 84–86; Doutté, *Magie et religion*, 205–206; Lory, “La magie des lettres”, 108–109. Dorpmüller gives a list of divine names relevant in the context of magic: *Religiöse Magie*, 261–267.

⁸⁹ Pielow, *Quellen der Weisheit*, 40; Doutté, *Magie et religion*, 205; Lory, “La magie des lettres”, 107.

⁹⁰ Ghawth al-Hindi, *Jawābir*, vol. 1, 90.

⁹¹ Ghawth al-Hindi, *Jawābir*, vol. 1, 97–98.

⁹² Ghawth al-Hindi, *Jawābir*, vol. 1, 90–91.

⁹³ Hellmut Ritter, “Introduction”, in: al-Majrīṭī, Picatrix. *Das Ziel des Weisen von Pseudo-Maḡrīṭī = Ghāyat al-ḥakīm wa-ḥaqq al-naṭijātayn bi-l-taqdīm*, Hellmut Ritter and Martin Plessner, transl., London: The Warburg Institute, 1962, xxxix–xl; El-Gawhary, *Gottesnamen*, 11–12, 72–

According to the *Kitāb al-Jawābir al-khams*, it is best to begin an invocation when its planet enters its astrological house, and to end it when it leaves it.⁹⁴ The day of the week as well as the correlation between hours and planets should also be taken into consideration.⁹⁵

The location chosen for an invocation has to be clean and remote.⁹⁶ For a specific invocation, the praying person must even retire to three different locations, one more isolated than the other, without disturbing sounds.⁹⁷ Sometimes, the location has to be marked, in most cases by a circle. The zodiacal sign related to the name may be inscribed in it,⁹⁸ and the ground on which the person is sitting is in other cases colored with specific stains.⁹⁹

The person has to dress in clean clothes and to perform an ablution before, at times during, the occurrence of the invocation.¹⁰⁰ The praying person also has to fulfill specific ascetic prescriptions pertaining both to sexual abstinence as well as to food restrictions. With regard to meat, one is not supposed to eat it, see it or smell it. As for fish, eggs, honey, onions, and garlic, they are also forbidden, and all meals have to be *ḥalāl*. The exact prescriptions differ between *jalālī*- and *jamālī*-names.¹⁰¹ It is also important to have good intentions and to be sincere with regard to the aims of the invocation. Envy and bragging should be avoided.¹⁰²

When the invocation begins, the praying person cannot immediately turn to the names, but has first to perform specific recitations. At the end of the invocation, the praying person has to give alms and release a certain number of birds: two for each letter of the invoked name.¹⁰³

Recitation modes

Invocations of the 41 great names can be classified into two groups: recitations that contain all the names, and recitations that evoke only one name.

In the first group – invocations of all names – we find varied prayers like the so-called *daʿwat sifr Ādam*, the *daʿwa lafziyya*, etc. How can these prayers however be differentiated, if they all contain the same names?

80; Coulon, *Magie islamique*, 830–33; see also Qādi Muḥammad Fādhil al-Samarqandī, *Jawābir al-ʿulūm-i Humāyūnī* (MS Ganj Bakhsh Nr. 301), fol. 499 a–b.

⁹⁴ Ghawth al-Hindī, *Jawābir*, vol. 1, 92.

⁹⁵ Ghawth al-Hindī, *Jawābir*, vol. 1, 92, 104, 151.

⁹⁶ Ghawth al-Hindī, *Jawābir*, vol. 1, 95.

⁹⁷ Ghawth al-Hindī, *Jawābir*, vol. 1, 119.

⁹⁸ Ghawth al-Hindī, *Jawābir*, vol. 1, 104.

⁹⁹ Ghawth al-Hindī, *Jawābir*, vol. 1, 119–120.

¹⁰⁰ Ghawth al-Hindī, *Jawābir*, vol. 1, 95, 96, 127, 151.

¹⁰¹ Ghawth al-Hindī, *Jawābir*, vol. 1, 95.

¹⁰² Ghawth al-Hindī, *Jawābir*, vol. 1, 95.

¹⁰³ Ghawth al-Hindī, *Jawābir*, vol. 1, 96.

First of all, differences apply to the timing, the location, and the ascetic practices related to the recitation. This means that the same names recited in other outward circumstances have different effects. But the recitation can also be varied with regard to its so-called *sharāʿiṭ*. Muḥammad Ghawth enumerates nine of them:

niṣāb – *zakāt* – *ʿusbr* – *qufl* – *dawr mudawwar* – *badhal* – *kbatm* – *tikrār* – *tawabhum*.¹⁰⁴

From the scarce information given by Muḥammad Ghawth, it seems most appropriate to understand these *sharāʿiṭ* as modes of recitation. That is to say that during the recitation process, the praying person not only repeats the names a certain number of times, but does so in nine different modes. The variations related to each mode concern the verbal realization of the recitation as well as the notions and concepts in the mind of the praying person. In the *tikrār* mode e.g., the first sound (*lafẓ*) of the name has to be repeated each time at the end of the name. In the *tawabhum* mode, the praying person is requested to imagine the meaning of all names, or – if this is not possible – the meaning of all the letters of the name, or – if this is again not possible – the first sound of the name and its meaning. In the *badhal* mode, the recitation focuses on the aspect of God's love.¹⁰⁵ The purpose of the *qufl* mode seems to open the locks behind which God has shut away the merits of the greatest names – the related notions are however not entirely clear.¹⁰⁶

The most important difference between each prayer consists in the numerical value related to each recitation mode. This value specifies how many times the names have to be recited in that mode. In most cases, these values are indicated without any explanation. They only rarely follow comprehensible criteria. As for the *daʿwat sifr Ādam*, the numbers correspond to cosmological factors: the 12.000 of the *niṣāb* to the 1000-fold of the number of the zodiacal signs, the 28.000 of the *zakāt* to the 1000-fold of the number of the lunar mansions, the 13.000 of the *dawr mudawwar* to the 1000-fold to the sum of the elements and spheres, etc.¹⁰⁷ And in the *daʿwat al-kulliyāt wa-l-juzʿiyyāt*, the values are calculated from the letters of the name, its diacritical signs and other components deduced from its characters.¹⁰⁸

¹⁰⁴ Ghawth al-Hindi, *Jawābir*, vol. 1, 93.

¹⁰⁵ Ghawth al-Hindi, *Jawābir*, vol. 1, 94.

¹⁰⁶ Ghawth al-Hindi, *Jawābir*, vol. 1, 93.

¹⁰⁷ Ghawth al-Hindi, *Jawābir*, vol. 1, 123.

¹⁰⁸ Ghawth al-Hindi, *Jawābir*, vol. 1, 121–122.

The daʿwa lafziyya and the daʿwat sifr Ādam

The invocations described by Muḥammad Ghawth are performed to reach specific goals. Most of these goals are related to the subjection of spiritual beings. Only one of the most basic invocations, the *daʿwa majmūʿa*¹⁰⁹, aims at mundane benefits, like the release of a prisoner, the favor of the sultan, etc. This invocation can be performed almost everywhere, and the names have only to be recited very few times.

The *daʿwa lafziyya*¹¹⁰, which deserves to be examined in more detail, is the exact opposite of this basic invocation. The outward conditions for this invocation are hard: The invocation is composed of three different stages, each of them lasting for seven weeks. From one stage to the other, the praying person has to retire to ever-more remote places. The soils of the respective locations have to be colored in definite colors – the first in red, the second in yellow and black, the third in yellow and green, and to be covered with a carpet in corresponding colors. Already during the first stage, different kinds of spiritual beings will appear. Towards the end of the second stage, all kinds of men would obey the praying person, but he has to continue and to avoid all worldly ambitions. Finally, during the third stage, a carpet appears spreading from his retreat to heaven. Spiritual beings approach and guide the praying person through all the heavens up to the seventh, which leads to God and to the safely preserved tablet (*al-lawḥ al-mahfūz*), where he learns all secrets.

The description of such ascension (*mīrāj*) is far from unique in the context of Sufi literature. On the contrary, we find ascension reports by Bayazīd Bisṭāmī, Ibn ʿArabī and others.¹¹¹ Still, with regard to Muḥammad Ghawth and his persecution, this prayer and the described ascension deserve specific attention. Was Muḥammad Ghawth’s own ascension experience induced by a *daʿwa lafziyya*? A comparison of the few autobiographical details provided by Muḥammad Ghawth and the requirements of this prayer reveals some parallels between the different stages of his withdrawal to ever-more remote places and the outward prerequisites of the invocation, although each single stage took much more time in the case of Muḥammad Ghawth.¹¹² No specific invocation has been recorded as stimulus for his ascension.¹¹³ Since the ascension itself is only very briefly described in the case of the *daʿwa lafziyya*, it is also not possible to draw significant parallels between it and the ascension report as it is given in the *Awrād-i Ghaw-*

¹⁰⁹ Ghawth al-Hindī, *Jawābir*, vol. 1, 135–136.

