

RUPERTO CAROLA HEIDELBERG UNIVERSITY /CLUSTER OF EXCELLENCE
ASIA AND EUROPE IN A GLOBAL CONTEXT

NATURAL DISASTERS IN
MAMLŪK EGYPT (1250–1517):
PERCEPTIONS, INTERPRETATIONS
AND HUMAN RESPONSES

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PREFACE

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collecting manuscript sources, I received the very kind help of the authorities at the *St. Petersburg Institute of Oriental Manuscripts* (Russian Academy of Sciences), *Egyptian National Library and Archives*, *Staatsbibliothek zu Berlin*, and *Bibliothèque Nationale de France*. I also wish to thank the staff of these libraries, and in particular the curators of the manuscript collections for their generous support and for providing photographs of manuscripts that were necessary for the research. I am also indebted to William Tucker and Stuart Borsch for allowing me to gain an insight into their unpublished papers.

Lastly, in this preface I present a few comments concerning the system of transliteration, dates and editorial symbols used in this study. Throughout the manuscript I have utilised the Arabic transliteration system approved and published by the *Library of Congress*.¹ In accordance with *The Chicago Manual of Style*,² I have

¹ R. Barry (ed.), *ALA-LC Romanization Tables: Transliteration Schemes for non-Roman Scripts; Approved by the Library of Congress and the American Library Association*, Washington: Library of Congress 1997. See also <http://www.loc.gov/catdir/cpsu/romanization/arabic.pdf>.

rendered in English the Arabic words that exist in English. Years, months, and days are recorded as given in the Arabic sources, i.e. Hijrī dates and Coptic months appear along with their corresponding Gregorian equivalents. The Hijrī date is separated from the Gregorian date with a slash, for example, 702/1302–3 or 702/1303 when the Hijrī month is given and the exact dating is possible. When Hijrī or Gregorian dates appear in isolation, A.H. (Hijrī) and A.D. (Gregorian) accompany them, as for example in 702 A.H. or 1303 A.D. For the computation of dates I used a calendar converter available here:

<http://www.al-islam.com/Loader.aspx?pageid=620>.

Square brackets, i.e. [], appear when information, which is essential to our understanding of some translated parts, is missing from the original texts. Suspension points between brackets, i.e. [...], mean that certain parts of the text have been omitted. When square brackets are italicised, i.e. [...] , it means that they appear in the western translations of the original texts.

² *The Chicago Manual of Style: the Essential Guide for Writers, Editors, and Publishers*, 16. ed., Chicago: University of Chicago Press 2010, 559–562.

I have retained the system of folio numbering as it appears in the manuscripts and the published guidelines to them. Accordingly, the following three types of numbering are given in the references:

- If two pages of the folio have separate numbers, they are written accordingly, e.g. fol. 345, fol. 346.
- If each folio consisting of two pages has one number—which is mainly the case with manuscripts from *Staatsbibliothek zu Berlin*—the front of the left side page appears along with the folio number and the letter *a* and the reverse side of the page appears with the same folio number and the letter *b*, like, for example, 21*a*, and 21*b*. This is in accordance with the method used by William Ahlwardt who catalogued the Arabic manuscripts of the *Staatsbibliothek zu Berlin*.³
- Some of the manuscripts, mainly those from the *Egyptian National Library and Archives*, have no numbers or are unreadable. In such

³ W. Ahlwardt, *Die Handschriften-Verzeichnisse der königlichen Bibliothek zu Berlin. Verzeichnis der arabischen Handschriften*, vol. 5, Berlin: A. Asher & C. 1893.

cases, the counting of folios begins with the right side, numbered as fol. 1v (verso), and continues with the left side numbered as fol. 1r (recto). This method is in accordance with the system of right-to-left languages such as Arabic.

PRELIMINARY REMARKS

1. Introduction

During the last decades, scientific interest in the environment, natural hazards and disasters has increased enormously. A number of scientists make climate change responsible for the rise in the number of natural hazards such as floods, droughts, storms, and hurricanes, which are referred to as “natural disasters”¹ in this study. With the

¹ In this thesis, I use the terms “natural hazard” and “natural disaster” synonymously, although they have different connotations: the former designates an environmental event; the latter is a social event as “disasters do not occur out of context but are embedded in the political structures, economic systems and social orders of the societies in which they take place.” (G. Bankoff, *Cultures of Disaster. Society and Natural Hazard in the Philippines*, London: Routledge 2003, 152.) See the distinction between these terms presented on the basis of the equivalent German concepts “Naturgefahr” and “Naturkatastrophen” in D. Groh, M. Kempe et al., Einleitung. Naturkatastrophen—wahrgenommen, gedeutet, dargestellt, in *Naturkatastrophen. Beiträge zu ihrer Deutung, Wahrnehmung und Darstellung in Text und Bild von der Antike bis ins 20. Jahrhundert*, ed. D. Groh, M. Kempe et al., Tübingen: Gunter Narr Verlag 2003, 14–15.

help of different interdisciplinary methods, they try to reconstruct the climate of the past centuries not only in Europe² but also in the Middle East.³ This kind of information can contribute to a better understanding of the physical circumstances of some catastrophic

² R. Glaser (ed.), *Klimgeschichte Mitteleuropas: 1000 Jahre Wetter, Klima, Katastrophen*, Darmstadt: Wissenschaftliche Buchgesellschaft 2001. R. Glaser and H. Stangl, Climate and Floods in Central Europe since AD 1000: Data, Methods, Results and Consequences, *Surveys in Geophysics* 25 (2004), 485–510. See also different projects launched under the direction of Professor Dr. Rüdiger Glaser on www.geographie.uni-freiburg.de/ipg/team/glaser_ruediger.

³ St. Vogt, R. Glaser et al., Assessing the Medieval Climate Anomaly in the Middle East: The Potential of Arabic Documentary Sources, *Science Highlights: Medieval Climate* 19/1 (March 2011). H. Grotzfeld, Klimgeschichte des Vorderen Orients 800–1800 A.D. nach arabischen Quellen, in *Historical Climatology in Different Climatic Zones = Historische Klimatologie in verschiedenen Klimazonen. Würzburger geographische Arbeiten*, ed. R. Glaser and R. Walsh, Würzburg: Im Selbstverlag des Instituts für Geographie der Universität Würzburg 1991, 21–43. K. Chalyan-Daffner and E. Marcussen, Hybridity of Historical Disasters. Nature, Society and Power. Conference in Beirut, *AHF-Information* 084 (2010), 1–2.

events in the past, present and future. However, such scientific work focuses mainly upon the collation and evaluation of data, which at its core conveys environmental aspects.⁴

Apart from the scientific research, there has been a marked rise of interest in the study of natural disasters across the fields of the humanities and social sciences.⁵ After all, natural hazards with

⁴ Groh, Kempe et al., Einleitung, 13.

⁵ A. Janku, G. Schenk and F. Mauelshagen (ed.), *Historical Disasters in Context. Science, Religion, and Politics*, New York: Routledge 2012. G. Schenk (ed.), *Katastrophen. Vom Untergang Pompejis bis zum Klimawandel*, Ostfildern: Thorbecke 2009. G. Schenk and J. Engels, Historical Disaster Research. Concepts, Methods and Case Studies, *Historical Social Research* 121=32.3/Special Issue (2007). G. Schenk, Lektüren im Buch der Natur. Wahrnehmung, Beschreibung und Deutung von Naturkatastrophen, in *Geschichte schreiben. Ein Quellen- und Studienhandbuch zur Historiografie (ca. 1350–1750)*, ed. S. Rau and B. Studt, Berlin: Akademie Verlag GmbH 2010, 507–521. G. Schenk, ‘... prima ci fu la cagione de la mala prodenza de’ Fiorentini...’ Disaster and ‘Life World’—Reactions in the Commune of Florence to the Flood of November 1333, *The Medieval History Journal* 10/1&2 (2007), 355–386. H. Sonnabend and G. Schenk, *Initiativen zur*

catastrophic outcomes are often generated in the process of the

historischen Katastrophenforschung. Untersuchung von Naturkatastrophen mit Stuttgarter Historikern, Stuttgart: Universität Stuttgart 2006, 78–88. K. Chalyan-Daffner, Vulnerability and Resilience in Development Context. The 5th KatNet-Conference on “Vulnerability and Resilience in Development Context,” Disaster Research Centre of the Institute of Social Sciences of Christian-Albrecht University in Kiel, *H-Soz-u-Kult* (26.10.2009). Chalyan-Daffner and Marcussen, Hybridity of Historical Disasters. K. Chalyan-Daffner and J. Itin, Cultures of Disaster. Concepts and Research. Workshop Organised in the Karl Jaspers Centre for Advanced Transcultural Studies, Heidelberg University, *H-Soz-u-Kult* (01.05.2009). G. Kreps, Disaster and the Social Order, *Sociological Theory* 3/1 (1985). M. Voss, The Vulnerable can't Speak. An Integrative Vulnerability Approach to Disaster and Climate Change Research, *Behemoth. A Journal on Civilization* 3 (2008). See a body of literature devoted to the classification, description, and assessment of disasters in *Disasters: The Journal of Disaster Studies and Management* published by Basil Blackwell, Oxford, 1977–present. C. Felgentreff, Th. Glade, *Naturrisiken und Sozialkatastrophen*, Berlin: Spektrum Akademischer Verlag 2008. See also projects launched by Freie Universität Berlin, Fachbereich Politik- und Sozialwissenschaften on www.katastrophennetz.de/.

combined effects of physical, social, economic, political, and other factors. This argument strongly emphasises the hybrid character of a natural disaster, seeing it as a multidimensional social phenomenon,⁶ lacking a unanimously agreed definition, as examinations of such events cross the boundaries of nature and culture,⁷ nature and

⁶ A. Oliver-Smith, Theorizing Disasters: Nature, Power, and Culture, in *Catastrophe & Culture: the Anthropology of Disaster*, ed. S. Hoffman and G. Button, Santa Fe: School of American Research Press 2002, 22–24, 43–45. M. Juneja and F. Mauelshagen, Disasters and Pre-Industrial Societies: Historiographic Trends and Comparative Perspective, *The Medieval History Journal* 10/1 (2007), 5. A. Ranft and S. Selzer, Städte aus Trümmern. Einleitende Überlegungen, in *Städte aus Trümmern. Katastrophenbewältigung zwischen Antike und Moderne*, ed. A. Ranft and S. Selzer, Göttingen: Vandenhoeck & Ruprecht 2004, 11.

⁷ The word “culture,” for which it is hard to find an adequate all-embracing definition, refers here, as David Alexander defines it, to a “summation of beliefs and behavioural patterns, the imprint of history and the force of achievements of a particular people. It is made explicit in artefacts and symbols, ideas and systems of values. The resulting cultural systems are both the fruit of past actions and a strong conditioner of future ones” which may change due to a foreign influence as “cultures are dynamic phenomena

society. This character makes them equally objects of the natural and social sciences.⁸ However, in order to understand how disasters influence and transform human cultures, it is necessary to examine them from the perspective of a specific socio-cultural history. This means that this research not only sees a natural phenomenon take

that can mutate [...]." D. Alexander, *Confronting Catastrophe. New Perspectives on Natural Disasters*, Oxford: University Press 2000, 61–62.

⁸ See discourses on disaster definitions in Oliver-Smith, *Theorizing Disasters*, 22–24, 43–45. E. Quarantelli and R. Perry (ed.), *What is a Disaster? New Answers to Old Questions*, Philadelphia, Pa.: Xlibris, 2005. Alexander, Confronting Catastrophe, 3, 7f. Groh, Kempe et al., Einleitung, 15–16. E. Quarantelli, Statistical and Conceptual Problems in the Study of Disasters, *Disaster Prevention and Management* 10/5 (2001), 325, 332f. J. Helbling, Coping with “Natural” Disasters in Pre-industrial Societies: Some Comments, *The Medieval History Journal* 10/1/2 (2006), 434f. O. Weinritt, The Floods of Baghdad. Cultural and Technological Responses, in *Natural Disasters, Cultural Responses. Case Studies toward a Global Environmental History*, ed. Ch. Mauch and Ch. Pfister, Lanham: The Rowman & Littlefield Publishing Group 2009, 103. M. Bhargava, Changing River Courses in North India: Calamities, Bounties, Strategies—Sixteenth to Early Nineteenth Centuries, *The Medieval History Journal* 10/1,2 (2007), 183.

centre-stage but also the human factor—the individual and his/her behaviour.

Accordingly, this thesis aims to study how people perceived and interpreted natural disasters, and what measures they took to prevent their occurrences, as well as to mitigate their effects in a specific culture, i.e. Mamlūk Egypt. The choice of approach derives from the state of current research, which, as presented below,⁹ reveals a lack of thorough studies on natural disasters in Egypt during the period of the Mamlūk reign (648–922/1250–1517). The latter was in particular uniquely dependent for its survival upon the Nile, which was the source of a number of disastrous events, all of which are in need of extensive research and focused evaluation.

Apart from this, I have chosen to focus on this region and period because they are marked by socio-cultural literary accomplishments,¹⁰

⁹ See *Chapter 2. State of Research*, p. 24f.

¹⁰ The enormous productivity of Mamlūk authors in the light of numerous narrative sources from the Mamlūk period is remarkable and indisputable. See U. Haarmann, *Mamluk Studies—A Western Perspective*, *Arab Journal for*

achieved and maintained across the millennia of Egyptian history. During its history, Egypt witnessed a spectacular rise from a province—for centuries relegated to the periphery of power: Roman, Byzantine, Umayyad and ‘Abbāsid¹¹—to the Fātimid Caliphate¹² and

the Humanities 13/51 (1995), 336 and *Chapter 3.2.1.1. Annals and Local Chronicles*, p. 269f.

¹¹ R. Ritner, Egypt under Roman Rule: the Legacy of Ancient Egypt, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 1–34. W. Kaegi, Egypt on the Eve of the Muslim Conquest, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 34–62. H. Kennedy, Egypt as a Province in the Islamic Caliphate, 641–868, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 62–86. Th. Bianquis, Autonomous Egypt from Ibn Tūlūn to Kāfir, 868–969, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 86–120.

¹² P. Walker, The Isma‘īlī Da‘wa and the Fātimid Caliphate, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 120–151. P. Sanders, The Fatimid State,

the “imperial metropolis”¹³ of Mamlūk Sultanate. This process, rich in transcultural flows and enhanced by the consolidation of Arab-Muslim society and culture in north Africa and Spain, turned Egypt, whose imperial role culminated during the Mamlūk epoch, to the centre of material and intellectual exchanges between the eastern and western Islamic lands.¹⁴

2. State of Research

Since the 1980s several researchers have contributed to our understanding of natural disasters¹⁵ such as earthquakes, excessive

969–1171, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 151–175.

¹³ S. Humphreys, Egypt in the World System of the Late Middle Ages, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 446.

¹⁴ Humphreys, Egypt in the World System of the Late Middle Ages, 447–448.

¹⁵ See Eric Jones’ general distinction of disasters as 1) geophysical (earthquakes, volcanic eruptions, tsunamis) 2) climatic (hurricanes, typhoons, hailstorms, floods, droughts), 3) biological (epidemics, epizootics, outbreaks of crop disease, locust invasion), and 4) social disasters (warfare, settlement fires, collapse of man-made structures). E. Jones, *The European*

floods, droughts, and epidemics that befell the Islamic Middle East between 661 A.D. and 1500 A.D.¹⁶ These disasters caused massive depopulation, collapse of the agrarian economy, malnutrition, and famines. William Tucker is one of the few scholars to have conducted preliminary work in this field of study, and two of his papers, *Natural Disasters and the Peasantry in Mamlūk Egypt*¹⁷ and *Environmental Hazards, Natural Disasters, Economic Loss, and Mortality in Mamlūk Syria*,¹⁸ give a general treatment of natural disasters which befell Mamlūk territories. However, the limited scope of such papers do not allow him to show the whole picture of disasters and responses to them and so he addresses people's general attitudes to calamities, focusing mainly on psychological aspects.¹⁹

Miracle: Environments, Economies and Geopolitics in the History of Europe and Asia, Cambridge: Cambridge University Press 2003, 24.

¹⁶ W. Tucker, Natural Disasters and the Peasantry in Mamlūk Egypt, *Journal of the Economic and Social History of the Orient* 24/2 (1981), 215.

¹⁷ W Tucker, Natural Disasters, 215–224.

¹⁸ W. Tucker, Environmental Hazards, Natural Disasters, Economic Loss, and Mortality in Mamluk Syria, *Mamlūk Studies Review* 3 (1999), 109–128.

¹⁹ Tucker, Natural Disasters, 215–224.

Most of the other studies of a general character do not explore natural disasters in special socio-cultural contexts—an important aspect for the study of disasters and their impact. Moreover, they focus on one specific disaster, treating them in isolation from different perspectives. In these studies, epidemics—the most destructive of all calamities—is the best-explored field, thanks to the research of Michael Dols²⁰ and Lawrence Conrad.²¹ Furthermore, Muṣṭafā Anwār Ṭāhir,²² Emanuela Guidoboni,²³ ‘Abdallāh Yūsuf al-Ghunaym,²⁴

²⁰ M. Dols, *The Black Death in the Middle East*, Princeton: Princeton University Press 1977. M. Dols, Plague in Early Islamic History, *Journal of the American Oriental Society* 94/3 (July-September 1974), 371–383.

²¹ L. Conrad, Arabic Plague Chronologies and Treatises: Social and Historical Factors in the Formation of a Literary Genre, *Studia Islamica* 54 (1981), 268–307. L. Conrad, Ṭā‘ūn and Wabā’. Conceptions of Plague and Pestilence in Early Islam, *Journal of the Economic and Social History of Orient* 25/3 (1982), 268–307. B. Shoshan and B. Panzac, “Wabā’,” *Encyclopaedia of Islam*, vol. 11, Leiden: Brill 2002, 2–4.