¹¹⁰ Ghawth al-Hindī, *Jawābir*, vol. 1, 119–121.

¹¹¹ Mohammad Ali Amir-Moezzi, “Meʿrāj i. Definition”, in: *Encyclopaedia Iranica*, available online at <http://www.iranicaonline.org/articles/meraj-i> (accessed online on 15 September 2014).

¹¹² Kugle, “Heaven’s Witness”, 9–10, 11–12.

¹¹³ Kugle, “Heaven’s Witness”, 12, especially fn 25, where such an invocation is not mentioned.

thiyya.¹¹⁴ We should however remember that the *Kitāb al-Jawābir al-khams* has only been preserved in its revised version. Maybe, the ascension has been described in more detail, testifying to Muḥammad Ghawth's own experiences, and would have been the genuine cause behind the revision of the book.

The second invocation to be described here is the *da'wat sifr Ādam*.¹¹⁵ The name of this invocation points to lettrist conceptions reflected in the writings of the *Ikbwān al-Ṣafā'* about a specific connection between Ādam and the alphabet. According to this conception, Ādam received nine letters corresponding to the Indian numbers and the nine celestial spheres. His language is called "Sūryāni", although it is not considered the same as Syriac/Aramaic by the *Ikbwān*.¹¹⁶ The *da'wat sifr Ādam* not only takes up in its name the specific role attributed to Ādam, but is also closely related to the letters of the alphabet and alphanumerical calculations. A correlation with the spheres is attained both by describing the *sharā'it* in accordance with cosmic dimensions – the *niṣāb* being 12.000 in accordance with the zodiacal signs, etc. – and by attributing the great names to the nine spheres. Since this latter correlation is closely connected to the effect of the prayer, some more details are needed here. According to Muḥammad Ghawth, every sphere consists of several climates, the planetary spheres of seven, the *kursi*-sphere of two, and the throne-sphere of three. Each of these climates is under the leadership of one chief or *ra'is* with his troops. By invoking the divine names, one invokes these chiefs, because each name is associated with one of them. The chiefs are submitted by the invocation; they approach the praying person and disclose to him the secrets of their climate – and thus, the secrets of the upper world. The lettrist understanding of Muḥammad Ghawth is here again quite obvious: the secrets of the upper world are revealed with the help of letters and names; the praying person is somehow recovering the position of Ādam in the process. Not all persons are strong enough for that, as Muḥammad Ghawth emphasizes; some even die during the invocation.¹¹⁷ And not all chiefs can be summoned: for each planetary sphere, only five names are known, with two remaining secret. These two are the poles of the spheres and hold its keys, which cannot be turned over; therefore, the names of these two chiefs remain secret.¹¹⁸ This in turn is explained as the main reason for the astrologers' errors, since they do not have access to the secrets of all climates, and therefore commit mistakes.

¹¹⁴ Kugle, "Heaven's Witness", 16–24.

¹¹⁵ Ghawth al-Hindi, *Jawābir*, vol. 1, 122–124.

¹¹⁶ *Ikbwān al-Ṣafā'*, *Rasā'il Ikbwān al-Ṣafā' wa-khillān al-wafā'*, Khair al-Din al-Zirikli, ed., vol. 3, [al-Qāhirah]: al-Maṭba'a al-'Arabiyya, 1347/1928, 150; Gril, "The Science of Letters", 133; Melvin-Koushki, *Quest*, 179; Lory, *La science des lettres*, 28, 69. For the specific relevance of Adam in the context of magic, see also El-Gawhary, *Gottesnamen*, 33–35.

¹¹⁷ Ghawth al-Hindi, *Jawābir*, vol. 1, 123, 6–7.

¹¹⁸ Ghawth al-Hindi, *Jawābir*, vol. 1, 123, 1–5. The exact damage they would cause is not clear, since here, the Persian and the Arabic version are slightly different: Ghawth al-Hindi, *Jawābir* (Persian), 164–165.

To sum up: the *daʿwat sifr Ādam* shows especially well lettrist notions with regard to the composition of the universe, its aim being to understand the working of the universe by the means of names.

Invocations of single names

Besides invoking all great names, a praying person can also focus on only one of them. To do so, one has to know the peculiarities of each great name. In the *Kitāb al-Jawābir al-khams*, they are described in detail subsequent to the *daʿwa ṣaghira*. For each name, Muḥammad Ghawth lists its belonging to *jamāl* or *jalāl* or both, and explains its effects.¹¹⁹ The praying person has to bear in mind these characteristics and effects and to choose which name to recite accordingly. The effect of each single name's recitation varies depending on its duration, the number of repetitions, the location, etc.¹²⁰ Generally speaking, the more difficult the outward circumstances and the longer the recitation, the more formidable its effect. The name itself is however always repeated in the same way, not in different modes.

The description of the thirteenth name e.g. begins in the following way:

The thirteenth name:

يا زكى الطاهر من كل آفة بقده

Oh sinless one pure from all evil by his holiness!

A *jamālī*-name, its peculiarity is to attain matters of the heart and to subjugate demons and men (*al-jinn wa-l-ins*) and to summon them. You recite it during 40 days, each day 15.000 times. You begin with it on a Saturday in the hour of Saturn on the 9th or the 12th of the month. Who performs a ritual ablution on a Wednesday and puts on clean clothes and recites it in an empty house 2051 times, to him seven elderly persons (*ashyākh*) from among the spirits will appear. And if he abstains from both the *jalālī*- and the *jamālī*-animals several days before the beginning of the recitation, his heart will be pure. The spirit will consequently like his company, and he will not perish by the vision of strange and astonishing things (...).¹²¹

The descriptions of the other names are quite similar. They are all rather long and claim to entail tremendous effects. In most of the times, it is said that very powerful spirits appear and submit to the praying person. But some effects go beyond that by way of providing the praying person with extraordinary faculties: e.g. the recitation of the 35th name results in the transformation of the body of the praying

¹¹⁹ Ghawth al-Hindi, *Jawābir*, vol. 1, 152–204 contains descriptions of all the names and their effects.

¹²⁰ Examples of these variations are amply given in the list of the names, e.g. Ghawth al-Hindi, *Jawābir*, vol. 1, 151, compare line 9–13 with 13–15.

¹²¹ Ghawth al-Hindi, *Jawābir*, vol. 1, 165–166.

person into a spirit, invisible to the eyes of jinn and men.¹²² The recitation of the 36th name provides man with the characteristics of God,¹²³ and the recitation of the 40th name enables him to breathe life into a piece of clad or wax – something he will however not do, because this would cause him to go astray and to turn towards paganism. In addition to that, the praying person does not want to be related to sorcery and black magic.¹²⁴ The praying person's adherence to the *shari'a* is furthermore emphasized. This emphasis probably responds to the accusations experienced by Muḥammad Ghawth during his stay in Gwalior. It is interesting to note that the same invocation is also said to prevent rulers and commons from slandering the praying person – an effect which might be interpreted as a reflection of the author's desire to escape similar trouble in the future, but also as an expression of his ultimate sense of superiority towards worldly potentates.¹²⁵

The spirits summoned by most of the invocations are not gentle, and they especially do not like to be subjugated. They therefore try to distract the praying person and to cheat him. These distractions entail great dangers; while in some cases, the spirits only aim at getting away from subjugation, in others, they kill the praying person.¹²⁶

The praying person on the other hand is interested in perpetuating the subjugation. In the above-mentioned invocation of the thirteenth name, he therefore asks the spirits to provide him with a ring allowing him to summon them whenever he wishes. They at first pretend that such a ring is not necessary, and turn it over only when he insists. The ring displays a secret script – probably a celestial script – which the spirits have to teach their new master.¹²⁷ By creating a permanent link between its carrier and the spirits, the function of this ring resembles that of talismans.¹²⁸

Invocations of the planets

Seven of the 41 names are distinguished by the specific feature of being used in invoking the planetary spirits.¹²⁹ As already seen, the planetary spheres were thought to be populated by different spirits. The same is true with the planets in

¹²² Ghawth al-Hindi, *Jawābir*, vol. 1, 197. Such an effect has also been described by al-Būni, who mentions being turned invisible in consequence of specific invocations; El-Gawhary, *Gottesnamen*, 99.

¹²³ Ghawth al-Hindi, *Jawābir*, vol. 1, 198.

¹²⁴ Ghawth al-Hindi, *Jawābir*, vol. 1, 203.

¹²⁵ Ghawth al-Hindi, *Jawābir*, vol. 1, 203.

¹²⁶ Ghawth al-Hindi, *Jawābir*, vol. 1, 199. For the danger going along with invocations, see also El-Gawhary, *Gottesnamen*, 206, and Doutté, *Magie et religion*, 97.

¹²⁷ Ghawth al-Hindi, *Jawābir*, vol. 1, 166; see also 200, where a similar ring is described.

¹²⁸ Kovalenko, *Magie et Islam*, 16. As described by al-Būni, most talismans either display letters or figures, *Quellen der Weisheit*, 142–143.

¹²⁹ 13th name: sun; 27th name: moon, 30th name: Mercury; 31st name: Venus; 32nd name: Jupiter; 36th name: Saturn; 38th name: Mars.

terms of being associated with spirits or angels. This notion probably goes back to hermetic ideas, and was transmitted to the Islamic world via the Sabians from Ḥarrān.¹³⁰

In the *Kitāb al-Jawābir al-khams*, planetary invocations do not form their own category, but belong to the invocation of single names. The seven names concerned can thus be used for “normal” invocations as well as for planetary invocations; if used for the latter, the total number of recitations is just higher and the outward conditions are more severe.

The above-mentioned thirteenth name can thus not only be recited to summon men and jinn, but also the sun. The invocation is then called *daʿwa shamsiyya* or *taskbir al-shams*.¹³¹ The total duration of this invocation is 150 days of perpetual recitation. Most of the time, the praying person has to face the sun. From time to time, he addresses the sun directly and invokes it to respond to the prayer with a loud voice, but usually, he just quietly repeats the great name. After these 150 days, he sees the sun descending from the sky and drawing nearer to him. When it approaches, its head looks like that of a cow¹³², but then, it will be transformed into a beautiful being. The sun behaves in a friendly way towards the praying person and asks him about his wishes. In the case of this prayer too, the praying person should not be diverted from his recitations and his true goals. When the sun offers him the throne, he ought not accept it at first, but only after 40 days. He will then rule in accordance with God’s prescriptions.¹³³

The invocations to the other six planets resemble that of the sun. The description of the planetary spirits is never very specific, except for Saturn. The text explains that he has dark skin and many hands, holding in each something different.¹³⁴ And the invocation of Mars is quite dangerous, since he is holding a sharp sword in his hands, and ready to kill the praying person at the slightest error.¹³⁵

The *Kitāb al-Jawābir al-khams* is not the first book to describe planetary invocations. Among the most famous of such books from the Muslim world are Fakhr al-Dīn al-Rāzī’s *al-Sirr al-maktūm*¹³⁶ and the *Ghāyat al-ḥakīm* of Pseudo al-Majrīṭī.¹³⁷

¹³⁰ In his introduction to the *Ghāyat al-ḥakīm*, Ritter traces the origin of the planetary spirits back to Ḥarrān and then via the *Ikbwān al-Ṣafāʾ* to the *Ghāyat al-ḥakīm*: Ritter, Introduction xxvi–xxx, xlix–li. For the link between astral cults and the Sabians, see also Francis E. Peters, “Hermes and Harran: The Roots of Arabic-Islamic Occultism”, in: *Intellectual Studies on Islam: Essays Written in Honor of Martin B. Dickson, Professor of Persian Studies, Princeton University*, Michel M. Mazzaoui and Vera Basch Moreen, eds., Salt Lake City, Utah: University of Utah Press, 1990, 185–215 and Emilie Savage-Smith, ed., *Magic and Divination in Early Islam*, Aldershot: Ashgate Variorum, repr. 2004, 55–85.

¹³¹ Ghawth al-Hindī, *Jawābir*, vol. 1, 167–168.

¹³² The origin of this notion has not been identified.

¹³³ Ghawth al-Hindī, *Jawābir*, vol. 1, 168.

¹³⁴ Ghawth al-Hindī, *Jawābir*, vol. 1, 198.

¹³⁵ Ghawth al-Hindī, *Jawābir*, vol. 1, 199.

¹³⁶ For more information about this book and its author, cf. Manfred Ullmann, *Die Natur- und Geheimwissenschaften im Islam*, (Handbuch der Orientalistik, Abt. 1, Ergbd. 6, Abschn. 6),

Although Muḥammad Ghawth even refers in his book to al-Rāzi's *al-Sirr al-maktūm*¹³⁸, the planetary invocations in that book are completely different from those in the *Kitāb al-Jawābir al-khams*. Al-Rāzi's approach is very systematic. He first discusses if the planets exist by necessity or not.¹³⁹ When he turns to the invocations, he begins with the moon and then progresses step by step, and respectively sphere by sphere, from Mercury via Venus to the sun, and from there to Mars, Jupiter and Saturn. The invocation of each "higher" planet preconditions success in the invocation of the lower planet, that is, one cannot invoke Jupiter before having successfully implored Mars.¹⁴⁰

The effects of the invocations are explained in much less detail; especially, no planetary spirits descend from the sky.¹⁴¹ The great names or divine names are of no importance in these invocations. However, similar to the practices described in the *Kitāb al-Jawābir al-khams*, the praying person has to choose an appropriate moment for the invocation, has to dress up in specific clothes, and has to follow a specific diet.¹⁴²

The chapter on planetary invocations in the *Ghāyat al-ḥakīm* is also quite detailed. The author explains first which concerns should be addressed to the planets.¹⁴³ He then expounds upon how to invoke the planets, where to perform the invocation, which clothes to put on and which words to choose. The planets are addressed directly, with different formula used for each of them. For some planets, several invocations are mentioned.¹⁴⁴ The origin of these invocations is attributed to the Sabians.¹⁴⁵ Obviously, the text presupposes a belief in planetary forces and spirits, but lettrist notions are of no relevance in it. It is therefore again clearly different from the *Kitāb al-Jawābir al-khams*.

One category of planetary invocations – maybe those traced back to the Sabians of Ḥarrān – therefore seems to have done without lettrist speculations, while another category of invocations, like those used by Muḥammad Ghawth, was based on them. The parallel existence of both traditions in his time can be best understood from the *Jawābir al-ʿulūm-i Humāyūni*, an encyclopaedia written in

Leiden: Brill, 1972, 388–390; Živa Vesel, "The Persian Translation of Fakhr al-Din Rāzi's *al-Sirr al-Maktūm* ('The Occult Secret') for *Ilutmiš*", in: *The Confluence of Cultures. French Contributions to Indo-Persian Studies*, 'Nalini' Françoise Delvoe, ed., New Delhi: Centre for Human Science, 1995, passim.

¹³⁷ For the *Ghāyat al-ḥakīm*, cf. Ritter, Introduction, passim; also Coulon, *Magie islamique*, 313–322.

¹³⁸ Ghawth al-Hindī, *Jawābir*, vol. 1, 137–138.

¹³⁹ Fakhr al-Din al-Rāzi, *Al-Sirr al-maktūm*, [MS Parliament library (Majlis) Tehran, Nr. 6853], fol. 135b–141a.

¹⁴⁰ Al-Rāzi, *Sirr*, fol. 141b.

¹⁴¹ Moon: al-Rāzi, *Sirr*, fol. 141b–146b; Mercury to Saturn: al-Rāzi, *Sirr*, fol. 146b–150b.

¹⁴² Al-Rāzi, *Sirr*, fol. 141a–143a.

¹⁴³ Al-Majriṭī, *Ghāyat al-ḥakīm*, 207–209.

¹⁴⁴ Al-Majriṭī, *Ghāyat al-ḥakīm*, 213–237.

¹⁴⁵ Al-Majriṭī, *Ghāyat al-ḥakīm*, 237–241.

the time of Humāyūn. This encyclopaedia contains several subchapters on occult sciences, one of them being on planetary invocations (*taskbir al-kawākib*), and another on the invocation of the great names (*daʿwat al-asmāʾ*).¹⁴⁶ Similar to the tradition of the *Sirr al-maktūm* and the *Ghāyat al-ḥakīm*, in the chapter on planetary invocations, the planets are addressed directly. The desires are rather concrete, and no personification of any planet descends from the sky.¹⁴⁷

In contrast, in the chapter on the great names¹⁴⁸, we find the same names as in the *Kitāb al-Jawābir al-khams*. They are not in the same order, and their number is also not exactly the same, but they are basically identical names, and they are also related to the prophets. For their invocation, the same modes are mentioned, that is *niṣāb*, *zakāt*, *qufl* etc. In the *Jawābir al-ʿulūm-i Humāyūnī*, however, these names are not used to invoke the planets. Most of the information is on the outer circumstances of the invocation, while the description of their effects is rather meager.

In Muḥammad Ghawth's book, the two traditions are merged or combined. It is impossible to know at the moment if this merging was already an established tradition at his time, or if this merging was something new. Al-Samarqandī, the author of the *Jawābir al-ʿulūm-i Humāyūnī*, was obviously not aware of it, or did not consider it worth mentioning.

Conclusions

In the end, we may wonder why Muḥammad Ghawth is reckoned to be such an important Shaykh and the *Kitāb al-Jawābir al-khams* such a key text. In my view, the impact of the text may have had something to do with the astonishing results of the invocations. Whereas lettrist views were widespread at the time of Muḥammad Ghawth, the detailed description of the prayers' effects, the amazing powers ascribed to the praying persons and the inclusion of invocations of the planets may have singled out this text from other similar material. This would explain why especially the third chapter of the book – in which these descriptions are contained – is so famous. Muḥammad Ghawth seems to have been able to integrate prevailing intellectual trends in his book and to further sharpen them. In Humāyūn, he found a more than ready listener. In the last analysis, the political career of Muḥammad Ghawth was probably also very important for his success, and further conducive to his following.