²² M. Ṭāhir, *Nuṣūṣ ḥarabiyah ta’rīkhīyah ‘an al-zalāzil wa-al-barākīn fī al-‘ālam al-‘arabī wa-al-islāmī: min bidāyat al-ta’rīkh al-islāmī ilā al-qarn al-thānī ‘ashar al-hijrī* (min al-qarn al-sādis ilā al-thāmin ‘ashar al-milādiyayn), al-Qāhirah: al-

Charles Melville, and Nicholas Ambraseys²⁵ have made significant contributions to the investigation of earthquakes in the Middle East. Their earthquake catalogues have reconstructed the chronology of earthquakes, which provides a basis for systematic research. However, some of the records in them require a critical review, which

Ma'had al-'ilmī al-faransi lil-āthār al-sharqīyah 2011. M. Tāhir, Traité de la fortification des demeures contre l'horreur des séismes. (Taħṣīn al-manāzil min hawl al-zalāzil) d'Abū'l-Hasan 'Alī Ibn al-Ġazzār, écrit à l'occasion du tremblement de terre de 984H./1576, *Annales Islamologiques* 12 (1975). M. Tāhir, Les grandes zones sismiques du monde musulman à travers l'histoire—I. L'Orient musulman, *Annales Islamologiques* 30 (1996), 79–104.

²³ E. Guidoboni and A. Comastri, *Catalogue of Earthquakes and Tsunamis in the Mediterranean Area from the 11th to the 15th Century*, Roma: Instituto Nazionale di Geofisica e Vulcanologia 2005.

²⁴ A. al-Għunaym, *Sijill al-zalāzil al-'arabī: aħdāth al-zalāzil wa-āthāruhā fī al-mašādir al-'arabiyyah*, Kuwayt: al-Jam'iyyah al-jughrāfiyah al-kuwaytiyah 2002.

²⁵ N. Ambraseys, C. Melville et al. (ed.), *The Seismicity of Egypt, Arabia and the Red Sea. Historical Review*, Cambridge 1994. C. Melville, “Zalzala,” *The Encyclopaedia of Islam*, vol. 11, Leiden: Brill 2002, 428–432.

I will present in the corresponding chapters.²⁶ Moreover, these studies do not demonstrate earthquakes in socio-cultural historical contexts, as they have not attempted to show the impact of earthquakes on specific cultures and societies in terms of perception, interpretation, and response.

Thus, scholars like Mustafā Anwar Tāhir,²⁷ Anna Akasoy,²⁸ Konrad Hirschler,²⁹ Donald Little,³⁰ Reinhard Schulze,³¹ Lutfallah Gari,³² and

²⁶ See *Chapter 4.2. Critical Review of “Doubtful” Earthquakes*, p. 288f.

²⁷ Tāhir, Tahṣīn al-manāzil. Tāhir, Nuṣūṣ ‘arabīyah. Tāhir, Les grandes zones sismiques, 277–294.

²⁸ A. Akasoy, Islamic Attitudes to Disasters in the Middle Ages: A Comparison of Earthquakes and Plagues, *The Medieval History Journal* 10/1–2 (2007), 387–410. A. Akasoy, Interpreting Earthquakes in Medieval Islamic Texts, in *Natural Disasters, Cultural Responses. Case Studies toward a Global Environmental History*, ed. Ch. Mauch and Ch. Pfister, Lanham: The Rowman & Littlefield Publishing Group 2009, 183–196.

²⁹ K. Hirschler, Erdbebenberichte und Diskurse der Kontinuität in der postformativen Periode, *Der Islam* 84 (2008), 103–139.

³⁰ D. Little, Data on Earthquakes Recorded by Mamluk Historians: An Historiographical Essay, in *Natural Disasters in the Ottoman Empire. Halcyon*

Emanuela Guidoboni³³ generally outlined this issue, elucidating basic interpretations of earthquakes in the Islamic Middle East. Their studies have shown that along with physical explanations—which Arab authors like Ibn Sīnā (Avicenna) (d. 428/1037),³⁴ al-Bīrūnī (d.

Days in Crete III. A Symposium Held in Rethymnon 10–12 January 1997, ed. E. Zachariadou, Rethymnon: Crete University Press 1999, 137–144.

³¹ R. Schulze, Islamische Deutungen von Erdbeben und anderen Naturkatastrophen, in *Katastrophen und ihre Bewältigung. Perspektiven und Positionen. Referate einer Vorlesungsreihe des Collegium generale der Universität Bern im Sommersemester 2003*, ed. C. Pfister und S. Summermatter, Bern 2004, 104–119.

³² L. Gari, Knowledge versus Natural Disasters from Arabic Sources, 21.05.2008, www.muslimheritage.com/topics/default.cfm?ArticleID=938.

³³ E. Guidoboni and J. Ebel, *Earthquakes and Tsunamis in the Past. A Guide to Techniques in Historical Seismology*, Cambridge: Cambridge University Press 2009.

³⁴ Ibn Sīnā, *al-Najāh: fī al-ḥikmah al-mantiqiyah wa-al-ṭabī’iyah wa-al-ilāhiyah*, al-Qāhirah: Muḥyī al-Dīn Ṣabrī al-Kurdī 1357/1938, 152–157. Ibn Sīnā (Avicenna) was a prominent physician and Islamic philosopher of Persian origin. Natural sciences presented in his most prominent works such as *al-Shifā’ (The Book of Healing)* and *Kitāb al-qānūn fī al-ṭibb (The Canon of*

after 440/1048),³⁵ and other Arab scholars³⁶ transmitted from Greek theories³⁷—most interpretations of these events, bearing a

Medicine) influenced the development of medicine, natural sciences, and philosophy from the tenth century A.D. onwards in Southern Europe. During this period the transmission of Greek science by the Arabs and the translation of the works of the Arabs into Latin “produced the first Renaissance” in Sicily which flourished in the twelfth century A.D. round Toledo, and soon afterwards in France. A. Goichon, “Ibn Sīnā,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1965, 941–947. See also M. al-Rawi, The Contribution of Ibn Sīnā (Avicenna) to the Development of Earth Sciences, *Foundation for Science, Technology and Civilisation* (November 2002), 1–12.

³⁵ G. Strohmaier, Avicenna und al-Bīrūnī im Dialog über aristotelische Naturphilosophie, in *Von Demokrit bis Dante: die Bewahrung antiken Erbes in der arabischen Kultur*, ed. G. Strohmaier, Hildesheim: Olms 1996, 342–358. al-Bīrūnī, *Kitāb taḥdīd nihāyāt al-amākin li-taṣḥīḥ masāfāt al-masākin*, vol. 25, Frankfurt: Ma‘had ta’rīkh al-‘ulūm al-‘arabīyah wa-al-islāmīyah 1413/1992, 42–55. al-Bīrūnī, *The Determination of the Coordinates of Positions for the Correction of Distances between Cities. A Translation from the Arabic of al-Bīrūnī’s Kitāb taḥdīd nihāyāt al-amākin li-taṣḥīḥ masāfāt al-masākin* by Jamil Ali, ed. F. Sezgin, Frankfurt am Main: Institute for the History of Arabic-

“normative”³⁸ character in Islamic tradition, have theological, mythical or cosmological³⁹ connotations.⁴⁰

Islamic Science at the Johann Wolfgang Goethe Institute 1992, 16–25. al-Bīrūnī was one of the greatest scholars of his time. He was fluent in physical and natural sciences and distinguished himself as a historian and linguist. (D. Boilot, “al-Bīrūnī,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill 1954, 1236–1238.) He was also a prominent astronomer and mathematical astrologer. F. Sezgin, Geschichte des Arabischen Schrifttums, vol. 7, Leiden: Brill 1970, 188f.

³⁶ See Aristotle’s commentary by Yahyā Ibn al-Bitrīq (d. ca. 215/830), Ḥunayn Ibn Ishāq (d. ca. 262/876), and Ibn Rushd (Averroes, “the commentator of Aristotle”) (d. 595/1198) in P. Lettinck, *Aristotle’s Meteorology and its Reception in the Arab World. With an Edition and Translation of Ibn Suwār’s and Ibn Bājja’s Commentary on the Meteorology*, Leiden: Brill 1999.

³⁷ Aristotle, *Meteorology*, Book I, ed. E. Webster, Raleigh: Alex Catalogue 2000.

³⁸ Hirschler, Erdbebenberichte, 103–139.

³⁹ This term is used here in its old sense of the word, denoting study of the universe as a whole. For more details about this concept see S. Colafrancesco, Premessa—Foreword, in *Cosmology through Time. Ancient and*

Finally, despite the huge number of secondary sources relating to the Nile floods,⁴¹ most of these studies focus on statistical hydrological records, geographical, economic, climatic, and water-management aspects, in particular, in the political context of post-Mamlūk countries, situated on the banks of the Nile.⁴² Only a few studies

Modern Cosmologies in the Mediterranean Area. Conference Proceedings, ed. S. Colafrancesco and G. Giobbi, Milano: Mimesis 2003, 7–11.

⁴⁰ Akasoy, Islamic Attitudes to Disasters, 387–410. Schulze, Islamische Deutungen von Erdbeben, 104–119. A. Johns, “Air and Wind,” *Encyclopaedia of the Qur’ān*, vol. 1, Leiden: Brill 2001, 51–55. F. Leemhuis, “Apocalypse,” *Encyclopaedia of the Qur’ān*, vol. 1, Leiden: Brill 2005, 111–114. I. Netton, “Nature as Signs,” *Encyclopaedia of the Qur’ān*, vol. 3, Leiden: Brill 2003, 528–535. K. Hirschler, “Earthquakes,” *Medieval Islamic Civilization: an Encyclopedia*, vol. 1, London: Routledge 2006, 219–220.

⁴¹ About 550 titles containing the word *Nile* appear in the databank of *Index Islamicus*.

⁴² See T. Tvedt, *A Bibliography on the River Nile. The River Nile and its Economic, Political, Social and Cultural Role. An Annotated Bibliography*, vol. 1, Bergen: University of Bergen 2000. R. Collins, *The Waters of the Nile: an Annotated Bibliography*, London: Zell 1991. F. Hassan, *A River Runs through*

explore the disastrous impact of floods during the Mamlūk era (648–922/1250–1517). These studies are Stuart Borsch' papers on the Nile floods and irrigation system,⁴³ Fekri Hassan's papers on extreme Nile floods and famines in the context of global climatic changes,⁴⁴

Egypt: Nile Floods and Civilization, *Geotimes* (April 2005), 22–25. H. Hurst, *The Nile: a General Account of the River and the Utilization of its Waters*, London: Constable 1952. J. Sutcliffe and J. Parks, *The Hydrology of the Nile*, Oxfordshire: International Association of Hydrological Sciences Press 1999. W. Willcocks, *Egyptian Irrigation*, vol. 1–2, London: Spon & Chamberlain 1913. S. Awulachew et al. (ed.), *The Nile River Basin. Water, Agriculture, Governance and Livelihoods*, London: Routledge 2012.

⁴³ S. Borsch, Nile Floods and the Irrigation System in Fifteenth-Century Egypt, *Mamlūk Studies Review* 4 (2000), 131–145. S. Borsch, Environment and Population: The Collapse of Large Irrigation Systems Reconsidered, *Comparative Studies in Society and History* 46 (2004), 451–468.

⁴⁴ F. Hassan, Extreme Nile Floods and Famines in Medieval Egypt (AD 930–1500) and their Climatic Implications, *Science Direct. Quaternary International* 173–174 (2007), 101–112. F. Hassan, Historical Nile Floods and their Implications for Climatic Change, *Science* 212 (June 1981), 1142–1145.

William Tucker's encyclopaedic entry on floods⁴⁵ and Yaacov Lev's paper on famines.⁴⁶ However, none of these papers holistically treat the perceptions, interpretations, and human responses to Nile-related disasters.

As no thorough study of natural disasters currently exists covering how people perceived, interpreted and combated them during the Mamlūk period (648–922/1250–1517) from a historical socio-cultural perspective, this thesis seeks to fill this gap by exploring these issues based on the selected primary sources. The aim is to contribute to a better understanding of the socio-cultural atmosphere and conditions

⁴⁵ W. Tucker, "Floods," *Medieval Islamic Civilization: an Encyclopedia*, vol. 1, Routledge 2006, 258–259. W. Tucker, "Weather," *Medieval Islamic Civilization: an Encyclopedia*, vol. 1, Routledge 2006, 859–860. I would like to express my gratitude to William Tucker and Gerrit Jasper Schenk for allowing me to gain an insight into the copy of William Tucker's unpublished paper on famines: W. Tucker, *The Effects of Famine in the Medieval Islamic World*.

⁴⁶ Y. Lev, The Regime and the Urban Wheat Market: The Famine of 662/1263–64 in Cairo, *Mamlūk Studies Review* 8 (2004), 149–161.

prevalent during the period under consideration. This thesis also seeks to show the necessity of a holistic treatment of natural disasters as one disastrous event usually generates others.⁴⁷

3. Research Frame and Limitations

Before presenting the scope of the study and methods of research, in the following I will give a brief overview of the geographical-historical background of the research frame and limitations. The Mamlūks, a word meaning “owned” in Arabic, were originally military slaves brought to Egypt as young boys from their homelands in Central Asia and raised as Muslims. They acquired military training as well as religious instruction and upon graduation they served as

⁴⁷ See, for example, the interrelation between different natural disasters and epidemics in J. Watson, M. Gayer et al., Epidemics after Natural Disasters, *Emerging Infectious Diseases* 13/1 (January 2007), 1–5. Ibn Khaldūn, *The Muqaddimah. An Introduction to History* tr. by F. Rosenthal, vol. 2, London: Routledge & Kegan Paul 1958, 136. See further discussion of the interrelation between disasters, p. 335f., 459f., 556f., and 50.

warriors for the Ayyūbid Sultans, the ruling dynasty of Egypt founded by Ṣalāḥ al-Dīn (d. 589/1193).⁴⁸

Realising the strength of their position after the assassination of the last Ayyūbid Sultan of Egypt Tūrān Shāh Ibn Ayyūb (d. 647/1250),⁴⁹ the Mamlūks seized power in 648/1250 under the rule of Shajar al-Durr (d. 655/1257),⁵⁰ the latter's step mother and widow⁵¹ of al-Ṣāliḥ

⁴⁸ R. Irwin, *The Middle East in the Middle Ages. The Early Mamluk Sultanate 1250–1382*, London & Sydney: Croom Helm 1986, 3f. L. Northrup, The Baḥrī Mamlūk Sultanate 1250–1390, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 244, 249. R. Amitai-Preiss, *Mongols and Mamluks. The Mamluk-Īlkhānid War, 1260–1281*, Cambridge: Cambridge University Press 1995, 17f. D. Richards, “Ṣalāḥ al-Dīn,” *The Encyclopaedia of Islam*, vol. 8, Leiden: Brill 1995, 910–914.

⁴⁹ Tūrān Shāh was al-Ṣāliḥ Ayyūb's son. Amitai-Preiss, *Mongols and Mamluks*, 17–19.

⁵⁰ A. Levanoni, Ṣağar ad-Durr: A Case of Female Sultanate in Medieval Islam, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. U. Vermeulen and J. van Steenbergen, Leuven: Peeters 2001, 209–219.

Ayyūb, the ruler of Egypt from 637–647/1240–1249.⁵² Over the next two centuries, the Mamlūk Sultans ruled over Egypt, Syria, and Palestine. As defenders of Islam, they also offered their protection to the holy cities of Mecca and Medina.⁵³ As a result of external conflicts, political, social, and economic tensions,⁵⁴ as well as the increase of devastating epidemics, droughts, and famines, in

⁵¹ L. Ammann, “*Shadjar al-Durr*,” *The Encyclopaedia of Islam*, vol. 9, Leiden: Brill 1997, 176. ‘A. Qāsim, ‘Asr salātīn al-mamālik, al-Qāhirah: Dār al-shurūq 1415/1994, 7–8.

⁵² D. Richards, “al-Şāliḥ Nadjm al-Dīn Ayyūb,” *The Encyclopaedia of Islam*, vol. 8, Leiden: Brill 1995, 988–989. Amitai-Preiss, Mongols and Mamluks, 18.

⁵³ Irwin, The Middle East in the Middle Ages, 1–21. A. Levanoni, The Mamluks’ Ascent to Power in Egypt, *Studia Islamica* 72 (1990), 121–144. D. Ayalon and P. Holt, “Mamlūk(s),” *The Encyclopaedia of Islam*, vol. 6, Leiden: Brill 1991, 314–331. R. Mortel, Prices in Mecca during the Mamlūk Period, *Journal of the Economic and Social History of the Orient* 32 (1989), 279–334.

⁵⁴ See more on the historical background of this transitional period in M. Winter, The Ottoman Occupation, in *The Cambridge History of Egypt. Islamic Egypt, 640–ý1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 490–517.

particular during the fourteenth and fifteenth centuries A.D.,⁵⁵ the Mamlūks began to lose their power and could not prevent the Ottoman invasion in 922/1517.⁵⁶ Consequently, one by one their territories fell under Ottoman rule.

Although these natural disasters as a whole had a crucial impact on the society in the Mamlūk regions, it is not possible to conduct a thorough examination of catastrophic events across the whole Sultanate, as the Mamlūks controlled a vast territory for more than two centuries. Hence, I will set some limitations concerning the research frame at the outset.