¹⁴⁶ A table of contents of this encyclopaedia is contained in Muḥammad Ḥusayn Tasbiḥi, "Jawābir al-ʿulūm-i Humāyūnī", in: *Wahid* 211/212 (1356/1977), passim.

¹⁴⁷ Al-Samarqandī, *Jawābir al-ʿulūm*, fol. 498b margin – 499a:17.

¹⁴⁸ Al-Samarqandī, *Jawābir al-ʿulūm*, fol. 503b:11 – 507b margin.

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Going Egyptian in Medieval Arabic Culture

The Long-Desired Fulfilled Knowledge of Occult Alphabets by Pseudo-Ibn Waḥshiyya

Isabel Toral-Niehoff / Annette Sundermeyer

For obvious reasons, native Egyptians and Arab pilgrims and traders who travelled throughout Egypt in the pre-Modern period were much more familiar with the formidable visible material remains of Ancient Egyptian culture than the Europeans.¹ The conspicuous presence of pyramids, temples, caves, marvelous treasures and mysterious hieroglyphs fired the imagination of Arab scholars and travelers alike and fostered the creation of all sorts of more or less fanciful interpretations. Egypt became the epitome of miracles, superstition and marvels par excellence. This Arabic *egyptomania* inspired a very rich literature: Historical legends referring to the mysterious pagan divinity called Hermes Trismegistos, a figure inherited from late antiquity, and then transformed into an Arabic prophet of science²; stories about the Pharaoh, Joseph, Moses and Cleopatra; speculations about the pyramids and temples³; “treasure-hunter” manuals⁴; all sorts of magical, alchemical and astrological treatises; books about talismans; finally, lists of magical alphabets, including hieroglyphs and their hypothetical decipher-

¹ Although Egypt did not disappear from the European mental map after antiquity, European visitors to Egypt were rare (and then mostly pilgrims) until Napoleon’s famous expedition in 1798, a date which is commonly regarded as the beginning of European colonialism in the Middle East and the birth of modern European Egyptology; cf. *The Wisdom of Egypt: Changing Visions through the Ages*, Peter Ucko and Timothy Champion, eds., London: UCL Press, 2003, especially Charles Burnett “Images of Egypt in the Latin Middle Ages”, 65-99 and Brian Curran, “The Renaissance Afterlife of Ancient Egypt 1400-1650”, 101-131. The Renaissance and Baroque *Egyptomania* (like that of Athanasius Kirchner) were mostly focused on Rome’s Egyptian monuments, much closer at hand.

² See the recent study by Kevin van Bladel, *The Arabic Hermes. From Pagan Sage to Prophet of Science*, Oxford: Oxford Univ. Press, 2009; for late antique Hermetism, see Garth Fowden, *The Egyptian Hermes. An Approach to the Late Pagan Mind*, Princeton, NJ: Princeton Univ. Press 1993 [1986].

³ For this rich literature, mostly unpublished, see the (sometimes uncritical) extended survey by Okasha El Daly, *Egyptology. The Missing Millennium*, London: UCL Press, 2005; further Michael Cook, “Pharaonic History in Medieval History”, in: *Studia Islamica* 57 (1983), 67-103 and the numerous works by Ulrich Haarmann quoted by El Daly in his bibliography, especially *Das Pyramidenbuch des Abū Ġaʿfar al-Idrisi (st. 649/1251)*, (Beiruter Texte und Studien, 38), Stuttgart: Steiner, 1991 and “Medieval Muslim Perceptions of Pharaonic Egypt”, in: *Ancient Egyptian Literature. History and Forms*, A. Loprieno, ed., Leiden: Brill, 1996, 605-627.

⁴ El Daly, *Egyptology*, 31-44. Christopher Braun has recently completed his thesis on this theme under the supervision of Charles Burnett (Warburg Institute London).

ment.⁵ Unfortunately, this rich tradition is yet little investigated and rather unknown, since most texts are not published, let alone translated.

The text that will be presented here belongs clearly to this variegated group of Arabic Egyptianizing texts. The *Shawq al-mustahām fi maʿrifat rumūz al-aqlām*⁶ is a treatise about magical alphabets whose main topic is the interpretation of hieroglyphs, in addition to other motifs related to the imaginary of Ancient Egypt. The work is attributed to Ibn Waḥshiyya, an early 10th-century Iraqi alchemist, well known as the author of the earliest extant Arabic handbook on agronomy. However, several differences between the *Shawq* and other writings that circulate under his name suggest that “Ibn Waḥshiyya” might be a pseudoepigrapion. Notwithstanding these doubts about the authorship, we will argue that the treatise might still be a very old text, and therefore likely interesting for the insights it may offer into the history and perception of Pharaonic Egypt in the Medieval Arabic culture it reflects. Although the booklet attracted some attention when it was first published in 1806 during the *egyptomania* following the French expedition to Egypt in 1799 – becoming one of the first Arabic texts ever translated into a modern European language (English)⁷ – it has not yet been studied in detail. The following remarks are just preliminary observations to a text that deserves a much deeper investigation in the context of Arabic *egyptomania*.

The attribution to Ibn Waḥshiyya

Ibn Waḥshiyya al-Nabaṭī (d. 318/930-1) was a curious personality of early tenth-century Baghdad who claimed to be of Chaldean (‘Nabatean’⁸) origin. He became famous as magician, alchemist and supposed translator of several books from ‘Old Babylonian’ into Arabic, an allegation that has proven spurious, since all of them rely on much later material. His historical persona remains also surrounded by mystery.⁹ His most famous work is the *Filāḥa al-Nabaṭiyya*, a much-debated agricultural handbook.¹⁰

⁵ El Daly, *Egyptology*, 57-74.

⁶ Editions: Joseph von Hammer-Purgstall, ed., *Shawq al-mustahām fi maʿrifat rumūz al-aqlām = Ancient Alphabets and Hieroglyphic Characters Explained. With an Account of the Egyptian Priests, Their Classes, Initiation, and Sacrifices*, London: Bulmer and Co., 1806; a French translation: René Alleau, ed., *La magie arabe traditionnelle*, Paris: Retz, 1977. A new edition of Hammer’s Arabic text with some annotations and the Arabic translation of his introduction: Jamāl Jumʿa, ed., *Kitāb shawq al-mustahām fi maʿrifat rumūz al-aqlām*, Beirut: Manshūrāt al-Jamal, 2010.

⁷ See below in the Epilogue.

⁸ *Nabaṭī* in Arabic meant in these times ‘Ancient Syriac’ i.e. ‘Aramaic’ or ‘native Babylonian’ and had no connection to the Nabateans of Roman times.

⁹ V. infra note 10.

¹⁰ For this debate, see Jaakko Hämeen-Anttila, *The Last Pagans of Iraq. Ibn Waḥshiyya and His Nabatean Agriculture*, Leiden: Brill, 2006, 3-10.

Although all extant manuscripts attribute the *Shawq* to Ibn Waḥshiyya, scholars have good reason to question his authorship. First of all, the name Ibn Waḥshiyya only appears in the colophon, where he is called Aḥmad b. Abī Bakr b. Waḥshiyya al-Nabaṭī al-Kaldāni.¹¹ In addition, the setting is mainly Ancient Egypt, and not Ancient Babylonia; nothing indicates a Syriac original; we do not find any Pseudo-Syriac names; finally, the text lacks the author's preface that we usually find in his texts. The main topical elements of these prefaces are: The finding legend; the translation from the Babylonian or Nabatean language; the dictation to Ibn Zayyāt; and the figure of the son of Ibn Waḥshiyya, who functions as the repository of this secret knowledge and to whom the first-person introduction is addressed.¹²

However, the booklet also shares several features with the Ibn Waḥshiyya corpus – a circumstance that recommends further consideration – though these similarities are to be found almost exclusively in the so-called appendix.¹³ The most important similarities are: First, the motive of the cultural excellence of the Nabateans and Chaldeans; second, the presence of Adam and Seth, and their writings, both very present in the *Filāḥa*;¹⁴ the Babylonian setting; references to the Babylonian divinity Adonai and to his Temple, and finally, the fact that the *Shawq* mentions the alleged authors of the *Nabatean Agriculture*, namely the sages Ṣaḡhrīth, Yanbūshād/Binūshād¹⁵ and Qūthāmi/Quthāmā, who are otherwise completely unknown.¹⁶

¹¹ Hammer, *Alphabets*, 136; Paris MS arabe 6805, 131. This fact is one of the reasons that the attribution was refused, first by Sylvestre de Sacy in: *Journal des Savants* 6 (1810), 145-175. For further arguments adduced against the attribution to Ibn Waḥshiyya see also Hämeen-Anttila, "Ibn Waḥshiyya and Magic", in: *Anaquel de Estudios Árabes* 10 (1999), 39-48, here 41 n. 13, and Hämeen-Anttila, *Last Pagans*, 21, fn. 45. The name in the *Filāḥa* is slightly different: Abū Bakr Aḥmad b. 'Alī b. Qays al-Kasdāni al-Qussini, see Hämeen-Anttila, *Last Pagans*, 93.

¹² Translation of the preface in the *Filāḥa* in Hämeen-Anttila, *Last Pagans*, 93-99 (Text 2); study by Isabel Toral-Niehoff, "Warum geheimes Wissen nicht vermittelt werden soll – oder doch? Die Selbstinszenierung des Ibn Waḥshiyya im Einführungsdialoꝑ der 'Nabatäischen Landwirtschaft'", in: *Performanz von Wissen. Strategien der Wissensvermittlung in der Vormoderne*, Therese Fuhrer and Almut-Barbara Renger, eds., (Bibliothek der Klassischen Altertumswissenschaften, N. F., 134), Heidelberg: Winter, 2012, 195-207; for the preface in the book of poisons, see Martin Levey, *Medieval Arabic Toxicology. The Book of Poisons of Ibn Waḥshiyya and its Relation to Early Indian and Greek Texts*, (Transactions of the American Philosophical Society, N. S., 56/7), Philadelphia, PA.: American Philos. Society, 1966, 20-23.

¹³ Hammer, *Alphabets*, 41-54 (translation), 114-136 (arab.).

¹⁴ Cf. Index in Hämeen-Anttila, *Last Pagans*. The interpretation of Adam and Seth as the first persons to write in a specific script is also common in other works on alphabets, where they are seen as the first two of a long list of prophets being granted the knowledge of a specific writing. While Adam is always connected to *suryāni*, the language associated with Seth varies, cf. ex.: Paris MS arabe 2675/2, 2676/9r, 2680/16, 2688/6v, 2726: 36r, 2727/1v.

¹⁵ Hämeen-Anttila, *Last Pagans*, always refers to this personality, otherwise unknown, but very present as an author in the *Filāḥa*, as Yanbūshād (cf. Index). It is clearly the same name that is transliterated as Binūshād by Hammer, *Alphabets*, 52/131.

¹⁶ Cf. the numerous references in Hämeen-Anttila, *Last Pagans* to Adam, Seth, Adonai, Agathodaimon, Ṣaḡhrīth, Binūshād/Yanbūshād and Qūthāmi/ Quthāmā. The similarities go

This indicates that, originally, the treatise goes back to two separate texts. The first, which was divided into eight chapters, is an anonymous treatise on magical alphabets, entitled *Shawq al-mustaham fi maʿrifat rumūz al-aqlām*, which discussed some 80 alphabets and tells some obscure legends about the *Harāmisa* or Egyptian priests. Its main setting is Pharaonic Egypt, and it follows the traditional explanation of the hieroglyphs as symbols.

The second is another alphabetical treatise (*al-Khātima al-farīda fi dbīkr aqlām iddaʿat tāʾifa min qarwam al-Nabaṭiyyīn wa-l-Kaldāniyyīn wa-l-Ṣābiyya*) attributed to Ibn Waḥshiyya (authentic or spurious), containing among others the *Shīshīm* alphabet and with strong similarities to other texts attributed to the author.¹⁷ This second treatise was later added to the first – until both merged and were eventually interpreted and transmitted as one unique alphabetical treatise, both attributed to Ibn Waḥshiyya, but circulating under the title of the first, namely *Shawq al-mustaham fi maʿrifat rumūz al-aqlām*.

In this chapter, we will restrict our observations to the main piece of writing, the anonymous *Shawq*. Given the distinct character of the Appendix by Ibn Waḥshiyya, its analysis will be published in a forthcoming publication.

*The long-desired fulfilled knowledge of occult alphabets*¹⁸

The topic of this booklet is a long list of around 80 magical alphabets, their interpretation and their equivalence in Arabic letters (cf. Introduction):

My object is to collect the rudiments of alphabets used by ancient nations, doctors and learned philosophers in their books of science, for the use of the curious and studious, who apply themselves to philosophical and mystic science. Each alphabet is represented in its old shape and form, the original name of it recorded, and the power of the characters written underneath with red ink in Arabic letters, to the end that they may be distinguished.¹⁹

Most of these ‘alphabets’ are just fantastic inventions and look very similar to the ‘magical letters’ we find in other Arabic and European magical texts – pseudo-letters that are shaped like Greek or Aramaic letters with small circles at the ends.²⁰

even further: The Arabic form used for the Babylonian divinity Adonai, *Dāvānāy*, is the same in the Appendix of the *Shawq* (Hammer, *Alphabets*, 50/131) as in the *Filāḥa* (Hämeen-Anttila, *Last Pagans*, 169).

¹⁷ This alphabet consists solely of recognizable hieroglyphs, which are interpreted not as logograms/pictograms, but as letters. Since antiquity Egyptian script has otherwise been described as a purely logographic script in Western discourse; the interpretation of hieroglyphics as letters only resurfaces in the Arabic discourse.

¹⁸ Literal translation of the Arabic title *Shawq al-mustahām fi maʿrifat rumūz al-aqlām*.

¹⁹ Hammer, *Alphabets*, 1/1. In fact, the Paris and the Wien manuscript reproduce exactly this distribution of red and black ink.

²⁰ The “Brillenbuchstaben”, cf. Manfred Ullmann, *Die Natur- und Geheimpwissenschaften im Islam*, (Handbuch der Orientalistik, Abt. 1, Ergbd. 6, Abschn. 6), Leiden: Brill, 1972; 362. The *shawq* is briefly discussed in 2f.

Only a small number of these can be identified in existing alphabets: e.g. the Kufic and Maghreb Arabic script, the Greek, the Syriac, Hebraic and South Arabian alphabets (however, only vaguely resembling the authentic ones) and the Indian ciphers, interpreted as a magical alphabet.²¹

The text is divided into eight chapters:

1. *Kūfī*, *Maghribī*, *Hindī* (ciphers, interpreted as letters);
2. the known alphabets: *Suryānī* (Syriac), *al-Nabaṭī al-qadīm* (Old Nabatean), *al-ʿIbrānī* (Hebrew), *al-Birbāwī* (Temple Script), *al-Luqumī*, *al-Musnad* (Old South Arabian), *al-Yūnānī* (Greek);
3. the alphabets of the seven sages: Hirmis, Aqlimūn, Aflātūn (Plato)²², Fithāghūrus (Pythagoras), Asqlibūs (Asklepios), Suqrāt (Socrates), Aristūs (Aristotle);
4. the alphabets of later sages: Balinās, ((ps.)-Apollonius of Tyana); *al-Birbāwī* (Temple Script) from Sūrid,²³ Faranjīyyūsh, Baṭlimūs the Greek (Ptolemy), Marqūnis for talismans, Jarjānī of Maryānūs, *al-Nabaṭī al-qadīm* (the Old Nabatean), the red Alphabet of Maghnīs, the talisman alphabet by Ghāmighāshīr, the symbolic alphabet of Hilyāʿūsh the Greek, Quṣṭūjis the Greek, Hirmis Abū Tāt the alchemist, Qulfutriyūs the magician, Siyūryānūs the Astrologer, Filāʿūs who deposited the great treasure; Diyusqūridūs the botanist (Dioscorides), the Davidian script, used in India; Dhīmūqarātīs (Democrates), the Coptic sages (Qifṭarīm b. Nūḥ), al-Farghānī, used by the seven Roman sages, Zūsīm the Hebrew (Zosimus), Mārshūl, Arkaghānīs the Greek, Aflātūn (Plato);
5. alphabets of the Seven Planets (Saturn, Jupiter, Mars, Sun, Venus, Mercury, Moon);
6. alphabets of the Twelve Constellations (Aries, Taurus, Gemini, Cancer, Leo, Virgin, Libra, Scorpio, Sagittarius, Capricorn, Aquarius, Pisces);

²¹ The fact that the Indian ciphers were used by the Arabs is seen by Gropp as an argument of the ancient provenance of the book; see: Harald Gropp, "Bin Wahshiyya's 93 Alphabets and Mathematics", in: *A Shared Legacy. Islamic Science East and West* Homage to Professor J. M. Millás Vallicrosa, Emilia Calvo und José María Millás Vallicrosa, eds., Barcelona: Univ. de Barcelona, 2008, 175–187. But the Indian alphabet is probably the most commonly mentioned alphabet in works dealing with ancient/foreign/magical scripts, as examples from the Bibliothèque Nationale, Paris: MS arabe 2675, 2676, 2726, 2727, 2634, 2682, 2684, 2595, 2688, 2635 and many more.

²² This three alphabets are also commonly mentioned in other treatises on alphabets, cf. Bibl. Nat. Paris MS 2676 f. 115r.