⁵⁵ See the discussion of disastrous droughts, famines, and epidemics in *Chapter 5.8. Case Studies of Disastrous Droughts: Causes, Effects, and Cultural Responses*, p. 555. Cf. the “theory of the decline of the East” in 950–1072 A.D. due to climatic disasters like droughts in R. Ellenblum, *The Collapse of the Eastern Mediterranean: Climate Change and the Decline of the East, 950–1072*, Cambridge: Cambridge University Press 2012. See also Fekri Hassan’s statement about the devastating effects of abrupt climatic events on the flood of the Nile and the Egyptian civilisation in the past. Hassan, A River Runs Through Egypt, 25.

⁵⁶ Winter, The Ottoman Occupation, 490–517.

This study focuses on the nature and impact of the major types of natural hazards—earthquakes, excessive floods, Nile-induced droughts, and famines—which specifically afflicted Mamlūk Egypt, the political and administrative centre of the Sultanate. Through its history, the latter was especially disaster-prone because of the Nile's proximity and its topography up until the twentieth century A.D., when, after several unsuccessful attempts, the Aswān High Dam⁵⁷ was finally constructed to control the Nile's flow through the delta.⁵⁸

⁵⁷ The first Aswān Low Dam was constructed in 1898–1902 A.D. (H. D., The Assuan Dam, *Journal of the Royal African Society* 12/46 (January 1913), 200) and the new Aswān High Dam was built in the 1950s. Y. Meital, The Aswan High Dam and Revolutionary Symbolism in Egypt, in *The Nile: Histories, Conflicts, Myths*, ed. H. Erlich and I. Gershoni, London: Lynne Rienner 2000, 219–227. Hurst, The Nile, 65–69.

⁵⁸ R. Benedick, The High Dam and the Transformation of the Nile, *Middle East Journal* 33/2 (1979), 121f. T. Larsen, The Nature of the Nile, *Saudi Aramco World* 38/6 (November/December 1987), 20–27.

What follows is a general outline of research methods employed in this thesis and the main questions and arguments addressed within it.

4. The Scope of Study: Questions and Methods of Research

4.1. Outline of Part I

This study consists of two major parts. Part I entitled *Natural Disasters Perceived and Interpreted by Mamlūk Authors: Plurality, Transculturality, and Continuity of Interpretations*, offers a theoretical basis paying particular attention to cultural perceptions and interpretations of natural disasters. Its two chapters examine how Arab writers of the Mamlūk period (here taken loosely to mean the period between the thirteenth and the early sixteenth century A.D.) perceived and interpreted natural disasters. These chapters trace the origins and the transmission of major interpretations by means of textual comparison and analysis. They shed light on the microstructure of texts, their function, and the authors' respective intentions. The primary aim of the enquiry here is to bring to light the overall picture of theoretical explanations, which Mamlūk authors presented isolated from the discourse of the socio-cultural impact of natural disasters.

Chapter 1 opens with the thoroughly neglected astro-meteorological explanations of disasters, which show the causality of celestial phenomena with regard to events on earth. *Chapter 2* treats natural disasters in the cosmographic genre of “wonders and oddities” (*‘ajā’ib wa-gharā’ib*). The latter not only brings together attempts at physical explanations, derived mainly from the works of antique philosophers and early Muslim savants (ninth–eleventh century A.D.), but also widely spread fictional stories, which display natural disasters as “marvellous oddities of creation.”

All of the interpretations included in these chapters are viewed from a transcultural perspective, i.e. in comparison with the views of the specific cultures, which played a significant role in their development and maintenance. This transcultural perspective focuses on the “entanglement, intermixing and commonness”⁵⁹ of interpretations, which partially accords to Wolfgang Welsch’ theory of

⁵⁹ W. Welsch, Transculturality—the Puzzling Form of Cultures Today, in *Spaces of Culture: City, Nation, World*, ed. M. Featherstone and S. Lash, London: Sage 1999, 197.

transculturality, promoting “not separation, but exchange and interaction.”⁶⁰ The aim is to show how the interpretations of natural disasters were formed, and to what extent their plots depended on their pre-Islamic counterparts.

⁶⁰ W. Welsch, Transculturality, 197. Although I use Wolfgang Welsch’s definition, which demarks transculturality from inadequate concepts of single cultures, interculturality and multiculturality, I disagree with his argument that transculturality on the macro-level is “the altered cut of today’s cultures” only. (W. Welsch, Transculturality, 194f.) As the following chapters will show, pre-modern or ancient societies were no less transcultural than the globalised societies of the twenty-first century A.D. See further evolutions of the theory of transculturality in the interdisciplinary research of Heidelberg University, which produced a series of studies on Asia and Europe in a transcultural global context: www.asia-europe.uni-heidelberg.de/de/forschung/publikationen.html: M. Herren-Oesch, M. Rüesch et al. (ed.), *Transcultural History: Theories, Methods, Sources*, Heidelberg 2012. G. Schenk (ed.), *Disasters, Risks and Cultures. A Comparative and Transcultural Survey of Historical Disaster Experiences between Asia and Europe*, Heidelberg: Springer [forthcoming], and *Journal of Transcultural Studies* www.archiv.ub.uni-heidelberg.de/ojs/index.php/transcultural/index.

Accordingly, the primary sources under scrutiny in Part I are texts that elucidate the causes of natural phenomena on the basis of a set of astrological manuscripts, among which an astrological treatise of the early sixteenth century Egyptian author Ibn Zunbul⁶¹ takes centre stage. Furthermore, other literary sources such as those of al-Tīfāshī (d. 651/1253),⁶² al-Qazwīnī (d. 682/1283),⁶³ al-Dimashqī (Sheikh al-

⁶¹ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn lil-Shaykh Aḥmad Ibn Zunbul al-Mahallī*, Staatsbibliothek zu Berlin, Ms. Pet 668 (5889), copied in 1100/1688, fols. 121. See biographical details about this author in *Chapter 1.4. Biographical Data on Ibn Zunbul*, p. 94f.

⁶² al-Tīfāshī, *Surūr al-nafs bi-madārik al-ḥawāss al-khams*, (hadhdhabahu: Ibn Manzūr), ed. by A. ‘Abbās, Bayrūt: al-Mu’assasah al-‘arabiyyah lil-dirāsāt wa-al-nashr 1400/1980. al-Tīfāshī was an Egyptian scholar and man-of-letters, who used works by both Greek and early Arab scholars in his books. J. Ruska and O. Kahl, “al-Tīfāshī,” *The Encyclopaedia of Islam*, vol. 10, Leiden: Brill 2000, 476.

⁶³ al-Qazwīnī, *Kitāb ‘ajā’ib al-makhlūqāt (wa-al-hayawānāt wa-gharā’ib al-mawjūdāt)*, ed. by F. Wüstenfeld, Wiesbaden: Sändig 1967. al-Qazwīnī was a famous Arab cosmographer and geographer. He is the author of the *‘Ajā’ib al-makhlūqāt* “Wonders of Creation,” commonly known as *Cosmography*. T.

Rabwah) (d. 727/1327),⁶⁴ Ibn Qayyim al-Jawziyah (d. 751/1350)⁶⁵ and al-Suyūṭī (d. 911/1505)⁶⁶ draw attention to different

Lewicki, “al-Ķazwīnī,” *The Encyclopaedia of Islam*, vol. 4, Leiden: Brill 1973, 865–867. See also footnote 3, p. 147 and footnote 20, p. 153.

⁶⁴ al-Dimashqī, *Kitāb nukhbāt al-dahr fī ‘ajā’ib al-barr wa-al-bahr*, ed. by M. Mehren, Leipzig: Otto Harrassowitz 1923. al-Dimashqī, who lived during the turbulent years of the Crusades, was sheikh and imām at al-Rabwah, a location near Damascus. D. Dunlop, “al-Dimashkī,” *The Encyclopaedia of Islam*, vol. 2, Leiden: Brill 1965, 291.

⁶⁵ Ibn Qayyim al-Jawziyah was a Ḥanbalī theologian, born at Damascus. He was well versed in *Qur’ānic* exegesis, *hadith*, and jurisprudence and was author of numerous books. As pupil of Ibn Taymiyah (d. 728/1328)—Ḥanbalī theologian and jurisconsult—he fell in disgrace for his oppositional views, and like his teacher, was imprisoned. After two years of imprisonment, Ibn Qayyim al-Jawziyah was released in 726/1326, soon after Ibn Taymiya’s death in the prison. H. Laoust, “Ibn Ḳayyim al-Djawziyya,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1965, 821–822. H. Laoust, “Ibn Taymiyya,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1965, 951–955. Ibn Qayyim al-Jawziyah, *Miftāḥ dār al-sa‘ādah wa-manshūr wilāyat ahl al-ilm wa-al-irādah*, vol. 1, Bayrūt: Dār al-kutub al-‘ilmīyah 1419/1998, 229.

interpretations of disasters. Their works convey valuable information about the creation of the world—heaven and earth—and causes of natural disasters. This short introduction of primary sources also includes other resources: especially when tracing the origin of interpretations, inherited from pre-Islamic ancient cultures such as, for example, the Assyrian-Babylonian and Hellenistic traditions, one cannot dispense with reference to additional material.

4.2. Outline of Part II

⁶⁶ al-Suyūṭī, *Kashf al-ṣalṭalah ‘an waṣf al-zalzalah*, ed. by M. ‘Izz al-Dīn, Bayrūt: ‘Ālam al-kutub 1987. al-Suyūṭī, *Mā rawāhu al-wā‘ūn fī akhbār al-ṭā‘ūn*, Dimashq: Dār al-kalām 1997. al-Suyūṭī was a famous Egyptian scholar of Persian origin, recognised as the most prolific Mamlūk author, who wrote among other topics on different natural disasters, such as earthquakes, epidemics, floods, droughts and famines. He was versed in various religious sciences and was a jurist, historian, Ṣūfī, and teacher of *ḥadīth*. E. Geoffroy, “al-Suyūṭī,” *The Encyclopaedia of Islam*, vol. 9, Leiden: Brill 1997, 913–916. H. Krauss-Sánchez, “al-Suyūṭī,” *The Encyclopedia of the Medieval Chronicle*, vol. 2, Leiden: Brill 2010, 1402–1403.

Catastrophes, the resulting terror and disorientation inevitably fostered different psychological and behavioural reactions among affected individuals and authorities, bringing about certain trends and coping mechanisms in society.⁶⁷ Thus, Part II *Natural Disasters in Mamlūk Egypt Reconstructed from the Historical Perspective* shows the impact of natural disasters (*al-kawārith al-ṭabī‘iyah* sing. *kārithah tabī‘iyah*)⁶⁸ on society. The latter is a modern Arabic term, not known

⁶⁷ Tucker, Natural Disasters, 222. Tucker, The Effects of Famine.

⁶⁸ This modern term, stemming from the root *karatha* (كَرَث)—which means “to affect,” “to trouble” someone, “to concern oneself with” or “to care” for someone (H. Wehr, A Dictionary of Modern Written Arabic, ed. by J. Cowan, Wiesbaden: Otto Harrassowitz 1980, 819)—might have derived either from the Latin term “cāritās” (loving-kindness, hospitality, affection, almsgiving) or from the notion of the Greek/Latin “catastrophe,” which originally meant “reversal of what is expected, “a sudden end.” In particular, the radical of the modern Arab term *karatha* and *caritas* show similarities. From the twelve century A.D. the latter aquired the meaning of “benevolence for the poor” and “charity,” a common activity in the aftermath of disasters. However, the connection between these terms is a supposition and needs further etymological historical research. J. Simpson and E. Weiner, “Charity,” *Oxford English Dictionary*, 2 ed., vol. 3, Oxford:

to Mamlūk society, as it does not appear in any of the texts. Instead, we find in Mamlūk literature numerous equivalent but not fully synonymous expressions, generally denoting “calamity” or “heavenly disasters” (*āfāt samāwīyah*)⁶⁹ like *muṣībah*, *tāmmah al-kubrā*, *al-shiddah*, *fanā'*, *fasād*, *qāri'ah*, *balīyah*, *naḥs*, *kharāb*, *tāriqah*, *shaqwah*, *dā'irah*, *sū'*, *'ayth*, *nūbah*, *nāzilah*.

Since a disaster⁷⁰ or a catastrophe⁷¹—terms used here synonymously—are social constructs,⁷² this part examines the socio-

Clarendon Press 1989, 42. J. Simpson and E. Weiner, “Catastrophe,” *Oxford English Dictionary*, 2 ed., vol. 2, Oxford: Clarendon Press 1989, 971–972. R. Barnhart, “Charity,” *Chambers Dictionary of Etymology*, New York: Wilson Company 2000, 160. R. Barnhart, “Catastrophe,” *Chambers Dictionary of Etymology*, New York: Wilson Company 2000, 150. See also Groh, Kempe et al., *Einleitung*, 14–15.

⁶⁹ al-Maqrīzī, *Ighāthat al-ummah bi-kashf al-ghummah*, ed. by J. al-Shayyāl, Damascus: Maktabat al-thaqāfah al-dīniyah 1420/2000, 59.

⁷⁰ No attempt has yet been made to examine the conceptual history of disasters in the Medieval Arab society except for occasional references to the problem of terminology in A. Akasoy, The Man-Made Disaster: Fire in Cities in the Medieval Middle East, *Historical Social Research* 32/3 (2007),

75–76. J. Rassi, Several Natural Disasters in the East (at the Beginning of the Eleventh Century) and their Consequences, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. G. Schenk, Heidelberg: Springer forthcoming. S. Büßow-Schmitz, *Fanā'* and *Fasād*: Perceptions and Concepts of Crises and Disasters in Fourteenth-Century Egypt, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. G. Schenk, Heidelberg: Springer forthcoming. The study of *disaster* terminology in Arabic literature is a field in need of research. It can be carried out based on primary religious sources (*Qur'ān*, *ḥadīth*, and *tafsīr*) and comparative contextual study of the historiographic literature. Cf. G. Schenk *Disastro, Catastrophe, and Divine Judgement—Words, Terms, Concepts and Images for Threats to Social Order in the long Middle Ages*, in *Disaster, Death and the Emotions in the Shadow of the Apocalypse*, ed. Ch. Zika and J. Spinks forthcoming.

⁷¹ See the definition of catastrophe in R. Delort, Avant-propos, in *Les catastrophes naturelles dans l'Europe médiévale et moderne: actes des XVe journées internationales d'histoire de l'Abbaye de Flaran, 10, 11 et 12 septembre 1993*, ed. B. Bennassar, Toulouse: Presses universitaires du Mirail 1996, 7–8 and in Ansgar Nünning's paper, where the latter defines a “catastrophe” from the perspective of literary studies as a narrative product of “selection, abstraction and distinction.” [“Ebenso wie andere Ereignisse sind nämlich

cultural history of major natural hazards which befell Mamlūk Egypt, and patterns of concrete human reactions to them. Here the human factor and its relation to disasters take centre stage and the purpose is to provide greater insight into the various ways disasters affected social, political, and economic life at the local level.

Accordingly, *Chapter 3* gives a general review of major disasters such as earthquakes, excessive floods, droughts, and famines in Mamlūk Egypt and presents common primary sources and methods of research which are further specified in *Chapter 4 Earthquakes* and *Chapter 5 Excessive Floods and Disastrous Droughts*. *Chapter 4* offers an initial chronological overview and critical review of “doubtful”⁷³

auch Krisen (und Katastrophen) stets Ergebnisse von Selektion, Abstraktion und Auszeichnung.”] A. Nünning, Krise als Erzählung und Metapher: Literaturwissenschaftliche Bausteine für eine Metaphorologie und Narratologie von Krisen, in *Krisengeschichte(n)*. „Krise“ als Leitbegriff und Erzählmuster in kulturwissenschaftlicher Perspektive, ed. C. Meyer, K. Patzel-Mattern et al., Stuttgart: Steiner 2013, 121.

⁷² See footnote 6, p. 20.

⁷³ See the definition of “doubtful” on p. 258 and in *Chapter 4.2. Critical Review of “Doubtful” Earthquakes*, p. 288f.

earthquakes, before systematically analysing the major disastrous earthquakes and their narrative⁷⁴ plots in its final discussion. *Chapter 5* addresses historical evidence of the disastrous impact of the Nile floods. In particular, in the fourteenth and fifteenth centuries A.D., the latter either rose to a dangerously high level, flooding agricultural lands and ruining harvests, or did not rise enough thus, causing drought. This, in combination with other socio-economic factors such as political and military conflicts, coupled with maladministration within and beyond the borders of the Sultanate, usually generated destructive food crises and famines.⁷⁵

⁷⁴ See the theory of narratology, in which “narrative is a meta-code, a human universal on the basis of which transcultural messages about the nature of a shared reality can be transmitted.” H. White, *The Content of the Form: Narrative Discourse and Historical Representation*, Baltimore: Johns Hopkins UP 1987, 1.

⁷⁵ See *Chapter 5.8. Case Studies of Disastrous Droughts: Causes, Effects, and Cultural Responses*, p. 555f.

Relying mainly on historiographic sources,⁷⁶ which incorporate a plethora of chronicles, manuals and treatises on catastrophes, these chapters shed light on how culture and society shaped responses to these catastrophic events. They also provide an insight into the spectrum of concrete human reactions in times of a crisis.⁷⁷ Furthermore, these chapters provide answers to a number of questions, such as to what extent administrations can be held responsible for the good or bad handling of disasters, and whether there is a likelihood of inter-state conflicts and a collapse of the social order in the aftermath of such disasters.⁷⁸

The final discussion is devoted to the question of whether the Mamlūk society, which experienced a number of devastating

⁷⁶ See 3.2.1. *Overview of Historical Sources on Natural Disasters*, p. 269.

⁷⁷ See theoretical basis of the concept of “crisis” in Nünning, Krise als Erzählung und Metapher, 117–145.

⁷⁸ Cf. theory of decline of East in the eleventh and twelfth centuries A.D. due to continuous climatic disasters in Ellenblum, The Collapse of the Eastern Mediterranean.

calamities, could be regarded as a “culture of disaster”⁷⁹ as defined according to Greg Bankoff’s theory set out in his book *Cultures of Disaster. Society and Natural Hazard in the Philippines*. Here Bankoff claims that “hazard and disaster are simply just accepted [normal] aspects of daily life”⁸⁰ for societies living in hazard-prone areas like the Philippines. In these societies, to which Mamlūk Egypt also belongs due to its proximity to the Nile, “natural hazards occur with such historical frequency that the constant threat of them has been integrated into the schema of daily life to form what can be called *cultures of disaster*.”⁸¹

⁷⁹ See different discourses on the concepts of “culture of disaster,” “culture of catastrophe,” “disaster cultures,” “disaster subcultures,” and “risk societies” in Alexander, Confronting Catastrophe, 61. G. Bankoff, Living with Hazard: Disaster Subcultures, Disaster Cultures and Risk Societies, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. G. Schenk, Heidelberg: Springer forthcoming. Weintritt, The Floods of Baghdad, 177.

⁸⁰ Bankoff, Cultures of Disaster, 3.

⁸¹ Bankoff, Cultures of Disaster, 4.

PART I

NATURAL DISASTERS PERCEIVED AND INTERPRETED BY MAMLŪK

AUTHORS: PLURALITY, TRANSCULTURALITY, AND CONTINUITY OF

INTERPRETATIONS

CHAPTER 1

NATURAL DISASTERS IN ASTRO-METEOROLOGICAL *MALHAMAH* HANDBOOKS

1.1. Introduction of *Malhamah* Handbooks

The descriptions found in “*anwā'*-books”¹ undoubtedly show that pre-Islamic Arabs forecast the weather according to stellar and

¹ There are different views about the origin and the meaning of the term *anwā'* in the early Arabic sources. According to Daniel Varisco, *anwā'* (sing. *naw'*) is a system, with which the Arabs in the pre-Islamic times used to estimate the passage of time and the state of the weather (rain, wind, heat, and cold) from setting or rising of certain star constellations. Some Muslim scholars identified *anwā'* with the twenty-eight moon stations (*manāzil al-qamar*); others linked it with the so-called “system of rain invocation.” (D. Varisco, The Origin of the *anwā'* in Arab Tradition, *Studia Islamica* 74 (1991), 5–6, 14, 24. Ch. Pellat, “Anwā’,” *The Encyclopaedia of Islam*, vol. 1,

constellatory positions. The advent of Islam not only saw the continuation of this practice but also introduced slight modifications to it. Some Arab scholars went so far as to accord astro-meteorological² phenomena with having a direct connection with life

Leiden: Brill 1960, 523–524. T. Fahd, *La divination Arabe. Études religieuses, sociologiques et folkloriques sur le milieu native de l'Islam*, Leiden: Brill 1966, 412–416.) See also the definition and short description of *anwā'* in Chapter *Rain* in al-Qalqashandī, *Kitāb ṣubḥ al-a'shā'*, vol. 2, al-Qāhirah: al-Maṭba‘ah al-amīriyah 1331/1913, 170–174 and al-Tifāshī, *Surūr al-nafs*, 303–305. Predictions on the basis of *anwā'* can also be found in agricultural almanacs, weather calendars (sing. *taqwīm*). (D. Varisco, A Rasulid Agricultural Almanac for 808/1405–6, *New Arabian Studies* 1 (1993), 108–123.) Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 63a–88a. The list of the *anwā'*-literature can be found in Sezgin, *Geschichte*, vol. 7, 339–370.

² Astro-meteorology predicts events on earth based on astrological, climatic, and geophysical phenomena. We should not confuse it with the astronomical meteorology, which deals mainly with the weather forecasting, without any implication of effects on human beings. (Sezgin, *Geschichte*, vol. 7, 306f. S. Jenks, Astrometeorology in the Middle Ages, *Isis* 74/2 (June 1983), 185.) To avoid confusion, see also the distinction between astronomy

on earth.³ These predictions, which included the relationship between the stars and catastrophic events, were compiled and can today be found in the so-called *malhamah*⁴ handbooks.

This chapter examines—as one kind of interpretation—the astro-meteorological predictions of catastrophic events conveyed in these

and astrology, which were not strictly differentiated semantically in the Middle Ages. (M. Neumauer, “Astral Phenomena,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 119–123.) According to one of the definitions, astronomy (*‘ilm al-hay’ah*, *‘ilm al-falak*, *‘ilm al-nujūm*) teaches—generally speaking—about the position and the motion of heavenly bodies, acquired through observations and mathematical calculations; whereas astrology (*śinā’at al-nujūm* or *aḥkām al-nujūm*) derives predictions of future events from the position and motion of heavenly bodies. (S. Pines, The Semantic Distinction between the Terms Astronomy and Astrology according to al-Bīrūnī, *Isis* 55/3 (1964), 345.) See more on Arabic terms M. Ullmann, Die Natur- und Geheimwissenschaften im Islam, Leiden: Brill 1970, 271–272.

³ Sezgin, Geschichte, vol. 7, 306.

⁴ More about this term see *Chapter 1.2. Development of Malhamah Genres*, p. 58f.

handbooks. While depicting these events the *malḥamah* handbooks also show how they were tied to and dependent upon astrometeorological phenomena, such as the appearance of certain star groups, zodiacal and meteorological signs as well as comets and meteors.⁵ These phenomena, combined with other signs like solar and lunar eclipses, were often interpreted as bad omens, associated with different calamities. Additionally, these handbooks contain special entries on earthquakes, winds and storms,⁶ which show decisively that the origins of earthly natural hazards—triggers of disasters—are in the heavens.

Since disasters play a central role in these handbooks, this chapter aims to outline their features, structure, and content so as to help

⁵ See more about comets and meteors as precursors of “earthquakes and other terrifying things” (*al-zalāzil wa-al-ahwāl*) in al-Suyūṭī, *Husn al-muḥāḍarah fī ta’rīkh Miṣr wa-al-Qāhirah*, ed. by M. Ibrāhīm, vol. 2, al-Qāhirah: Dār iḥyā’ al-kutub al-‘arabīyah 1387/1968, 323.

⁶ E. Savage-Smith, Introduction, in *Magic and Divination in Early Islam. The Formation of the Classical Islamic World*, ed. L. Conrad, Aldershot Ashgate Variorum 2004, xxx–xxxii.

increase our understanding of their causes and consequences in this specific context. In the interest of brevity, it will focus on interpretations in one particular *malḥamah* taken from an astrological treatise *al-Kitāb naql min kitāb al-qānūn* (*An Extract from the Book of the Rules*)⁷ a manuscript that remains unpublished. It is unique because—unlike numerous collections of anonymous⁸ *malḥamah* manuscripts—it has an author, Aḥmad Ibn ‘Alī Zunbul al-Maḥallī al-Munajjim,⁹ who will henceforth be referred to as Ibn Zunbul. What also makes this manuscript unique is the fact that Ibn Zunbul

⁷ Apart from *Malḥamah*, this manuscript contains chapters on global and local topography, astronomy, history of Coptic feasts, and other information. Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*.

⁸ *Malḥamah* handbooks were mainly copied anonymously because their compilers probably feared criticism on the part of religious scholars who found any kind of predictions contradicting the message of the *Qur’ān*. See the discussion of this issue, p. 84f. Apart from Ibn Zunbul, we can find an extract of this genre in *al-Tifāshī*, *Surūr al-nafs*, 337–345. The latter included a chapter on predictions based on the astro-meteorological *malḥamah*.

⁹ I will present biographical data about Ibn Zunbul and his manuscript after the general overview of the *malḥamah* genre. See p. 94f. and 101f.

compiled it in the early sixteenth century A.D., long after the prime age for this genre, the tenth/eleventh centuries A.D.¹⁰ This point therefore brings forward a question, namely, what contributed to the revival of *malhamah*, thus making it timeless.

1.2. Development of *Malhamah* Genres

Building an understanding of the role that *malhamah* handbooks played in Egyptian society requires an introductory explanation of the term itself and its development in specific Arabic literary genres. *Malhamah* is an Arabic word, probably of Hebrew or Aramaic origin, imbued with a number of meanings. In pre-Islamic Egypt, the word (*milhamot*) referred primarily to the Wars of the Lord, the Wars of Yahweh¹¹ (the name of the God of the Israelites and Judeans),¹² as illustrated in the *Tanach* (The Hebrew Bible, The Book of Bamidbar

¹⁰ See footnote 62, p. 82.

¹¹ T. Fahd, “Malḥama,” *The Encyclopaedia of Islam*, vol. 6, Leiden: Brill 1991, 247. R. Firestone, Conceptions of Holy War in Biblical and Qur’ānic Tradition, *Journal of Religious Ethics*, 24/1 (Spring 1996), 101.

¹² H. Nissen, “Yahweh,” *Brill’s New Pauly. Encyclopaedia of the Ancient World*, vol. 15, Leiden: Brill 2010.

(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.¹³

No consensus exists regarding the question of when and under what circumstances this elusive concept developed in ancient Israel. The content of the above-mentioned biblical verses is not self-explanatory either. However, there is a common agreement that this notion in the *Tanach* refers to God's wars on behalf of Israel as described, for example, in the book of Devarim (Deuteronomy). The latter provides the best interpretative expression of these "holy wars," in which God is depicted as fighting for the people of Israel, helping them to protect their national unity and territorial inheritance.¹⁴

¹³ H. Ben-Shammai, Saadia's Introduction to Daniel: Prophetic Calculation of the End of Days vs. Astrological and Magical Speculation, *Aleph* 4 (2004), 16.

¹⁴ See more references to the spectrum of "holy war", its meaning and function in the Hebrew Bible in R. Firestone, Conceptions of Holy War, 102–107. G. Jones, The Concept of Holy War, in *The World of Ancient Israel Sociological, Anthropological and Political Perspectives*, ed. R. Clements,

The prominent Arab lexicographer Ibn Manzūr (d. 711/1311–2)¹⁵ defines *malḥamah* pl. *malāhim* (ملاحم/ملحمة) as “a great slaughter, battle,

Cambridge: Cambridge University Press 1989, 299–321. M. Lind, Yahweh is a Warrior. The Theology of Warfare in Ancient Israel, Scottsdale: Herald 1980. P. Miller, The Divine Warrior in Early Israel. Harvard Semitic Monographs 5, Cambridge: Mass Harvard University Press 1973. R. Smend, *Yahweh War and Tribal Confederation. Reflections on Israel's Earliest History*, Nashville: Tenn Abingdon 1970. F. Stolz, *Jahwes und Israels Krieg. Abhandlungen zur Theologie des Alten und Neuen Testaments*, 60 Zürich Theologischer Verlag 1972. M. Walzer, The Idea of Holy War in Ancient Israel, *Journal of Religious Ethics* 22/2 (1992), 215–227. M. Weinfeld, Divine Intervention in War in Ancient Israel and in the Ancient Near East, in *History, Historiography and Interpretation Studies in Biblical and Cuneiform Literatures*, M. Weinfeld and H. Tadmor (eds.), Jerusalem: Magnes 1983. M. Weippert, ‚Heiliger Krieg‘ in Israel und Assyrien. Kritische Anmerkungen zu Gerhard von Rads Konzept des ‚Heiligen Krieges im alten Israel‘, *Zeitschrift für die alttestamentliche Wissenschaft* 82 (1972), 460–493.

¹⁵ J. Fück, “Ibn Manzūr,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1965, 864.

war” (*al-waq‘ah al-‘azīmah*, *al-qatl*, *al-harb*) with many casualties.¹⁶ It is also 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 the chronicles¹⁷ and western dictionaries also attest to the fact that it means a “bloody fight, slaughter, massacre, fierce battle.”¹⁸ Later this word extended its denotation into Arabic literature,¹⁹ acquiring the meaning of “prediction, eschatological prophecy, apocalypse, vision of the future.”²⁰ This last meaning best describes the content of the

¹⁶ Ibn Manzūr, “Malḥamah,” *Lisān al-‘arab*, vol. 3, Bayrūt: Dār lisān al-‘arab 1988, 352.

¹⁷ al-Maqrīzī, *Kitāb al-sulūk li-ma‘rifat duwal al-mulūk*, ed. by S. ‘Āshūr, vol. 4,2, al-Qāhirah: Matba‘at dār al-kutub 1972, 649. ‘Abd al-Bāsiṭ, *Nayl al-amal fī dhayl al-duwal*, ed. by ‘U. Tadmurī, vol. 2,6, Şaydā: al-Maktabah al-‘asrīyah 1422/2002, 27, 337. ‘Abd al-Bāsiṭ, *Nayl al-amal fī dhayl al-duwal*, vol. 2,8, 78.

¹⁸ Wehr, Dictionary, 861.

¹⁹ Ibn al-Dawādārī, *Kanz al-durar wa-jāmi‘ al-ghurar*, ed. by U. Haarmann, vol. 8, al-Qāhirah: al-Ma‘had al-almānī lil-āthār bi-al-Qāhirah 1971, 275. Ibn Khaldūn, *Muqaddimah*, vol. 2, 219–220.

²⁰ Ben-Shammai, Saadia’s Introduction to Daniel, 16.

malḥamah, the genre of predictions, which prophesies wars, among other disastrous events, and which thus reflects its original Hebrew meaning.

Beginning in the Islamic Middle Ages, the variations of the word's meanings—"war" versus "prediction"—became distinguishable in at least three literary genres, all known as *malḥamah*. These are

- (a) apocalyptic *malḥamah* of pseudo-historical character²¹
- (b) astro-meteorological *malḥamah*²² and
- (c) *malḥamah*-heroic poem.²³

As all of them bear the same name, the particular astro-meteorological *malḥamah* (b), which is of relevance here, is often

²¹ Fahd, "Malḥama," 247.

²² Fahd, "Malḥama," 247.

²³ *Malḥamah* in this context is a collective name of seven classical Arabic poems. M. Kreutz, Sulaymān al-Bustānīs *Arabische Ilias*: Ein Beispiel für arabischen Philhellenismus im ausgehenden Osmanischen Reich, *Die Welt des Islams* 44/2 (2004), 162.

confused in the literature with the apocalyptic *malḥamah* of pseudo-historical character (a). The following explanation intends to highlight common features of these two genres, while at the same time pointing out the differences between them.

(a) Apocalyptic *Malḥamah* of Pseudo-Historical Character

From the end of the Umayyad period (the mid-eighth century A.D.),²⁴ a series of traditions (*ahādīth*) appeared which revealed the general nature of this old concept, at least in its initial stage. In these traditions,²⁵ according to Suliman Bashear (an expert in early Islamic history and religious thought),²⁶ *malāḥim* were overwhelmingly associated with Arab-Byzantine wars (seventh–eleventh A.D.

²⁴ Ben-Shammai, Saadia's Introduction to Daniel, 17.

²⁵ See the source references to these traditions in S. Bashear, Apocalyptic and other Materials on Early Muslim-Byzantine Wars: A Review of Arabic Sources, *JRAS* 3/1/2 (1991), 173–207.

²⁶ S. Bashear, *Studies in Early Islamic Tradition, Collected Studies in Arabic and Islam*, Jerusalem: Hebrew University, Max Schloessinger Memorial Foundation 2004.

centuries) in Syria.²⁷ The connection with these specific wars in the formation period of Islam was so exclusive that in *hadīth*-compilations *malāhim* became almost synonymous with these wars. 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-Dajjāl²⁸ and the sign of the “hour” before the end of the world.²⁹

²⁷ There are some traditions in which other wars in early Islam are also called *malāhim*. These are the “four *malāhim*” of paradise on earth, referring to the battles of Baqr, Uhud, al-Khandaq, and Khaybar, headed by the prophet. (Bashear, Apocalyptic and other Materials, 205.) Some other traditions differentiate between the “small” and the “great *malhamah*,” (Bashear, Apocalyptic and other Materials, 184, 186.) and even between five *malāhim*. “The two have elapsed and there remain three: the *malhamah* of the Turks in the Jazīra, the *malhamah* of the A‘māq and the *malāhim* of al-dajjāl to be followed by no other *malhamah* [...].” Bashear, Apocalyptic and other Materials, 189.

²⁸ According to Arab tradition, al-Dajjāl is the Antichrist (*al-Maṣīḥ al-kadhdhāb*) or a certain man of the Jews (*rajul min yahūd*), who will come forth in the last days and claim falsely to be a prophet. Ibn Manzūr, “Dajjāl,” *Lisān al-‘arab*, vol. 1, Bayrūt: Dār lisān al-‘arab 1988, 948. See

Accordingly, the apocalyptic *malḥamah* of pseudo-historical character (a) shows connections to wars, waged by the Arabs against the Byzantines. This kind of *malḥamah* often has a moral core and is associated with the literature propagating the approach of the Mahdī (“the rightly guided”).³⁰ Furthermore, using methods of “judicial”³¹

more about al-Dajjāl in al-Nuwayrī, *Nihāyat al-arab fī funūn al-adab*, vol. 14, al-Qāhirah: Maṭābi‘ Kūstātsūmās wa-shurakā’hu 1963, 275–277.

²⁹ See more on different types of apocalyptic literature in Islam, such as moral apocalypses, the apocalypse of weeks, political apocalypses on the Umayyads and ‘Abbāsids, apocalypses about *fitan* (“conflicts,” “temptation,” “tests”) as well as historical and messianic apocalypses in D. Cook, *Studies in Muslim Apocalyptic, Studies in Late Antiquity and Early Islam*, Princeton: The Darwin Press 2002, 20–21, 333–385.