²³ *Sūrid* is commonly supposed to be buried in one of the pyramids, but also mentioned as one who engraved the secrets in the stone, ex.: al-Maqrīzī, *al-Mawāʿiz wa-l-iʿtibār fī dhikr al-khiṭaṭ wa-l-athār*, Ayman Fuʿād Sayyid, ed., vol. 2, London: Al-Furqan Islamic Heritage Foundation, 2002, 303. The *Birbāwī* alphabet is in other treatise on alphabets attributed to Akhnūkh/Idris, ex.: Bibl. Nat., Paris 2676/f. 9v.

7. alphabets of the Ancient kings: The Syrian kings, the *Harāmisa*, the Pharaos, the Canaanites, the Chaldeans, the *Nabaṭ*, the Kurds, the Kasdanians, the Persians and the Copts;
8. the alphabets of Hermes the Great, the sage (a script that is engraved on temples, pyramids, inscriptions, stones and old temples from the time of the Pharaohs)²⁴; which is divided into heavenly symbols (*al-ʿulwiyyāt*), animal symbols (*al-ḥaywāniyya*)²⁵, botanic symbols (*nabatiyya*), mineral symbols (*miʿdaniyya*).

As said before, these eight chapters are followed by an appendix that was originally a different text, and that will not be studied in this article (*al-khatima al-farida fi dhikr aqlām iddaʿat tāʿifa min qaʿim al-nabaṭiyyīn wa-l-Kaldāniyyīn wa-l-Ṣābiyya*): Alphabets used by a sect of the Nabateans, the Chaldeans and the Sabeans.²⁶

Manuscripts and editions

Five manuscripts and two editions of the *Shawq* are found in European libraries and in Cairo. In the colophon all manuscripts tell the same story of transmission: The original copy was finished after twenty-one years in 241/856 and was deposited in the treasury of the caliph ʿAbd al-Malik b. Marwān (r. 65-86/685-705). From the original, Ḥasan b. Faraj b. ʿAli b. Dāwūd b. Sanām b. Thābit b. Qurra is supposed to have completed a copy in 413/1022, which was then the archetype for all extant manuscripts.²⁷ Both attributions are anachronistic: On the one hand, the mentioned date of origin neither corresponds to the lifetime of ʿAbd al-Malik b. Marwān nor the date of the ‘Nabatean agriculture’ (dictated 924), and would therefore exclude Ibn Waḥshiyya as the author.²⁸ On the other hand, the copy by a descendant of the famous Ḥarrānian mathematician and translator Thābit b. Qurra (826-901) seems all too fitting the overall Nabatean context of the Ibn Waḥshiyya-corpus. The manuscripts are:

²⁴ This chapter clearly deals with hieroglyphics, which are here interpreted as symbols: “Know that this alphabet is not like the others, organized in letters; they are rather symbols and occult indications, according to that what Hermes the great had established”; Hammer, *Alphabets*, 81.

²⁵ This is the section that includes the mysterious symbol of wisdom called *Babūmid*, (Hammer, *Alphabets*, 22), which Hammer related to the “Baphomet” idol venerated by the Templars (Hammer, *Alphabets*, xii-xiii). The figure, preserved in all manuscripts, stands out as completely different in shape from the other hieroglyphs, and definitely deserves a deeper investigation.

²⁶ This is the part that can be attributed to Ibn Waḥshiyya or to Pseudo-Ibn Waḥshiyya. It is absent from the Berlin manuscript (v.i.).

²⁷ Hammer, *Alphabets*, 135-136.

²⁸ Hämeen-Anttila, *Ibn Waḥshiyya and Magic*, 41.

1. Bibliothèque Nationale, Paris: MS arabe 6805²⁹ (P):

This is a well preserved and fabricated manuscript with filigrees encoding the *basmala* and the first two pages of the text (fol. 2v and 3r). The text is written in *naskhī* with diacritical points in black ink with red or blue chapter titles and paragraphs; the magic letters are written in black with their Arabic equivalents in red. Apparently due to the binding process the pages are not in the right order.³⁰ The book is very small (9x17cm) with the script covering a surface of only 4x9cm, with its 134 pages having about nine lines per page. This copy is dated 1165/1751 (f. 131r), having two marks of possession: One of a Sulaymān Rashīd, dated from 1814 (1r), and another of an unknown ‘Alī. It was bought by the library in 1932.

2. Nationalbibliothek, Wien: Arabic manuscripts 68 (W):

This very well preserved and fabricated manuscript is written in *naskhī* script with diacritical points, in black ink for the text and the signs, and red ink for chapter titles, paragraphs and the Arabic equivalences of the signs. Additionally, there are very frequent red dots, between single ideas (like punctuation marks). The book is also small (9.5x15cm) with 150 pages and 11 lines per page. The copy of the manuscript is dated to 1166/1753.

3. Bayerische Staatsbibliothek, München: MS cod. arab. 798³¹ (M):

The manuscript is written in *naskhī* script in black ink. The single magical signs are still recognizable, but executed with less care than in the two aforementioned manuscripts. Written below some of the Arabic meanings of the signs in chapter eight are Latin translations (ex. p. 132) and the manuscript is bound together with several other texts.³² The manuscript consists of 184 pages (of which 77 pages are devoted to Ibn Wahshiyya’s text)³³ with about 18 lines per page and the pagination backwards (p. 187-110). The manuscript is dated 1791, and it is said to be a copy of a 1759 version, that was itself copied from a version of 1753.

²⁹ Link to the online resource: http://archivesetmanuscrits.bnf.fr/ead.html?id=FRBNFEAD00005924&c=FRBNFEAD000005924_e0000018&qid=sd_x_q1. (Date of access 07.11.2016).

³⁰ The order of the pages should be: 1-11; 119-126; 12; 108-117; 13-107; 118; 127-132. Additionally, there is one page 14bis and one 26bis.

³¹ Link to the online resource: <http://nbn-resolving.de/urn:nbn:de:bvb:12-bsb00037029-8>, (date of access 07.11.2016).

³² Cf.: Joseph Aumer, *Catalogus Codicum Manu Scriptorum Bibliothecae Regiae Monacensis*, 1/2, Die arabischen Handschriften der K. Hof- und Staatsbibliothek in München, Wiesbaden: Harrassowitz, 1970 [repr. of the edition München 1866], 347f.

³³ The order/numbering of the pages in the original manuscript is also off: 187-166, 139, 165-140, 138-135, 120, 134-121, 119-110. (This order has already been realized for the online resource).

4. Staatsbibliothek, Berlin: MS or fol. 708³⁴ (B):

Lacking the appendix, this is only a partial copy of the text. It is also written in black ink, in *naskhi* script. The manuscript consists of only 16 pages, with about 26 lines per page and very small signs. The attribution to Ibn Waḥshiyya in the appendix is missing, but the title page (fol. 1r) names the author as al-Shaykh al-Wajjiyah (Wajih?) al-Nabaṭiyya; it is dated 1214/1800.

5. Carl Brockelmann mentions another manuscript in the al-Khizāna al-Taymūriyya library in Cairo,³⁵ now the National Library V:346.

6. Hammer (-Purgstall), Joseph (1806): *Ancient Alphabets and Hieroglyphic Characters Explained. With an Account of the Egyptian Priests, their Classes, Initiation, and Sacrifices* (H):

The original text on which Hammer's Edition is based is often said to be lost.³⁶ Nevertheless, Gustav Flügel mentioned in his catalogue³⁷ that the manuscript in Wien was Carl Rosetti von Rosenhügel's present to the Hofbibliothek and he was in fact the Austrian consul-general in Cairo, who gave the manuscript of the *Shawq* to Hammer.³⁸ Hammer's edition corresponds very closely to the manuscript in Wien: The red dots in the manuscript correspond exactly to the otherwise not-attested punctuation in Hammer's edition. There are very few deviations between the two scripts, and those present can be explained as printing mistakes.³⁹ Even the style of the title of chapter eight seems to be directly transferred to the edition.

7. There is supposed to be one additional manuscript (T) in the Sipahsalār library in Tehran, which has been reproduced at the end of Ṭabbā's work on manuscripts.⁴⁰ The edition nevertheless does not mention a manuscript number⁴¹ or any

³⁴ Link to the online resource: http://digital.staatsbibliothek-berlin.de/werkansicht?PPN=PPN749693584&PHYSID=PHYS_0001&DMDID=DMDLOG_0001 (date of access 07.11.2016).

³⁵ Formerly the library of Aḥmad Taymūr Pasha, cf.: Carl Brockelmann, *Geschichte der arabischen Litteratur*, 1. Supplbd., Leiden: Brill, 1937, 431. The manuscript is mentioned without a number in an article on manuscripts in that library: 'Isā Iskandar al-Ma'lūf, "Khazā'in al-kutub al-'arabiyya min nafā'is al-khizāna al-Taymūriya", in: *Revue de l'Académie Arabe de Damas* 3/12 (1923), 365.

³⁶ El Daly, *Egyptology*, 68.