³⁰ See more about al-Mahdī in al-Nuwayrī, *Nihāyat al-arab*, vol. 14, 273–274. W. Madelung, “al-Mahdī,” *The Encyclopaedia of Islam*, vol. 5, Leiden: Brill 1986, 1230–1238. This kind of *malḥamah* was popular especially among the followers of the Shia. (B. Langner, *Untersuchungen zur historischen Volkskunde Ägyptens nach mamlukischen Quellen*, Islamkundliche Untersuchungen, Berlin: Klaus Schwartz 1983, 92. Fahd, “Malḥama,” 224.) A number of these texts, attributed to the great mystic Ibn al-‘Arabī (d.

astrology—which incorporates astronomical and mathematical calculations—apocalyptic *malḥamah* (a) makes predictions about the duration of the world and Islam, as well as the fate of individuals, dynasties,³² nations and kings.³³

638/1240), was commented and circulated up until the seventeenth century A.D. Fahd, “*Malḥama*,” 227.

³¹ For the Arabs astrology consists of two major branches: “judicial” and “general” astrology. The “judicial” astrology, sometimes called catarchic astrology, involves the calculation of the positions of planets and the mathematical production of horoscopes. The “general” astrology—also known as “natural,” “non-horoscopic,” “universal” or, as George Saliba calls it, “omen astrology”—has more of a profane character. It does not require knowledge of mathematics but simple techniques with which astrologers predict the influence of celestial phenomena on conditions on earth. Savage-Smith, Introduction, xxvi–xxxvii. G. Saliba, *The Role of the Astrologer in Medieval Islamic Society*, in *Magic and Divination in Early Islam. The Formation of the Classical Islamic World*, ed. L. Conrad, Aldershot: Ashgate 2004, 353. Ptolemy, *Tetrabiblos*, tr. by F. Robbins, Aberdeen: University Press 1948, 117–121. J.-P. Boudet, “Astrology,” *Medieval Science, Technology, and Medicine: an Encyclopedia*, London: Routledge 2005, 61–62.

³² Ibn Khaldūn, *Muqaddimah*, vol. 2, 209.

(b) Astro-meteorological *Malhamah*

Conversely, the astro-meteorological *malhamah* (b), which can be classified as a branch of “general”³⁴ astrology, is primarily concerned with the prediction of future events (social and natural disasters), derived from astrological, climatic and geophysical phenomena

³³ al-Bīrūnī, *The Chronology of Ancient Nations: an English Version of the Arabic Text of the Athâr-ul-Bâkiya of Albîrûnî, or, “Vestiges of the Past,” Collected and Reduced to Writing by the Author in A.H. 390–1, A.D. 1000*, tr. and ed. by E. Sachau, London: W. H. Allen & Co. 1879, 84f. E. von Orthmann, Astrologie und Propaganda. Iranische Weltzyklusmodelle im Dienst der Fâtimiden, *Die Welt des Orients* 36 (2006), 131–142.

³⁴ See the classification of and description of “general” astrology in footnote 31, p. 66. The origin of this classification goes back to Ptolemy’s *Tetrabiblos*. When outlining the objectives of “general” astrology, Ptolemy (d. ca. 100 A.D.) defines it as follows: “Of the general inquiry itself, a part, again, is found to concern whole countries, and a part to concern cities; and further, a part deals with the greater and more periodic conditions, such as wars, famines, pestilences, earthquakes, deluges, and the like [...].” (Ptolemy, *Tetrabiblos*, 117–121.) More details about the further subdivision of astrology can be found in Boudet, “Astrology,” 61–62.

without using highly sophisticated methods of calculation.³⁵ The astrological phenomena refer here to simple observations of celestial signs—such as the rising of Sirius³⁶ (*al-Shi'rā*), the position of the seven planets in the zodiacal signs, and lunar or solar eclipses. The climatic phenomena refer to winds, storms, thunder and lightning, while the geophysical phenomena refer to earthquakes, volcanic eruptions and tsunamis.

One of the reasons for the confusion between these genres derives from the fact that both of them include descriptions of natural

³⁵ Savage-Smith, Introduction, xxvi–xxxvii.

³⁶ Sirius/Sothis, also known as the Dog Star, “is the brightest star in the earth’s hemisphere just before dawn.” (Y. Shavit, Up the River or Down the River? An Afrocentrist Dilemma, in *The Nile. Histories, Cultures, Myths*, ed. H. Erlich and I. Gershoni, Colorado: Lynne Rienner Publishers 2000, 81. al-Tifāshī, *Surūr al-nafs*, 139. N. Brosch, *Sirius Matters*, Berlin: Springer 2008.) Sirius is also a part of the decans. E. Zinner, Die Sternbilder der alten Aegypter, *Isis* 16 (Juli 1931), 92f. P. Casanova, De quelques légendes astronomiques arabes considérées dans leurs rapports avec la mythologie égyptienne, *Bulletin de l’institut français d’archéologie orientale. (BIFAO)* 2 (1902), 2–3, 25–34.

disasters as part of their content. However, the apocalyptic *malhamah* of pseudo-historical character (a) announce that the End of Days is to arrive by unusual catastrophic events such as floods, storms and earthquakes,³⁷ treating them marginally, whereas the plot of the astro-meteorological *malhamah* (b) mainly builds on predictions of such disastrous events. The marginal inclusion of natural disasters in the apocalyptic *malhamah* (a) and their exclusive treatment in the astro-meteorological *malhamah* (b) constitutes the major difference between these genres.

Since the astro-meteorological *malhamah* (b) along with natural disasters occasionally prophesy wars, treated in the apocalyptic *malhamah* (a) specifically, the thematic inclusion of *malāhim* “apocalyptic wars” in both of these genres is the reason why they bear the same name, which is confusing at first sight. The following excerpt from Ibn Zunbul’s astro-meteorological *malhamah* (b) illustrates the thematic inclusion of “apocalyptic wars,” the major link between these two different genres.

³⁷ Cook, Studies in Muslim Apocalyptic, 333–385.

“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, and 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 ‘azīmah* (a great “apocalyptic” war) and while the king might conclude a pact with the other [king], but the ships will be exposed to many disasters (*āfāt kathīrah*) [...]. Byzantium (al-Rūm) will carry out a raid against Islam. It will be cold and icy. There will be wars (*hurūb*) in Egypt. The Byzantines and many creatures will be destroyed [...]. Armies will be moving in the lands of Egypt. There will be a discrepancy among the Arabs in Syria and al-Jazā’ir, and some Muslim cities will be deceived by a trick. The king of Egypt will move from city to city and will destroy a famous city.

There will be deaths among sheikhs. The summer will be good.
But God knows better.”³⁸

We can best understand the significance of Ibn Zunbul’s passage in view of the history of the Mamlūk Sultanate, and the events that occurred shortly before the Ottoman invasion which Ibn Zunbul witnessed as a contemporary.³⁹ Mamlūk Sultanate was, in fact, more than usually preoccupied with wars between great empires—perceived as apocalyptic—with economic problems caused by the shift of trading routes, and political conflicts within the Sultanate itself.⁴⁰ The choice of the specific term *malḥamah* to convey its

³⁸ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 40a.

³⁹ See biographical data on Ibn Zunbul in Chapter 1.4. *Biographical Data on Ibn Zunbul*, p. 94f. which shows that Ibn Zunbul had close ties to Maḥmūd Bāshāh, Ottoman governor of Egypt and Yemen (r. 973–975/1566–1567).

⁴⁰ J. Livingston, Science and the Occult in the Thinking of Ibn Qayyim al-Jawziyya, *Journal of the American Oriental Study* 112/4 (1992 October–December), 599–600. Qāsim, ‘Aṣr salāṭīn al-mamālīk, 8. L. Northrup, The Bahri Mamlūk Sultanate, 1250–1390, in *The Cambridge History of Egypt*, ed.

earliest meaning of historical “apocalyptic wars” next to the more general word for a “war” (*harb* pl. *hurūb*) seems intentional in this extract and shows a clear distinction between these two concepts, emphasising the role of “apocalyptic wars” during the Mamlūk period in particular.

As David Cook, an expert on apocalyptic literature in Islam, has noted, the majority of apocalyptic texts “reflect historical reality of a certain time period” and “when they were first put into circulation they reflected what was actually happening (or at least what the apocalyptic saw through the eyes of his very specific world view).”⁴¹

As a result, by using the term *malhamah*, Ibn Zunbul not only provided his readers with a revisionist picture of past disasters, like the wars between the Arabs and the Byzantines, the raids of the Crusaders and the Mongol invasion that brought an end to the ‘Abbāsid Caliphate, but also projected them forward as warnings related to current and future events. This is reflected in the wars

C. Petry, Cambridge: Cambridge University Press 1998, 251. Winter, The Ottoman Occupation, 490–517.

⁴¹ Cook, Studies in Muslim Apocalyptic, 313.

against the Mongols and the Crusaders during the early Mamlūk period,⁴² as well as the increasing fear of an Ottoman invasion in the early 16th century A.D.⁴³

The thematic inclusion of *malḥamah*, referring mainly to the Arab and Byzantine wars,⁴⁴ is omnipresent in Ibn Zunbul's⁴⁵ and other astro-meteorological *malḥamah* texts, despite the historical irrelevance of the Byzantine Empire during Ibn Zunbul's lifetime. This inclusion also shows the possibility of adapting the structure and content of these old texts to any historical context thus making the predictions in the astro-meteorological *malḥamah* (b) timeless.

1.3. Popularity of Astro-meteorological *Malḥamah*

The above-mentioned historical events, during which the population most probably suffered hardships, have contributed to the production

⁴² Northrup, The Bahri Mamluk Sultanate 1250–1390, 248, 252.

⁴³ Winter, The Ottoman Occupation, 490f. S. Ziemech, The Mamluks in History, *Foundation for Science, Technology and Civilisation* (June 2004), 5.

⁴⁴ See p. 63f.

⁴⁵ See, fore example, pp. 70, 93, 108, 115, 122 and 124.

of *malḥamah* astro-meteorological manuals, which, though one-sided, tried to make sense of catastrophic events. Numerous collections of *malḥamah* located in manuscripts in various libraries around the world attest to their popularity. In his catalogue Wilhelm Ahlwardt lists about thirteen manuscripts comprising of astro-meteorological predictions.⁴⁶ *The Egyptian National Library*⁴⁷ and *the National Library of France*⁴⁸ also preserve a collection of this genre.

⁴⁶ Ahlwardt, Die Handschriften-Verzeichnisse, 272–308. See some of the manuscripts: Anonymous, *Hādhā kitāb malḥamat sayyidanā Dāniyāl ‘alāyhi al-salām*, Staatsbibliothek zu Berlin, Ms. Spr 1936 (5912), copied 1150/1737, fols. 1–63. Anonymous, *Kitāb Hirmis al-Harāmisah wa-huwa Idrīs al-nabīy fī al-ḥukm ‘inda ṭulū‘ al-shi‘rā wa-mā la-hā min al-jawādāt [sic al-hawādīth]*, Staatsbibliothek zu Berlin, Ms. Mq. 657 (5913), 77 fols. = Anonymous, *Kitāb Hirmis al-Harāmisah [...]*, Ms. Mf. 39,6 (5914), copied 1000/1591 fols. 85–96. Anonymous, *Hādhīhi malḥamah tadullu ‘alā waqā‘i‘ allatī takūnu fī dhālikā al-‘ām bi-ḥukm al-yawm al-sādis min ṭūbah al-qubtī*, Staatsbibliothek zu Berlin, Ms. Mo 197 (5903), copied 1215/1800, fols. 1–3. Anonymous, *Hādhā kitāb qā‘idat al-Nil wa-mā yaḥduthu min al-khusūf wa-al-kusūf wa-al-zalāzil wa-al-ra‘d wa-al-ṣawā‘iq wa-mā yaq‘u fiha li-Dāniyāl*, Staatsbibliothek zu Berlin, Ms. Mo 198 (5915), copied 1200/1785, fols. 1–55. Anonymous, *Kitāb taqwīm al-shi‘rā al-yamānīyah wa-mā fī dhālikā min al-*

ḥawādīth wa-dalā'il fi kull al-sanah, Staatsbibliothek zu Berlin, Ms. We. 1155 (5916), copied 1238/1822, fols. 1–57. See also Ms. Mo. 197,2 (5914) fol. 4–30a; Ms. We 1752 (5902), fols. 40–61; Ms. Mq. 98 (5904), fols. 14b–15a; Ms. Mq. 466 (5915), copied 1100/1688.

⁴⁷ See manuscripts of the same genre in the catalogues of D. King, *A Survey of the Scientific Manuscripts in the Egyptian National Library*, ed. by The American Research Centre in Egypt, vol. 5, Winona Lake: Eisenbrauns 1986, 27–28. D. King, *Fihris al-makhtūṭāt al-‘ilmīyah al-mahfūẓah bi-dār al-kutub al-miṣriyah*, vol. 2, al-Qāhirah: al-Hay’ah al-miṣriyah al-‘āmmah lil-kitāb: bi-al-ta‘āwun ma‘a markaz al-buhūth al-amrīkī bi-Miṣr wa-mu’assasat Smīthsūniyān 1986, 628–629 and the following manuscripts under the rubric *al-Ta’ālif fī ‘ilm aḥkām al-nujūm* in the *Egyptian National Library*: Anonymous, *Fī al-ḥawādīth al-samāwīyah [...] min kalām Dāniyāl wa-Hirmis wa-Dhī al-Qarnayn*, Egyptian National Library, Ms. 1156,4 DM (copies Ms. 1092 DM, Ms. 159 ṬM), ca. 800 A.H., fols. 45v–87v. Anonymous, *Kitāb Hirmis [...] fī al-ḥikm ‘inda tulū‘ al-shi‘rā wa-mā la-hā min al-ḥawādīth*, Egyptian National Library, Ms. 132 DM, 1100 A.H., 92 fols. (copies Ms. DM 575, 48 fols.; Ms. DH 16,2, fols. 73v–117v; Ms. K 3852, 68 fols.).

⁴⁸ More of the same genre is preserved in the *National Library of France*: Ms. Arabe 2578 (1171), fols. 1–41; Ms. Arabe 2579 (983), fols. 1–14; Ms. Arabe 4580,6 (1921), 86 fols.; Ms. Arab 2633 (1109).

Despite some structural and contextual discrepancies, almost all of them are associated with the transcultural pseudo-author Hermes,⁴⁹

⁴⁹ There are different, often contradictory, legends about Hermes, which is a mingling of various traditions. The most frequently cited knowledge about him in the primary and secondary sources distinguishes between three pseudo-authors called Hermes: Hermes the First, who lived in Egypt before the Flood and was identified there with Egyptian God Thoth, (F. Peters, *Hermes and Harran: The Roots of Arabic-Islamic Occultism*, in *Magic and Divination in Early Islam. Published in the Series the Formation of the Classical Islamic World*, ed. by E. Savage-Smith, Aldershot: Ashgate 2004, 58. U. Koch-Westenholz, *Mesopotamian Astrology. An introduction to Babylonian and Assyrian Celestial Divination*, Copenhagen: University of Copenhagen 1995, 132. M. Plessner, *Hermes Trismegistus and Arab Science*, *Studia Islamica* 2 (1954), 51), Hermes the Second, who lived after the Flood in Babylon and revived the sciences after the great destruction, and Hermes the Third, who was a physician and alchemist, living in Egypt after the Flood. Knowledge and learning reached Greece through Asclepius from the third Hermes, who is associated with the Hermes of the *Corpus Hermeticum*. (Plessner, *Hermes*, 51–52. D. Pingree, *The Thousands of Abū Ma'shar, Studies of the Warburg Institute*, London: The Warburg Institute of University of London 1968, 15–

whom Jewish tradition identifies with Enoch, the Persian tradition with Hūshank and the Muslim tradition with Idrīs.⁵⁰ Therefore,

18. Manetho, *Aegyptiaca*, tr. by W. Waddell, Aberdeen: University Press 1948, 209–211. Ch. Burnett, The Legend of the Three Hermes and Abū Ma‘shar’s Kitāb al-Ulūf in the Latin Middle Ages, in *Magic and Divination in the Middle Ages. Texts and Techniques in the Islamic and Christian Worlds*, ed. Ch. Burnett, Aldershot: Ashgate 1996, 231. G. Fowden, *The Egyptian Hermes. A Historical Approach to the Late Pagan Mind*, Princeton: Princeton University Press 1986, 53. W. Gundel and G. Gundel, *Astrologumena. Die astrologische Literatur in der Antike und ihre Geschichte*, Wiesbaden: Franz Steiner Verlag 1966, 10–27. See also the manuscripts in the *Egyptian National Library*: Ms. DM 896.1, fol. 32; Ms. DM 575, fol. 48v and in the *National Library of France*: Arabe 2487, fols. 32–38, as well as the list of the treatises attributed to Hermes in Sezgin, *Geschichte*, vol. 7, 50–58. Ullmann, *Die Natur- und Geheimwissenschaften*, 289–293, and the difference between the *Corpus Hermeticum* and the *Arabic Hermetica* in footnote 51, p. 78.