³⁷ Gustav Flügel, *Die arabischen, persischen und türkischen Handschriften der Kaiserlich-Königlichen Hofbibliothek zu Wien / im Auftrag der Vorgesetzten k.k. Behörde geordnet und beschrieben*, 1. Wien 1865, 71-72.

³⁸ Joseph v. Hammer-Purgstall, *Erinnerungen aus meinem Leben (1774-1852)*, Leipzig/Wien 1940, more information below.

³⁹ There are only a few deviations which are either connected to the writing of the *hamza* or simple printing mistakes, which become obvious when the manuscript is compared to Hammer's translation, ex.: *al-ṣitin* instead of *al-ṣin* (Hammer 92/12; Wien 172/5) where the letter *ya* was mistakenly printed as a *ta*, which he nevertheless translated as 'China': 24.

⁴⁰ Iyād Ṭabbā', *Manhaj taḥqīq al-makḥūṭāt*, Damascus: Dār al-Fikr, 2003.

further description of the manuscript. The dating is the same as in the manuscript in Wien (1753). Interestingly, this manuscript is very close to Hammer's edition, it even reproduces some of his apparent printing mistakes, which are not found in the other manuscripts.⁴²

Finally, Athanasius Kirchner (1602-1680), a 17th-century polymath, could have seen a copy of *Shawq* in Malta (see below, epilogue).

All extant manuscripts are therefore copies produced in a 50 year period, from 1750 to 1800. They are all characterized by very little deviation, most of which can be interpreted as faulty repetitions or reading/writing mistakes, which seems to make the hypothesis of a common archetype reasonable. But in general it is surprising how faithfully the signs and their Arabic translations were copied in all works on magic alphabets. Though in the *Shawq* the same order of the Arabic alphabet is not always used, which would make the copying process easier, only the Tehran manuscript has five instances of divergent interpretation of the magical signs.⁴³

Ancient Egypt – the excursus of the Harāmisa

Echoes of Pharaonic Egypt, understood as a mythical space and cultural icon for mysterious wisdom, are very frequent in the *Shawq*, which denotes a strong “Egyptianizing” flavor.⁴⁴ Many sages or alphabet inventors are either identified as Egyptians or appear connected to *topoi* commonly related to Egypt – Pharaohs, pyramids, temples, graves, hidden treasures, mummies and hieroglyphs. This tendency suggests a regional, local Egyptian origin, particularly as references to Babylonia and Persia are rare.⁴⁵

⁴¹ No manuscript of this title has yet been found in the catalogues of Tehran's libraries.

⁴² Seeing that also the dating of the manuscript is the same, it could be a copy of Hammer's edition: ex.: The explanations of the ‘third group of *Harāmisa*’, which is added on the margin of all the manuscripts, is not reproduced in H. 100 or T. 183; the above mentioned printing error *al-ṣitin* instead of *al-ṣin* (China) is also found in both texts (H., 92/T., 179). There are many similar examples, which will be discussed in a different context.

⁴³ This concerns only the 8th chapter, the wrong interpretations in the Tehran manuscript are: Page 194/line16: kh for h; z for t (H., 117/line 5); page 193/line 9: d for d and d for d (H., 115/line 10); page 195/line 7: h for j (H., 118/line 4).

⁴⁴ We have to emphasize that Pharaonic Egypt is not the only reference to a mythic pre-Islamic past and its people. Many of the alphabets are attributed to sages and philosophers of Greek and Roman antiquity, others to Nabateans, Hebrews, Indians, and Berbers. There are some remarkable absences, too: Ancient Iran and the Sasanians are rather absent, and the same applies to Biblical and Qurʾānic figures.

⁴⁵ This is a peculiar selection that might indicate an Egyptian origin of the *Shawq*, since it denotes a need to construct and assert a regional Egyptian identity; but this aspect deserves a deeper investigation that goes beyond the scope of this article. The appendix is completely different, here Babylonia is very present.

The most extensive passage referring to Ancient Egypt is to be found in the eighth chapter, within a remarkable excursus on the Hermes or *Harāmisa*. These are presented as initiated scholars, sages or priests of a peculiar, pagan religion (*al-barāmisa al-khāṣṣa*); the text also includes a description of their practice and rituals.⁴⁶ Unfortunately, this highly interesting amalgam of fantastic legends and half-truths has never been investigated in greater detail.⁴⁷ On the one hand, the text clearly belongs to the Arabic Hermetic tradition, which is rooted in the late-antique Hermetism: It mentions the pagan divinity Hermes Trismegistos, and it knows the Arabic equivalence, *Hirmis al-muthballath al-ni‘ma*,⁴⁸ it further refers to the connection of the Hermetical writings with the scriptures of Idris-Enoch,⁴⁹ and it also mentions Asklepios.⁵⁰ However, the *Harāmisa* excursus in the *Shawq* either reflects a very early stage of the legend, or is part of a peculiar, yet unknown, regional tradition. This assumption is based on the fact that the text neither knows the standard Arabic Hermetic history (known as the *Legend of the Three Hermes*)⁵¹ nor refers to it. According to this standard account, first attributed to the ninth-century astrologer Abū Ma‘shar, Hermes was divided into three personalities: The first, who built the pyramids and invented the hieroglyphs, lived in Egypt before the Flood; the second, the inventor of astrology, lived in Babylonia; the third lived in Egypt after the Flood, and was an author of alchemical and magical treatises. This story became the “canonical” Arabic legend of Hermes Trismegistos from the 10th century onwards and is preserved in many variants, well until the 14th century.⁵²

By contrast, the excursus neither mentions the Flood, nor the pyramids, nor any multiplicity of Hermes. In fact, it divides the *Harāmisa*, which are understood to be peculiar *groups of people*, and not individuals, into four *madhābib* or schools. The first, the *Harāmisa al-Hūmīyya* (?), were the descendants of Hermes the Great and the most exclusive class; the second, the *Harāmisa al-Pināwalūziyya* (?),⁵³ were the descendants of his brother *Asqilibiyānūs* (Asklipianos); the third were the Eastern-

⁴⁶ See pages 14-40 (Arabic)/78-133 (translation). Cf. Hammer in his introduction, XIV, he expresses enthusiasm that these passages could cast “new light to the catacombs of Saqqara”.

⁴⁷ Isabel Toral-Niehoff is preparing a commented translation of these passages.

⁴⁸ More common as *al-muthballath al-ḥikma*, see van Bladel, *Arabic Hermes*, 122.

⁴⁹ In Arabic culture, the prophet Idris was soon equated with Enoch, see van Bladel, *Arabic Hermes*, 164-184. This identification is to be found since the 9th century, see van Bladel, *Arabic Hermes*, 181.

⁵⁰ Or Asklipianos.

⁵¹ See Cook, *Pharaonic Egypt*, 71, there called “hermetic history” and passim; cf. also van Bladel, *Arabic Hermes*, 123-163, where he investigates in detail origins and further development of the legend. Both scholars agree in the fact that since the emergence of the legend in the late ninth century (attributed to the astrologer Abū Ma‘shar of Balkh, d. 886), this account became the standard in Arabic tradition.

⁵² Cf. for example van Bladel, *Arabic Hermes*, 157-159, referring to the version by Ibn Nubāta (686-768/1287-1366).

⁵³ Astonishingly in all manuscripts the Persian letter ‘p’ is reproduced, Paris fol. 60r, Wien, 95, Berlin, 28, Bayern, 47, only in the Tehran manuscript, 179, it could be read as ‘Yanāwalūziyya’.

ers (*isbrāqiyyūn*), the descendants of Hermes's sister; finally, the fourth were the *mashshā'ūn* (Peripathetics?), hybrid descendants of Hermes and ordinary people.

Especially interesting is an extended passage describing a peculiar *rite de passage*, which seems partly inspired by Christian baptism rituals, and partly by legends about temples, bizarre interpretations of Egyptian sarcophagi, and some reminiscence of mystery religions: Accordingly, the children were first presented to the High Priest, then put into a coffin, asked several questions about their spiritual identity, and finally urged to keep secret the mystery of their religion. Further important elements are fumigations with sacred plants, sprinkling with holy water, bloody sacrifices of rams and bulls and, finally, mysterious predictions uttered by the severed heads of the sacrificed animals.⁵⁴

The possibility that this account is a late falsification made by someone unaware of the well-known Arabic Hermetic tradition of the Three Hermes cannot be excluded; however, since the text lacks the overt anachronisms that are common in other alphabetical texts⁵⁵ (for instance, frequent references to Islamic religion/institutions, or to late historical/religious figures), it is more plausible to suppose an early dating, probably in the late 9th century, before the *Legend of the Three Hermes* became the standard Hermetic history. The late dating of the manuscripts, all copied in the 18th century, and probably all based on the same archetype, suggests eventually a yet-unstudied interest in Egyptian mysteries and hieroglyphs in the Late Ottoman period, which parallels similar European trends. However, to be conclusive, these passages and the complete *Shawq* require a further study, based on the comparison to similar magical legends and alphabetic treatises in Arabic, as well as in the late-antique tradition.