⁵⁰ Plessner, *Hermes*, 51. See also manuscripts in the *Staatsbibliothek zu Berlin*: Anonymous, *Kitāb Hirmis al-Harāmisah*, Ms. Mq. 657 (5913); Ms. Mf. 39,6 (5914). al-Dimashqī, *Kitāb nukhbāt al-dahr*, 33–34, 24. al-‘Umari, *Masālik al-abṣār fī mamālik al-amṣār*, ed. by al-Sarīḥī, vol. 1, Abū al-Żabī: al-Majma‘ al-thaqāfi 2003, 104–105.

western literature refers to this Hermetic collection as the *Arabic Hermetica*.⁵¹

Some versions of these treatises also bear the names of, or refer to, Aristotle (d. 322 B.C.),⁵² Alexander the Great (d. 327 B.C.)⁵³ and

⁵¹ The astrological *Arabic Hermetica* and its forerunners, attributed to Hermes Trismegistos, should not be confused with the *Corpus Hermeticum* having theological and philosophical content. (Gundel and Gundel, *Astrologumena*, 12, 27.) The latter was compiled between the first and the third centuries A.D. (E. Iversen, *Egyptian and Hermetic Doctrine*, Copenhagen: Museum Tusculanum Press 1984, 26) and comprises eighteen treatises, the Latin version of the Asclepius and various other fragments. Hermes Trismegistus, *Die griechischen Traktate und der lateinische “Asclepius,”* ed. by C. Colpe and J. Holzhausen, vol. 1, Das Corpus Hermeticum Deutsch: Übersetzung, Darstellung und Kommentierung in drei Teilen, Stuttgart-Bad Cannstatt: Frommann-Holzboog 1997.

⁵² See the manuscripts in *Staatsbibliothek zu Berlin*: Arsaṭālīs [sic. Aristūṭālīs], *Kitāb al-ahkām fī ḥawādith al-ayyām ‘an Arsaṭālīs al-faylasūf*, Ms. Mf 39 (5873), fols. 1–38, copied by Ibrāhīm Ibn ‘Abd-al-Rahman in 872/1468; Ms. Mf. 39,6 (5914), fols. 85–96; the *Egyptian National Library*: Ms. DH 16,2, fols. 73r–117v; Ms. K 3852, 1100 A.H., fols. 68 and other manuscripts listed in

Ptolemy (ca. d. 100 A.D.),⁵⁴ suggesting that these world figures were their narrators. Certain parts of the *malhamah* are also ascribed to Dāniyāl (Daniel),⁵⁵ another pseudo-author, whose name is connected with Daniel in the Bible. Like Hermes, Daniel, has acquired various

King, Fihris al-makhtūtāt. Sezgin, Geschichte, vol. 7, 60–63. Ullmann, Die Natur- und Geheimwissenschaften, 287–288.

⁵³ See the manuscripts in The *Egyptian National Library*: Anonymous, *Fī al-hawādith al-samāwīyah*, Ms. DM 1156,4, fols. 45–87 and later copies of the same manuscript: Ms. ṬM 159, 1221 A.H., 52 fols., Ms. DM 1092, 1296 A.H., 141 fols. and; Ms. S 4467.5, fols. 59–74. Sezgin, Geschichte, vol. 7, 64.

⁵⁴ Some of these texts are linked to Ptolemy, see for example, Staatsbibliothek zu Berlin, Ms. We. 1155 (5916); *Kitāb bulūgh al-amāniyah fīmā yata‘allaqu bi-ṭulū‘ al-shi‘rā al-yamāniyah*, Egyptian National Library, Ms. DM 994, 1271 A.H., 16 fols. (copies Ms. DM 59,2+3, 1000 A.H.; Ms. DJ 289,2, 1222 A.H., fols. 56–59; Ms. DM 1056,1, 1308 A.H., fols. 1–33; Ms. DM 788, 1050 A.H., 40 fols.; Ms. HM 2,2, 1290 A.H., fols. 203–209; Ms. DM 79,2, 1150 A.H., fols. 4–13; Ms. Sh 72, 1301 A.H. 13 fols.). Sezgin, Geschichte, vol. 7, 41–48. Ullmann, Die Natur- und Geheimwissenschaften, 282–285.

⁵⁵ See about Dāniyāl in al-Nuwayrī, *Nihāyat al-arab*, vol. 14, 158–163.

associations in different cultures and although the *Qur'ān* does not mention Daniel, Muslim tradition venerated him as a prophet, as a revealer of the future and of eschatological mysteries.⁵⁶ This group of astro-meteorological *malḥamah*, if copied separately, usually bears the title *Malḥamat Dāniyāl*.⁵⁷

⁵⁶ G. Vajda, “Dāniyāl,” *The Encyclopaedia of Islam*, vol. 2, Leiden: Brill 1965, 112–113. Z. Hirschberg, H. Ginsberg et al., “Daniel,” 2 ed., *Encyclopaedia Judaica*, vol. 5, Detroit: Thomson Gale 2007, 417–425.

⁵⁷ *Malḥamat Dāniyāl* also belongs to the Hermetic literature to be found in numerous manuscripts: Anonymous, *Hādhā kitāb malḥamat sayyidanā Dāniyāl ‘alāyhi al-salām*, Staatsbibliothek zu Berlin, Ms. Spr 1936 (5912), copied 1150/1737, fols. 1–63. Anonymous, *Malḥamah*, the National Library of France, Ms. Arabe 2593, 3, 16th century. Anonymous, *Malḥamah*, the National Library of France, Ms. Arabe 2633, 17th century. See also Ahlwardt, Die Handschriften-Verzeichnisse. Ullmann, Die Natur- und Geheimwissenschaften, 293. Sezgin, Geschichte, vol. 7, 312–317. G. Furlani, Eine Sammlung astrologischer Abhandlungen in arabischer Sprache, *Zeitschrift für Assyriologie und Verwandte Gebiete* 33 (1921), 157–168. Fahd, La divination Arabe, 408–412.

The number of collections and the variations in their titles and dating makes their systematic analysis quite difficult. Hans Georg Gundel rightly noted that these variations explained astrological Hermetic scripts' acquisition of hybrid forms throughout the centuries.⁵⁸ Since most of these handbooks were copied anonymously—for whatever reasons⁵⁹—tracing the course of their history and sorting out their biographical data becomes a difficult task, particularly because they have also been distorted by centuries of transmission. Although some *malḥamah* manuscripts explicitly refer to the Yemenite author of the Umayyad period, Wahb Ibn Munabbih (d. ca. 114/732),⁶⁰ as the

⁵⁸ Gundel and Gundel, *Astrologumena*, 14.

⁵⁹ As was mentioned earlier in footnote 8, p. 57, *Malḥamah* handbooks were copied anonymously because their compilers probably feared criticism on the part of religious scholars who found any kind of predictions contradictory to the message of the *Qur’ān*. However, by adding the names of the well-known personalities, like Aristotle or Alexander the Great, the compilers ensured the readers' interest.

⁶⁰ Wahb Ibn Munabbih (34–114/654–732) was a prominent Yemenite narrator of the Ummayad period. R. Khoury, “Wahb Ibn Munabbih,” *The Encyclopaedia of Islam*, vol. 11, Leiden: Brill 2002, 34–36. R. Khoury, Un

earliest known author who compiled an astro-meteorological *malḥamah*,⁶¹ according to Julius Ruska, the greater part of the Arabic *malḥamah* originated during the tenth or eleventh centuries A.D.,⁶² the era of translation movements in the ‘Abbāsid period.⁶³ Some of these texts were then re-translated from Arabic into Latin.⁶⁴

Fragment astrologique inédit attribué à Wahb b. Munabbi (110 ou 114/728 ou 732), *Arabica. Revue d'études arabes* 19 (1972), 139–140.

⁶¹ See, for example, the following manuscript in the Egyptian National Library, Ms. DH 16,2, 1133 H, fols. 73–117, cited above in footnote 52, p. 78 and the article by R. Khoury, Un Fragment astrologique, 139–144.

⁶² J. Ruska, *Tabula Smaragdina: Ein Beitrag zur Geschichte der Hermetischen Literatur*, Heidelberg: Carl Winter’s Universitätsbuchhandlung 1926, 67. Ullmann, Die Natur- und Geheimwissenschaften, 289.

⁶³ D. Gutas, *Greek Thought, Arabic Culture. The Graeco-Arabic Translation Movement in Baghdad and Early ‘Abbāsid Society (2nd–4th/8th–ý10th Centuries)*, London: Routledge 1998. F. Rosenthal, The Classical Heritage in Islam. Translated from German by E. and J. Marmorstein, Islamic World Series, London: Routledge and Kegan Paul 1975.

⁶⁴ Jenks, Astrometeorology, 185–210.

At least three sources of this genre can be dated from the Mamlūk period:

(1) the anonymous original copy of *Kitāb al-Malhamah* (*Book of Malhamah*) dedicated to the late Mamlūk Sultan Qāytbāy (r. 872–901/1468–1496)⁶⁵

(2) the anonymous *Kitāb fī al-hawādith al-samāwīyah [...] min kalām Dāniyāl wa-Hirmis wa-Dhī al-Qarnayn* (*The Book of Heavenly Events Transmitted from the word of Daniel, Hermes and Alexander the Great*)⁶⁶ and

⁶⁵ Anonymous, *al-Malhamah*, The Chester Beatty Library, Ms. Ar 4041, 15th century A.D., fols. 282. See more about Sultan Qāytbāy and the period of his reign in J.-Cl. Garcin, The Regime of the Circassian Mamlūks, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 290–317. See also about this Sultan footnote 352, p. 388.

⁶⁶ Anonymous, *Fī al-hawādith al-samāwīyah*, Egyptian National Library, Ms. 1156,4 DM (copies Ms. 1092 DM, Ms. 159 ṬM), ca. 800 A.H., fols. 45v–87v. Unsurprisingly, this manuscript was compiled during the late fourteenth century A.D, the period during which people faced an increase in disastrous droughts, famines and epidemics. See Chapter 5.8. *Case Studies of Disastrous Droughts: Causes, Effects, and Cultural Responses*, p. 555f.

(3) Ibn Zunbul's astro-meteorological *Malḥamah*, which I will analyse below.⁶⁷

Although the number of *malḥamah* sources, dating from the Mamlūk period, is currently restricted to these three sources,⁶⁸ we can assume that the astro-meteorological predictions were circulating widely in Mamlūk society.⁶⁹ We have evidence that religious scholars and jurists wrote polemical works against astrologers who made and spread predictions.⁷⁰ Among the prominent personalities—who were

⁶⁷ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 38b–63a.

⁶⁸ As I have noticed in footnote 8, p. 57, al-Tifāshī (d. 651/1253) was another author who included a chapter on predictions based on the astro-meteorological *malḥamah*. al-Tifāshī, *Surūr al-nafs*, 337–345.

⁶⁹ There are occasional references to astro-meteorological predictions in the Mamlūk chronicles. See al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 855. al-‘Asqalānī, *Inbā’ al-ghumr bi-anbā’ al-‘umr*, ed. by H. Ḥabashī, vol. 2, al-Qāhirah: al-Majlis al-a‘lā lil-shu‘ūn al-islāmiyah, lajnat iḥyā’ al-turāth al-Islāmī 1415/1994, 37, 402. ‘Abd al-Bāsiṭ, *Nayl al-amal fī dhayl al-duwal*, vol. 1,3, 20, 32. ‘Abd al-Bāsiṭ, *Nayl al-amal fī dhayl al-duwal*, vol. 1,4, 82, 357.

⁷⁰ D. King, The Astronomy of the Mamluks, *Isis* 74/4 (1983 December), 551.

arduous opponents of this genre and criticised investment of faith in them—were Ibn Taymīyah (d. 728/1328),⁷¹ his student Ibn Qayyim al-Jawzīyah (d. 751/1350),⁷² and Ibn Khaldūn (d. 808/1406).⁷³ For them astrology needed to be forbidden because it was a dangerous competitor to the religious basis of Islamic society.⁷⁴

⁷¹ See about Ibn Taymīyah in footnote 65, p. 44.

⁷² See about Ibn Qayyim al-Jawzīyah in footnote 65, p. 44.

⁷³ Ibn Khaldūn was one of the prominent personalities of Arab-Muslim culture. As a historian and philosopher he was generally labelled “the father of sociology.” M. Berkel, “Ibn Khaldūn,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 835–837. M. Kia and T. Glick, “Ibn Khaldūn,” *Encyclopaedic Historiography of the Muslim World*, vol. 2, Delhi: Global Vision Publishing House 2003, 400–403. M. Talbi, “Ibn Khaldūn,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1965, 825–831. D. Little, Historiography of the Ayyūbid and Mamlūk Epochs, in *The Cambridge History of Egypt (640–1517)*, ed. Carl F. Petry, Cambridge: Cambridge University Press 1998, 433f.

⁷⁴ Y. Michot, Ibn Taymiyya on Astrology. Annotated Translation of Three Fatwas, *Journal of Islamic Studies* 11/2 (2000), 160. Ibn Qayyim al-Jawzīyah, *Miftāḥ dār al-sa‘ādah wa-manshūr wilāyat ahl al-‘ilm wa-al-irādah*,

Despite occasional punishments of astrologers for false predictions⁷⁵ and attacks against their practices,⁷⁶ which Sunnī clerics declared as contradicting the *Qur'ānic sūrah* 27:66⁷⁷ and 31:34⁷⁸—divinatory profane literature, to which the astro-meteorological *malḥamah* belongs, enjoyed a popularity among the Egyptians from the thirteenth century A.D.⁷⁹ In his *Muqaddimah*, this is how prominent

vol. 2, Bayrūt: Dār al-kutub al-‘ilmīyah 1419/1998, 515f. Ibn Khaldūn, *Muqaddimah*, vol. 2, 201.

⁷⁵ al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 2, 432–433.

⁷⁶ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 918–919.

⁷⁷ Langner, Untersuchungen, 84–85. See the *Qur'ānic sūrah* 27:66 “None in the heavens or on earth knows the hidden reality [of anything that exists: none knows it] save God.” Muhammad, *The Message of the Qur'ān*, tr. by Muhammad Asad, Gibraltar: Dar al-Andalus 1980, 585.

⁷⁸ *Kitāb alf laylah wa-laylah*, ed. by W. Macnaghten, vol. 2, Calcutta: W. Thacker and Co. St. Andrew’s Library 1839, 523. See this *Qur'ānic sūrah* 31:34 on p. 90.

⁷⁹ Fahd, La divination Arabe, 39–90. Savage-Smith, Introduction. Langner, Untersuchungen, 3–4.

historiographer Ibn Khaldūn (d. 784/1382)⁸⁰ explained the reasons for the popularity of this genre: “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.”⁸¹

The records of the Mamlūk chroniclers, indeed, show that people were disposed to believe in astro-meteorological predictions. They document repeatedly how the astrologers prophesy solar eclipses and earthquakes. For example, while reporting the events of the year 801/1398–9, the chronicler Ibn Ḥajar al-‘Asqalānī (d. 852/1449),⁸²

⁸⁰ W. Fischel, *Ibn Khaldūn in Egypt. His Public Functions and His Historical Research, 1382–1406. A Study in Islamic Historiography*, Berkeley: University of California Press 1967.

⁸¹ Ibn Khaldūn, *Muqaddimah*, vol. 2, 200.

⁸² Ibn Ḥajar al-‘Asqalānī was the supreme Shāfi‘ī judge appointed by Sultan Barsbay (r. 825–841/1422–1438). He was considered “the greatest religious scholar of his age.” See about this chronicler in J. Bacharach, Circassian Mamluk Historians and their Quantitative Economic Data, *Journal of the American Research Center in Egypt* 12 (1975), 79. S. Massoud, The Chronicles

says that, according to astronomers (*ahl al-hay'ah*), an earthquake would occur on the first days of the year. This news spread quickly among the people. But this prediction did not come true, as expected, and “God accused the foreboders of lying.”⁸³

In another case, the chronicler al-Maqrīzī (d. 845/1442)⁸⁴ reports that after the astrologers’ (*al-munajjimūn*) prophesy of the coming of a

and Annalistic Sources of the Early Mamluk Circassian Period, Leiden: Brill 2007, 53f. F. Rosenthal, “Ibn Ḥadjar al-‘Asqalānī,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1971, 776–778. S. Massoud, “Ibn Hajar al-‘Asqalānī,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 831–832. F. Rosenthal, “Ibn Ḥadjar al-‘Asqalānī,” *Encyclopaedic Historiography of the Muslim World*, vol. 2, Leiden: Brill 2003, 377–381. D. Little, *Historiography of the Ayyūbid and Mamlūk Epochs*, 442.

⁸³ al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 2, 37. The same event is reported in al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 308.

⁸⁴ al-Maqrīzī was the most famous and the most criticised historian of the late Mamlūk period. He occupied different positions and worked for a short duration as muhtasib of Cairo. Bacharach, *Circassian Mamluk Historians*, 77–78. Massoud, *The Chronicles and Annalistic Sources*, 48–49. F. Rosenthal, “al-Makrīzī,” *The Encyclopaedia of Islam*, vol. 6, Leiden: Brill

solar eclipse in Jumādā II 834/February 1431, people were called to fast in New Cairo and do generous deeds. As the day came and no solar eclipse occurred, those who had warned of it were rebuked.⁸⁵ Referring to the same event, the later chronicler ‘Abd al-Bāsit (d. 920/1514)⁸⁶ noted that the Sultan violently punished accused troublemakers.⁸⁷ Similarly, the astrologers spread rumours that a disastrous earthquake would ravage [probably Egypt], supposedly on 3 Rabī‘ I 891/8 March 1486.⁸⁸

1991, 193–194. R. Amitai, al-Maqrīzī as a Historian of the Early Mamluk Sultanate (or: Is al-Maqrīzī an Unrecognized Historiographical Villain?), *Mamlūk Studies Review* 7 (2003), 99–118. D. Little, Historiography of the Ayyūbid and Mamlūk Epochs, 436f.

⁸⁵ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 855.

⁸⁶ ‘Abd al-Bāsit Ibn Khālid was physician and chronicler of the late Mamlūk period, who travelled a lot during his lifetime. See more about his biography in ‘Abd al-Bāsit, *Nayl al-amal*, vol. 1,1, 23–48. Massoud, The Chronicles and Annalistic Sources, 67–69. Bacharach, Circassian Mamluk Historians, 82.ý

⁸⁷ ‘Abd al-Bāsit, *Nayl al-amal*, vol. 1,4, 296.

⁸⁸ ‘Abd al-Bāsit, *Nayl al-amal*, vol. 2,8, 19.

Furthermore, part of an astro-meteorological *malhamah* is unsurprisingly part of a *Thousand and one Nights*,⁸⁹ as one of the tale's components. Its inclusion in one of the best-known literary collection of popular stories,⁹⁰ which is a treasure trove of the social history of the time and a *histoire de mentalités*,⁹¹ also indicates that people were acquainted with these kinds of predictions. In one of the tales an astrologer asks the slave Tawaddud to share her knowledge about the art of astrology. At first she introduces the principles of astrology such as the names and qualities of the seven planets and the lunar stations. But when asked to talk about the weather predictions derived from celestial signs she becomes reluctant to continue her story, calling all those astrologers who produce almanacs heretics (*zindiq*).⁹² To back up what she says, she cites the *Qur'ānic sūrah* 31:34:

⁸⁹ *Kitāb alf laylah*, vol. 2, 523.

⁹⁰ Haarmann, Mamluk Studies—A Western Perspective, 336.

⁹¹ Haarmann, Mamluk Studies, 343.

⁹² Night 455: *Kitāb alf laylah*, 523. The Book of the Thousand Nights and a Night Translated from the Arabic by Richard Burton, ed. by L. Charles and A. Letchford, vol. 4, London: H.S. Nichols & Co. 1894, 182–183.

“Verily, with God alone rests the knowledge of when the Last Hour will come; and He [it is who] sends down rain; and He [alone] knows what is in the wombs: whereas no one knows what he will reap tomorrow, and no one knows in what land he will die. Verily, God [alone] is all-knowing, all-aware.”⁹³

However, with the permission of the Caliph, who is probably the one most eager to hear about these predictions, she gives a full account of an astro-meteorological almanac (*taqwīm*).⁹⁴ This almanac presents both disastrous and non-disastrous events dependent on the influence of seven planets and the day of the week,⁹⁵ on which the first day of the year, probably January,⁹⁶ would begin. The following excerpt illustrates this kind of prediction:

⁹³ Muḥammad, *the Qur’ān*, 632.

⁹⁴ *Kitāb alf laylah*, 524.

⁹⁵ *Kitāb alf laylah*, 523–524.

⁹⁶ In Ibn Zunbul’s *malḥamah*, which also includes a section with similar methods of predictions, January (Kānūn al-thānī) is explicitly mentioned. Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 57b–58a.

“So, if the first day of the year begins on Sunday, that day is the Sun’s and this portends (though God alone is All-knowing) oppression of kings, Sultans and governors. There will be much miasma and lack of rain. The people will be in great disorder. The grain-crop will be good, except for lentils, which will perish. The vines will rotten, the price for the linen will rise and the wheat will become cheap from the beginning of Tūbah⁹⁷ to the end of Baramhāt.⁹⁸ In this year there will be

⁹⁷ Tūbah is the fifth month of the Coptic calendar, which falls between 9 January and 7 February. C. Wassef, “Months of Coptic Calendar,” *Claremont Coptic Encyclopedia*, vol. 2, New York: Macmillan Publishing Company 1991, 438–439. F. de Blois, “Ta’rīkh,” *The Encyclopaedia of Islam*, vol. 10, Leiden: Brill 2000, 261. T. Malaty, *The Coptic Calendar and Church of Alexandria*, 10.

⁹⁸ Baramhāt is the seventh month of the Coptic calendar, which falls between 10 March and 8 April. Wassef, “Coptic Calendar,” vol 2, 439. de Blois, “Ta’rīkh,” 261. Malaty, *The Coptic Calendar*, 10.

much killing among kings, however, plenty of good in this year. But God knows better.”⁹⁹

The predictions continue in the same mood, using the remaining days of the week. Ibn Zunbul’s astro-meteorological *malhamah* also contains a section with a similar method for making predictions:

“If January (Kānūn al-thānī) falls on Saturday (al-Sabt), it will be cold and icy in Kānūn. A man of rank will die in the land of the West. The winter will be long the next year. The midsummer (*qayż*) will be extremely hot. Lentils will be scarce [...]. In spite of it, there will be abundance. But some sheikhs will die, and epidemics (*āfah*) will spread among the livestock. The vine will be scarce. There will be little rain in April and Mai. It will be extremely cold in February [...]. Many [people] will suffer from fever. The pregnant will be intact. There will be many wars in the Byzantine regions.”¹⁰⁰

⁹⁹ Kitāb alf laylah, 524. The Book of the Thousand Nights, 183.

¹⁰⁰ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 57b–58a.

Taking into consideration the popularity of *Thousand and One Nights*,¹⁰¹ which, as Ulrich Haarmann notes, were given their final structure and form in Mamlūk Egypt,¹⁰² the above-mentioned implicit and explicit historical evidence leads us to deduce that both ordinary people and officials were familiar with this kind of astro-meteorological prediction. Moreover, people were inclined to believe in astrologers' predictions despite their reputations as beguilers. Astro-meteorological predictions were, therefore, powerful sociological forces that directly influenced people's worldviews and behaviour towards natural disasters, indubitably shaping social structures and interpretative patterns.

1.4. Biographical Data on Ibn Zunbul

Before moving to the analysis of Ibn Zunbul's astro-meteorological *Malhamah*, I will here offer a short introduction about the author. We

¹⁰¹ The structure and content of the Arabian Nights is the product of the Mamlūk age. L. Northrup, The Bahri Mamlūk Sultanate, 1250–1390, in *The Cambridge History of Egypt*, ed. C. Petry, Cambridge: Cambridge University Press, 242.

¹⁰² Haarmann, Mamluk Studies, 336.

have little data about him—except for fragmented information gained from his own manuscript¹⁰³ as well as several articles¹⁰⁴ and very brief records in *The Encyclopedia of the Medieval Chronicle*,¹⁰⁵ as well as Carl Brockelmann's¹⁰⁶ and Wilhelm Ahlwardt's catalogues.¹⁰⁷

Judging from his *nisbah* (al-Mahallī) and the information contained in the treatise itself, it is obvious that he came from Mahallah.¹⁰⁸ However, Mahallah does not relate to one specific location in Egypt

¹⁰³ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 79a–79b.

¹⁰⁴ R. Irwin, Ibn Zunbul and the Romance of History, in *Writing and Representation in Medieval Islam. Muslim Horizons*, ed. Julia Bray, London: Routledge 2006, 3–15. B. Lellouch, Ibn Zunbul, un Égyptien face à l'universalisme Ottoman (seizième siècle), *Studia Islamica* 79 (1994), 143–155. Lellouch, Ibn Zunbul, 1–10.

¹⁰⁵ H. Krauss-Sánchez, “Ibn Zunbul,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 842–843.

¹⁰⁶ C. Brockelmann, *Geschichte der Arabischen Literatur*, vol. 2, Berlin: Verlag von Emil Felber 1902, 54.

¹⁰⁷ Ahlwardt, Die Handschriften-Verzeichnisse, 285–286.

¹⁰⁸ Ch. Pellat, “Mahalla,” *The Encyclopaedia of Islam*, vol. 5, Leiden: Brill 1986, 1220–1221.

as this term is the first constituent element of the names of places in more than a hundred towns and villages in Egypt.

Of these the most famous is al-Mahalla al-Kubrā, an important town on the shore of the Nile between Damietta and New Cairo.¹⁰⁹ He gives his date of birth, unknown until now, as 910/1504¹¹⁰ in his *malhamah*, and states that his birthday coincided with the conjunction of Saturn and Jupiter, a natural phenomenon that usually occurs every twenty years. According to Mamlūk authors, it induces

¹⁰⁹ J. Kramers, “al-Mahalla al-Kubrā,” *The Encyclopaedia of Islam*, vol. 5, Leiden: Brill 1986, 1221. See the map of Upper and Lower Egypt in C. Petry, (ed.), *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, vol. 1, Cambridge: Cambridge University Press 1998, p. xvii. The whole of Egypt is traditionally divided into two parts: Upper Egypt (al-Wajh al-qiblī), which is on the south of Old Cairo, and Lower Egypt (al-Wajh al-bahrī) which is on the north of Old Cairo. The whole land—Qiblīyah and Bahrīyah—was divided into twenty-six provinces and thirty districts. al-Maqrīzī, *al-Mawā‘iz wa-al-i‘tibār fī dhikr al-khiṭāṭ wa-al-āthār*, ed. by A. Sayyid, vol. 3, London: Mu‘assasat al-furqān lil-turāth al-islāmī 1422/2002, 193f. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 396–402.

¹¹⁰ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 79a–79b.

outstanding changes¹¹¹ on earth such as the Deluge, the End of the World, the fate of kings and dynasties, and disasters like wars, epidemics, floods and earthquakes.¹¹²

Ibn Zunbul's allusion to this conjunction was not an exaggeration, as there is evidence for its occurrence in 910/1504.¹¹³ Uncertainty surrounds the date of his death, though Wilhelm Ahlwardt suggests that Ibn Zunbul must have died in 980/1572.¹¹⁴ Similarly, Carl Brockelmann dates his death after 960/1552.¹¹⁵ Since neither of them cite their sources, we cannot trace the evidence for their claims. However, from the manuscript itself we learn that Ibn Zunbul

¹¹¹ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fol. 79a. Ben-Shammai, Saadia's Introduction to Daniel, 22. Ibn Khaldūn, *Muqaddimah*, vol. 2, 211f.

¹¹² Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 79a–79b. Michot, Ibn Taymiyya, 185. von Orthmann, *Astrologie und Propaganda*, 131–142.

¹¹³ Boudet, “Astrology,” 63.

¹¹⁴ Ahlwardt, *Die Handschriften-Verzeichnisse*, 286.

¹¹⁵ Brockelmann, *Geschichte*, vol. 2, 298.

prefigured Mahmūd Bāshāh's¹¹⁶ death in 975/1567,¹¹⁷ which makes Wilhelm Ahlwardt's and Carl Brockelmann's arguments plausible.

Relying on historiographical tradition, some scholars have subsequently argued that Ibn Zunbul must have been in the service of the last Mamlūk Sultan Qānṣawh al-Ghawrī (r. 906–922/1501–1516).¹¹⁸ They suppose he was an eyewitness of the Sultan's expedition in 922/1516 because he gave a detailed description of this expedition, even though there is no explicit evidence of it. Some

¹¹⁶ Mahmūd Bāshāh was Ottoman governor of Egypt and Yemen (r. 973–975/1566–1567). J. Blackburn, “Mahmūd Pasha,” *The Encyclopaedia of Islam*, vol. 5, ed. by C. Bosworth et al., Leiden: Brill 1986.

¹¹⁷ In Ibn Zunbul's manuscript Mahmūd Bāshāh asks Ibn Zunbul to interpret his dream which Mahmūd Bāshā sees as an omen for his coming death. Thereafter, Ibn Zunbul reports the latter's assassination in 975/1567. Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fol. 113b f.

¹¹⁸ Sultan Qānṣawh al-Ghawrī was “the last great Mamlūk Sultan.” See more about the period of his reign in Garcin, The Regime of the Circassian Mamlūks, 298–299.

historians like Doris Behrens-Abouseif¹¹⁹ and Robert Irwin expressed their doubts about this assumption,¹²⁰ which becomes more comprehensible now when we know the date of his birth. If he were in the service of Sultan al-Ghawrī (r. 906–922/1501–1516), this would mean that in 922/1516 he was twelve years old, a young age for being “a civil officer at the war division.”¹²¹

Concerning his professional activities, explicit references in his own work suggest that he spent much of his life as an astrologer, dream interpreter¹²² and presumably as a geomancer (*al-rammālī*)¹²³ in the

¹¹⁹ B. Lellouch, Ibn Zunbul Ahmād b. ‘Alī (d. 1574), *Historians of the Ottoman Empire*, ed. C. Kafadar, H. Karateke and C. Fleischer, 1–2.

¹²⁰ Irwin, Ibn Zunbul, 4.

¹²¹ Brockelmann, Geschichte, vol. 2, 298.

¹²² Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 109a–113b.

¹²³ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 118a f. Geomancy (*‘ilm al-raml*) is a method used to foretell the future from the patterns formed by the sand or rocks tossed on the ground. This method for making predictions was popular during the Mamlūk period. (Langner, Untersuchungen, 97–98.) See more about other divinatory methods of

service of Maḥmūd Bāshāh.¹²⁴ He combined the profession of a chronicler¹²⁵ with that of an astrologer and earned money by predicting the future. Such a combination was not unique in Egypt. Rulers in Mamlūk political circles often patronised astrologers.¹²⁶ Some of the Mamlūk Sultans, such as al-Nāṣir Muḥammad Ibn Qalāwūn¹²⁷ and Sultan Qāytbāy (r. 872–901/1468–1496),¹²⁸ were

making predictions in Langner, Untersuchungen, 64. Savage-Smith, Introduction, xiii–li.

¹²⁴ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 110a f.

¹²⁵ Irwin, Ibn Zunbul, 3–5. According to Michael Winter, Ibn Zunbul is not a reliable chronicler as his historiographic work “is a kind of romance.” Winter, *The Ottoman Occupation*, 491.

¹²⁶ Saliba, *The Role of the Astrologer*, 357–362.

¹²⁷ al-Nāṣir Muḥammad Ibn Qalāwūn, the most beloved Sultan, came to power three times: (1) 693–694/1293–1294, (2) 698–708/1299–1309 and (3) 709–741/1310–1341. See *al-bishārah* (the good news) about his birth and prophecies about his coming to power in Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 272–274, 352f. Irwin, *The Middle East in the Middle Ages*, 120. D. Behrens-Abouseif, *an-Nāṣir Muḥammad and al-Ašraf Qāytbāy—Patrons of Urbanism*, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. U. Vermeulen and D. de Smet, Leuven: Peeters 1995, 266–274.

even known to have an interest in astrology,¹²⁹ predictions and interpretations of prodigious signs (*uṣūlīyah*).¹³⁰ From the number of manuscripts that have survived we can consider him to have been a popular author who claimed to have been an eyewitness of the Ottoman conquest of Egypt in 922/1517.¹³¹ He also maintained close ties with the Ottoman court during the years after the conquest.¹³²

1.5. Ibn Zunbul's *Malhamah*

As already mentioned above, Ibn Zunbul's astro-meteorological *malhamah* is part of *al-Kitāb naql min kitāb al-qānūn* (*An Extract from the Book of the Rules*), which is comprised of chapters 22 and 23 of the

Northrup, The Baḥrī Mamlūk Sultanate, 252–253. See also footnote 352, p. 388.

¹²⁸ See footnote 65, p. 83.

¹²⁹ D. King, The Astronomy of the Mamluks: A Brief Overview, *Muqarnas* 2 (1984), 82.

¹³⁰ Mufaddal Ibn Abī al-Faḍā'il, *Moufazzal Ibn Abil-Fazail. Histoire des sultans mamlouks. al-Nahj al-sadid wa-al-durr al-farid fīmā ba'd ta'rīkh Ibn al-'Amīd*, tr. and ed. by E. Blochet, vol. 3, Paris: Firmin-Didot 1929, 153, 159–163.

¹³¹ Winter, The Ottoman Occupation, 491.

¹³² Lellouch, Historians of the Ottoman Empire, 2–8.

unpublished encyclopaedic compendium *Qānūn al-dunyāh* (*The Rule of the World*). This compendium not only integrates *malḥamah* but also brings together a wide array of geographical information with historical knowledge pertaining to the places described. Furthermore, it also devotes significant space to the explanation of celestial and terrestrial phenomena.¹³³

From the beginning of Ibn Zunbul's *malḥamah*, it is clear that the author must have been familiar with the knowledge of the ancient scholars, since he often refers to Ptolemy (ca. d. 100 A.D.),¹³⁴ Plato (d. 347 B.C.), Aristotle (d. 322 B.C.), and other Greek philosophers.¹³⁵ Like most Arabic works on matters of antiquity, this handbook is predominantly composed of extracts copied from older authorities without giving precise sources of information. He also integrated

¹³³ Irwin, Ibn Zunbul, 5.

¹³⁴ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 15b–18b. More about Ptolemy and his astrological works see O. Neugebauer, *A History of Ancient Mathematical Astronomy*, Heidelberg: Springer-Verlag Berlin 1975, 834. Gundel and Gundel, *Astrologumena*, 202f.

¹³⁵ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fol. 22b.

topics taken from the Arab books of his predecessors such as al-Kindī (d. ca. 256/870),¹³⁶ Abū Ma‘shar (d. 272/886),¹³⁷ Ibn Yūnus (d. 399/1009)¹³⁸ and al-Bīrūnī (d. 440/1048),¹³⁹ to whom he often refers.¹⁴⁰ It is clear that Ibn Zunbul’s *malhamah* wrote about issues that had been common knowledge among astrologers. Although this

¹³⁶ al-Kindī was a prominent Arab philosopher and scholar, who in his works adapted concepts from the Aristotelian tradition. See Sezgin, Geschichte, vol. 7, 130f. J. Jolivet and R. Rashed, “al-Kindī,” *The Encyclopaedia of Islam*, vol. 5, Leiden: Brill, Online 1986, 122–123.