Notwithstanding the issue of dating, the *Shawq* testifies to Medieval Arabic perceptions of Egypt and the ongoing fascination with the Egyptian scripts. Thus, it continues traditional visions of Egypt firmly rooted in the region – including mistakes, misunderstandings and re-interpretations of well-known Egyptian motifs like hieroglyphs – and should be seen as a legitimate part of the lega-

⁵⁴ The using of oracular heads, frequently severed human heads, for purposes of divination appears frequently in Middle Eastern traditions, s. Kevin Lagrandeur, "The Talking Heads as a Symbol of Dangerous Knowledge in Friar Bacon and in Alphonsus, King of Aragon", in: *English Studies* 80/5 (1999), 408-409.

⁵⁵ Complete works on alphabets are for example Bibliothèque Nationale MS arabe 2675, 2676, 2703, 2726, 2727. But magic alphabets are more frequently introduced into greater works of occult sciences, (ex. Bibliothèque Nationale, Paris MS arabe 2405, 2595, 2609, 2626, 2634, 2635, 2680, 2681) or treasure hunting manuals (ex. Bib. Nat. Paris: MS arabe 2357, 2602, 2764, 2765, 2766, 2767). The resemblance between *Shawq* and other works on alphabets seem to be mainly restricted to some individual alphabets (like the above mentioned Indian ciphers or the tree alphabet of Platon) with the other works being rather characterized by a religious and theoretical approach to the foreign scripts. Annette Sundermeyer is currently preparing her thesis (HU Berlin) on the reception of hieroglyphs in Arabic context, in which also the connection between different treatises on alphabets will be discussed.

cy of Egyptian Culture.⁵⁶ Thus, if we put aside the question of ‘authentic’ vs. ‘erroneous’ interpretations of Egyptian culture, we might conclude that the Medieval Arabic perception of Ancient Egypt belongs to a much wider context of a long-lasting cultural tradition of ‘Egyptianizing’ in the sense of going Egyptian.

Epilogue: Eastern and Western Egyptomania interacting

The Arabic text by Ibn Wahšhiyya has also a very interesting history in the context of European Egyptology and *Egyptomania*. The first editor and translator of the manuscript was Joseph (von) Hammer, an Austrian scholar better known by his later name Joseph Hammer-Purgstall, who was to become one of the founders of Oriental Studies in Europe.⁵⁷ In 1799, during Napoleon’s expedition to Egypt, the talented young Joseph was sent on a diplomatic mission to Constantinople, where he caught the attention of the British, who were impressed by an ode he had previously composed celebrating Nelson’s victory in the Battle of the Nile.⁵⁸ He then accompanied Captain Sir William Sidney Smith in his vessel *The Tiger* as a translator, first to Syria, and then to Egypt, finally arriving in Cairo on February 22nd 1800,⁵⁹ after the French had left. He devoted his stay in Egypt mainly to acquiring Oriental manuscripts – as for example *Thousand and One Nights* and the *Romance of Antar*. The manuscript of the *Shawq* was a present of the then-Austrian consul, General Rossini, who was a great collector of Egyptian antiquities.⁶⁰

⁵⁶ For the history of “Egyptianizing Egypt” in antiquity cf. M. J. Versluys, “Understanding Egypt in Egypt and Beyond”, in: *Isis on the Nile. Egyptian Gods in Hellenistic and Roman Egypt. Proceedings of the 4th International Conference of Isis Studies, Liège, November 27-29, 2008*, L. Bricault, M. J. Versluys, eds., Leiden: Brill, 2010, 7-36, 7-9 and passim.

⁵⁷ Wilhelm Baum, “Josef von Hammer-Purgstall. Ein österreichischer Pionier der Orientalistik”, in: *Österreich in Geschichte und Literatur* 46 (2002), 224-239 and Hannes D. Galter, “Joseph von Hammer-Purgstall und die Anfänge der Orientalistik”, in: *Kunst und Geisteswissenschaften aus Graz*, Karl Acham, ed., Wien: Böhlau 2009, 457-470.

⁵⁸ Baum, “Josef von Hammer-Purgstall”, 238. Hammer-Purgstall, *Erinnerungen und Briefe. Briefe von 1790 bis Ende 1819*, Walter Höflechner and Alexandra Wagner, eds., 3 vols., Graz: Zentrum für Wissenschaftsgeschichte, 2011, vol. 3, 1887, Nr. 16 “Auf den Sieg der Britten vor Alexandria”.

⁵⁹ The Austrians agreed because they wanted him to check the attitude of the Austrian ambassador in Cairo regarding the French; Baum, “Josef von Hammer-Purgstall”, 237.

⁶⁰ In his memoirs Hammer explains that Rossini gave him this manuscript (which was for him the most valuable he had and the only one he did not have to hand over to the French), because he was certain that it contained the key to the hieroglyphics, cf. Hammer-Purgstall, *Erinnerungen*, 227. Cf. also the reference to Rossini’s country house, which was decorated with Egyptian antiquities, taken from a description by J. P. Marcel: “Un negociant M. Carlo Rosetti possedoit à Boulac un jolie maison de champagne, dont l’estampe cijointe presente le vestibule: on y a entassé des antiquités égyptiennes, qu’y se trouvent encore. On y voit entre autres une momie dans un corceuil de pierre; l’artiste a sculpté sur le Courvecle una figure humaine dans l’attitude d’une personne endormie” quoted in: *Wiener Literaturzeitung*, August 1816, 1036.

Joseph Hammer edited and translated the text into English, seemingly enthusiastic about its content. According to the correspondence between Sylvestre de Sacy and Hammer, he was still working on the translation in early 1803.⁶¹ The booklet was finally published in London in 1806 by William Bulmer, in a “typographical tour de force”, since the different “magic” letters had to be fabricated separately.⁶² Thus, Ibn Waḥshiyya’s treatise became one of the earliest Arabic texts ever translated into a modern European language and, eventually, also one of the first Arabic texts ever printed in England.⁶³

The amazing interest for this bizarre booklet has to be seen in the context of the ongoing hieroglyphic ‘fever’ which marked the decades between the discovery of the (not yet deciphered) Rosetta stone (1799) and Champollion’s final decipherment (1821). It was a period in which any text on hieroglyphs attracted the almost ecstatic attention of especially French and English scholars, competing eagerly to be the first to ‘crack’ the code. Joseph Hammer refers to this French-British rivalry in his introduction, remarking with slight contempt upon the “French Savans, who, though successful in collecting many valuable Oriental books and manuscripts, failed in their endeavours to procure a satisfactory explanation of the Hieroglyphics.”⁶⁴ He proudly presents his translation that “gives beside a key to the hieroglyphics, and in the same chapter a curious account of the different classes of the Egyptian priests, their initiation and sacrifices.”⁶⁵ It is clear that Joseph Hammer saw his translation as a valuable ‘British’ contribution to the debate and, as such, it was celebrated among British scholars, who proudly thought they had won the race to be the “first to decipher”.⁶⁶ Joseph Hammer was not the first European who pointed to Ibn Waḥshiyya’s text; he was rather inspired by earlier readings. Hammer explicitly refers to Athanasius Kirchner, the famous 17th-century polymath who, among other things, claimed to have deciphered the hieroglyphs. Kirchner explains that he had already known another manuscript from Malta:

*Nam Aben Wabshia – primus Aegyptios libros in linguam arabicam transtulit, quem nos in Melitae inter spolia Turcorum repostum singulari Dei providentia in arabicum reperimus.*⁶⁷

⁶¹ Letter 22 June 1803, Hammer-Purgstall, *Erinnerungen*, 630 ff.: Letter from Sylvestre de Sacy to Hammer, responding to a previous letter from February with a question regarding the identity of Ibn Waḥshiyya which de Sacy identified as a son of the author of the *Filāḥa*.

⁶² Geoffrey Roper, “Arabic Printing and Publishing in England before 1820”, in: *Bulletin of the British Society for Middle Eastern Studies*, 12/1 (1985), 12-32, note 100. William Bulmer was the well-credited publisher for the East India Company in London; Roper, “Arabic Printing”, 22) and was one of the few publishers and type-setters in England of texts in Arabic letters.

⁶³ For a history of Arabic printing in England cf. Roper, “Arabic Printing”, passim.

⁶⁴ Hammer, *Alphabets*, I.

⁶⁵ Hammer, *Alphabets*, IV.

⁶⁶ See the review in: *The Critical Review, or Annals of Literature*, 3rd Series, 12 (1808), 60-65.

⁶⁷ Quotation in Hammer, *Ancient Alphabets*, XVIII (referring to the *epistola paraenetica*, 109).

But, as is well known, Hammer's enthusiastic appreciation of Ibn Waḥshiyya's booklet proved mistaken. The hieroglyphs were correctly deciphered some years later by the Frenchman Champollion, taking as its base a reproduction of the Rosetta Stone. Ibn Waḥshiyya's treatise eventually fell into oblivion.

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