¹³⁷ See about Abū Ma‘shar Ja‘far Ibn Muḥammad Ibn ‘Umar al-Balkhī, who was the most prominent astrologer and astronomer of his time, in Sezgin, Geschichte, vol. 7, 139f. J. Millás, “Abū Ma‘shar,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill, Online 1960, 139–140.

¹³⁸ See more on one of the most prominent Muslim astronomers Ibn Yūnus, also spelled Yūnis, in Sezgin, Geschichte, vol. 7, 173. C. Brockelmann, Geschichte der Arabischen Literatur. Erster Supplementband, vol. 1, Leiden: Brill 1937, 400. B. Goldstein, “Ibn Yūnus/Yūnis,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill, Online 1965, 969–970.

¹³⁹ See about al-Bīrūnī footnote 35, p. 30.

¹⁴⁰ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 18b, 24b, 25a, 25b, 36b, 37a.

kind of literature is known to have derived from the Assyrian-Babylonian omnia tradition,¹⁴¹ it brings forward many other cultural influences that need to be examined. As *malhamah* handbooks were regularly copied, remodelled, and adapted to specific geographic-historical situations, no thorough history of this genre exists, a fact that makes the reconstruction and dating of the original version difficult.

1.6. Structure and Content of Ibn Zunbul's *Malhamah*

To trace the history of the development of *Malhamah*, one must begin with the study of its structure and content. A helpful first step would be to comparatively analyse the techniques¹⁴² used to predict natural disasters, along the way untangling and sorting the different input from the varied sources which influenced it. The following pages exemplify the stages of this process and are devoted to a structural

¹⁴¹ Furlani, Eine Sammlung, 157. A. Fodor, Malhamat Daniyal, in *The Muslim East. Studies in Honour of Julius Germanus*, ed. G. Káldy-Nagy, Budapest: Loránd Eötvös University 1974, 85.

¹⁴² Ibn Zunbul uses different methods for predictions, which here I call *techniques*.

and contextual analysis of Ibn Zunbul's *malhamah* and similar treatises. In the pages detailing this process, I aim to trace the transmission of the manuscript's ideas and reveal the motives behind its composition. The objective is not only to highlight the intricate entanglement of cultural flows and historical agencies that culminate in the manuscript, but to demonstrate their importance for Ibn Zunbul's society and time. It thus constitutes a process that demonstrates both the most important historical intellectual currents and their impact on, and place in, the world.

The first section (I) of Ibn Zunbul's *malhamah* begins with the derivation of portents/omens (*dalā'il/dalālah/‘alāmah*) from the position of the moon in the various zodiacal signs at the heliacal rising of Sirius.¹⁴³ The latter is referred to in the text of the *malhamah* as “the birth of the year” (*mawlid al-sanah*).¹⁴⁴ Accordingly, this part of Ibn Zunbul's text and most other *malhamah* treatises bear titles similar to *The Book of Hermes about the Judgments Made from the Rising*

¹⁴³ See about Sirius footnote 36, p. 68.

¹⁴⁴ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 38b–44b, 39a.

of Sirius.¹⁴⁵ This first technique (1) is one among many other methods for making predictions in the astrological handbooks, attributed to

¹⁴⁵ Cf. Anonymous, *Kitāb Hirmis fī hikmat ṭulū‘ al-shi‘rah*. (*The Book of Hermes about the Wisdom Based on the Rising of Sirius*), The National Library of Russia, Samaritan collection, Ms. Фирк. Сам. VII 13, copied in the 17th century, fols. 1–51. Anonymous, *Kitāb Hirmis al-Harāmisah wa-huwa Idrīs fī al-ḥikm ‘inda ṭulū‘ al-shi‘rah al-yamāniyah*, National Library of France, Ms. Arabe 2578, fols. 1–41. Anonymous, *Kitāb Hirmis al-Harāmisah al-manqūl min kitāb Idrīs*, National Library of France, Ms. Arabe 4580, fols. 86–102. Anonymous, *Kitāb Hirmis*, Egyptian National Library, Ms. DM 132, fols. 73–117. Anonymous, *Rasā'il fī dalā'il al-shi'rā al-yamāniyah*, Egyptian National Library, Ms. DM 59,2 + 3 (copies Ms. DJ 289,2; Ms. DM 994; Ms. DM 1056,1; Ms. DM 788; Ms. HM 2,2; Ms. DM 79,2; Sh 72). Anonymous, *Kitāb bulūgh al-amāniyah fīmā yata‘allaqu bi-ṭulū‘ al-shi'rā al-yamāniyah*, Egyptian National Library, Ms. DM 994, 1271 A.H., 16 fols. See different copies in King, *Fihris al-makhtūtāt*, 637–640: Anonymous, *Risālah fī aḥkām al-shi'rā al-yamāniyah*, Egyptian National Library, Ms. Sh 73, 1130 A.H. (copy Ms. Sh 71). King, A Survey, 27: Anonymous, *Kitāb Hirmis al-Harāmisah*, Mq. 657 (5913). Anonymous, *Kitāb taqwīm*, Ms. We. 1155 (5916). For more about similar manuscripts in other libraries see Fahd, *La divination Arabe*, 494. Ullmann, *Die Natur- und Geheimwissenschaften*, 291.

Hermes. Predictions usually start with the zodiacal sign of Aries (al-Hamal) and end with Pisces (al-Hūt). Here is an example of predictions linked to the rising of Sirius in the sign of Leo (Asad):

“The wise Hermes said strong winds (*rīh ‘azīmah*) will blow towards north and east for days [...]. Stars will become red and will burn like fire. Streams of water will tide over the rest of the lands. The Nile will rise extremely [...]. There will be unrest and wars [...]. People will suffer from fever; pregnant women, birds, and animals will miscarry [...]. The water of the Nile will become unhealthy and will change, and there will be a prodigy (*āyah*) in it. There will be a solar and lunar eclipse. People will make profits from oil. The price for wheat will sink from Hātūr¹⁴⁶ to Ba’ūnah¹⁴⁷ [...]. Birds and pigs will die.

¹⁴⁶ Hātūr (10 November–10 December) is the third month of the Coptic calendar. Wassef, “Coptic Calendar,” vol. 2, 438. Malaty, The Coptic Calendar, 9–10. Wehr, Dictionary, 1015.

¹⁴⁷ Ba’ūnah (8 June–7 July) is the tenth month of the Coptic calendar. Wassef, “Coptic Calendar,” vol. 2, 439. Malaty, The Coptic Calendar, 9–10. Wehr, Dictionary, 41.

Locusts will appear [...]. The upper lands (al-Šā‘īd) and Egypt will be destroyed. It will be hot, and strong hot winds (*sumūm*) will blaze. There will be tremors (*rajjafah*) and a great earthquake (*zalzalah ‘azīmah*) [...]. The stream of the Nile will colour red like blood. But there will abundance in the land of Egypt, Syria and Byzantine [...]. Rains will be pouring down out of season. The merchants will benefit. And if Mars is in the [house of] Leo, the honey, bloodshed, and robbers will increase. And there will be a great event (*waq‘ah ‘azīmah*) in the land of India. A man who is famous in the city of rivers will be killed. But God knows better!”¹⁴⁸

¹⁴⁸ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 41a–41b. Cf. Anonymous, *Kitāb Hirmis*, Ms. Фирк. Сам. VII 13, fols. 2a f., in which predictions are given for “the birth of the year” in conjunction with zodiacal signs of Aries, Taurus, Gemini, Cancer and Lion and planets Mars, Venus, Mercury and the Sun. Some pages with the remaining zodiacal signs are obviously missing in this treatise. Cf. also with the other texts mentioned in footnotes 46–48, p. 74f. and footnotes 52–54, p. 78f.

Although the tremendous influence of Assyrian-Babylonian celestial divination on *malhamah* has long been assumed,¹⁴⁹ texts using Sirius (Sothis)¹⁵⁰ as a device for prognostications must have reached the Arabic *malhamah* through Egyptian intermediaries. The crucial element supporting this assumption is that the heliacal rising of Sirius, which does not play a prominent role in Assyrian-Babylonian omens, indicated the rise of the Nile and determined the beginning of the new year (1 Tūt/11–12 September)¹⁵¹ in ancient Egypt.¹⁵² The Copts called this star the “flood-bringer” due to the proximity of its rising with the annual rise of the Nile.¹⁵³ In addition, it is known that

¹⁴⁹ See footnote 141, p. 104.

¹⁵⁰ See footnote 36, p. 68.

¹⁵¹ Tūt is the first Coptic month, which corresponds to the period between 11 September and 10 October. Wassef, “Coptic Calendar,” vol. 2, 438.

¹⁵² P. Kunitzsch, “al-*Ši‘rā*,” *The Encyclopaedia of Islam*, vol. 9, Leiden: Brill 1997, 471–472. Malaty, The Coptic Calendar, 9. H. Lutfi, Coptic Festivals of the Nile: Aberrations of the Past? in *The Mamluks in Egyptian Politics and Society*, ed. Th. Philipp and U. Haarmann, Cambridge: Cambridge University Press 1998, 277–280.

¹⁵³ T. Oestigaard, *Water, Culture and Identity: Comparing Past and Present Traditions in the Nile Basin Region*, Bergen: BRIC Press 2009, 147.

Astrologumena related to the heliacal rising of Sirius existed from Hellenistic times.¹⁵⁴

To illustrate this connection, I have here included one of the few astrological texts preserved in a demotic papyrus (31222 Egyptian Museum) dating from the second century B.C.¹⁵⁵ Although the greater part of the text is missing, the translation of the text, published by George Hughes, shows resemblances to the *malhamah*'s structure and technique:

“The influences of Sothis (Sirius): If it rises when the moon is in Sagittarius: grain in the field [.....] (2) in the country of the Syrian... death will occur. will abound in weakness by night and day. [...] will (3) go ... and he (it) will

¹⁵⁴ *Astrologumena* is the antique genre, which can be considered equivalent to the Arabic *malhamah* prognostications. Cf. Gundel and Gundel, *Astrologumena*, 14–15, 56–57.

¹⁵⁵ W. Spiegelberg, “Die demotischen Papyrus,” Catalogue Général des Antiquités Égyptiennes du Musée du Caire, vol. 2, Strasbourg: Dumont Schauberg 1908, 309.

be filled. If it (Sothis) rises when Saturn is <in> Sagittarius:
The king [will] fight ... of his and he will (4) prince in
Egypt. Pharaoh [.....] will go to The inundation (of the
Nile) will come to Egypt. [.....] (5) will occur in the country of
the Parthian....”¹⁵⁶

There are relatively frequent references to the Nile in the *malhamah*, which is another indication of its connection with the Hellenistic-Egyptian prototype. These references suggest the authors' interest in the Nile, which otherwise would be quite inexplicable on the part of an author living somewhere in Mesopotamia. The *malhamah's* ascription to Hermes Trismegistos, who evolved out of syncretism of the Egyptian God Thoth¹⁵⁷ and the Greek Hermes,¹⁵⁸ is a final proof of the text's Hellenistic-Egyptian relations.

¹⁵⁶ G. Hughes, A Demotic Astrological Text, *Journal of Near Eastern Studies* 10/4 (October 1951), 258.

¹⁵⁷ In Ancient Egypt Thoth was regarded as the moon-god, the “ruler of the stars,” of the “cosmic order and of religious and civil institutions.” He was also god of wisdom and science, inventor of writing, and designator of the

The second section (II) of Ibn Zunbul's *malḥamah* is attributed to Dāniyāl (Daniel).¹⁵⁹ This attribution strikingly shows the significance of Jewish culture¹⁶⁰ for the transmission of this part of the Arabic

seasons, months, and years. Fowden, *The Egyptian Hermes*, 22. Malaty, *The Coptic Calendar*, 9.

¹⁵⁸ The Greeks in Egypt during the Hellenistic period identified Thoth with their god Hermes. (Gundel and Gundel, *Astrologumena*, 12.) “Like Thoth, the classical Greek Hermes was associated with the moon, medicine and the realm of the dead.” Both of them were messengers of the gods and the interpreters of “the divine will to mankind.” Fowden, *The Egyptian Hermes*, 22–24.

¹⁵⁹ Next to Hermes and Alexander the Great, some parts of *malḥamah* are attributed to Daniel. Anonymous, *Fī al-ḥawādith al-samāwīyah*, Egyptian National Library, Ms. DM 1156,4. Anonymous, *al-Qawl ‘alā ‘ayd al-ṣalib* (*Mansūb ilā Dāniyāl*), Egyptian National Library, Ms. S 70,3. See also footnote 57, p. 80.

¹⁶⁰ Gundel and Gundel, *Astrologumena*, 49–56, 259. References to similar divinatory texts in Hebrew can be found in J. Greenfield and M. Sokoloff, *Astrological and Related Omen Texts in Jewish Palestinian Aramaic*, in *Al Kanfei Jonah: Collected Studies of Jonas C. Greenfield on Semitic Philology*, ed.

malhamah. It consists mainly of omens derived from celestial and terrestrial signs.¹⁶¹ Accordingly, the second technique (2) of this second section refers to the change of celestial signs: occurrences of solar (*kusūf al-shams*)¹⁶² and lunar eclipses (*khusūf al-qamar*),¹⁶³ halos

Sh. Paul, M. Stone et al., Israel: Daatz 1995, 436f. R. Leicht, *Astrologumena Judaica. Untersuchungen zur Geschichte der astrologischen Literatur der Juden*, Tübingen: Mohr Siebeck 1968.

¹⁶¹ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 45a–56a.

¹⁶² Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 45a–46a. Cf. R. Labat, *Un Calendrier Babylonien des Travaux des Signes et des Mois*. (Séries IQQUR ĪPUŠ), Paris: Champion 1965, 163.

¹⁶³ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 46a–47a. Omen texts concerning lunar eclipses were popular in the Mesopotamian scholarly divination. They were disseminated both east, as far as India, and west of Mesopotamia, to Egypt. Their transmission to Egypt must have taken place during the fifth century B.C. (F. Rochberg-Halton, *Aspects of Babylonian Celestial Divination: the Lunar Eclipse Tablets of Enūma Anu Enlil*, Archiv für Orientforschung. Beiheft, Horn: Verlag Ferdinand Berger 1988, 7–30. R. Parker, *A Vienna Demotic Papyrus on Eclipse and Lunar Omina*, Providence: Brown University Press 1959. Gundel and Gundel, *Astrologumena*, 263. Cf. Labat, *Un Calendrier Byblosien*, 143–151.) In the first half of the second

around the sun and the moon (*al-dā’irah hawla al-shams wa-al-qamar*),¹⁶⁴ and different appearances of the new moon (*hilāl*).¹⁶⁵ The predictions based on lunar and solar eclipses are the oldest techniques to be found in manuals from different cultures.¹⁶⁶

All the predictions in section two are made according to similar schemata, predominately arranged by month. They usually begin with predictions for April (*Nīsān*)—the first month of the Babylonian year—and end with predictions for March (*Adhār*), except for references to omens relating to the appearance of the new moon during the twelve months of the Muslim calendar. The latter must

millennium B.C., omens derived from lunar phenomena were also popular in the Hittite kingdom (ca. 1350–1180 B.C.). W. Hübler and H. Hunger, “Astrology,” *Brill’s New Pauly. Encyclopaedia of the Ancient World*, vol. 1, Leiden: Brill 2002.

¹⁶⁴ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 47a–48b. Cf. Labat, *Un Calendrier Bybylonien*, 159–162.

¹⁶⁵ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fol. 48b.

¹⁶⁶ Gundel and Gundel, *Astrologumena*, 265.

have developed later in accordance with structural requirements of Arabic *malḥamah* text, as illustrated in example (c).

(a) “Dāniyāl, peace be upon him, said: ‘If there is a solar eclipse in April, there will be injustice, kings will be destroyed and replaced. The sovereign of Egypt will rise against his enemies. If the eclipse happens in the direction of the East, the prices will rise there and the riots will be frequent in the land of the non-Arabs (*al-‘ajm*). If the eclipse happens from the direction of the West, the prices will rise in Byzantine [there will be a famine] and their king will die. The wars, hunger and famine (*ghalā’*) among them will spread [...].’”¹⁶⁷

(b) “Dāniyāl, peace be upon him, said: ‘If there is a halo around the moon in April, it is an omen for the increase of

¹⁶⁷ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fol. 45a. Cf. Fodor, *Malhamat Daniyal*, 107–108.

winds, earthquakes, and clouds. But the crops and the fruit will be good [...].”¹⁶⁸

(c) “The month of Ṣafar [the second month of the Muslim calendar]: If the new moon has an erect position, ulcers and sore-throat will spread among the young boys and the rain will be frequent. If it is in a lying position, the locusts and rats will be numerous.”¹⁶⁹

There are structural similarities between the techniques deployed in the first two examples and predictions of the Assyrian-Babylonian

¹⁶⁸ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fol. 48a. This passage is almost identical with the passage about the halos around the moon in Anonymous, *Kitāb Hirmis*, Ms. Фирк. Сам. VII 13, fol. 8b. Cf. Fodor, *Malhamat Daniyal*, 111.

¹⁶⁹ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fol. 48b. Cf. Fodor, *Malhamat Daniyal*, 112.

“omina.”¹⁷⁰ The latter belonged to the collections of *Enūma Anu Enlil*,¹⁷¹ which served for the soothsayers as manuals for predictions and disaster aversion in Mesopotamia. The omina texts are highly structured, just like the *malhamah*, and have a fixed order for each of the natural phenomena observed, making entry location relatively easy.¹⁷²

The predictions in these collections also begin with the month *Nīsān*,¹⁷³ which is an obvious sign of the Assyrian-Babylonian influence. The following translation of one of numerous Assyrian-Babylonian texts written in cuneiform script on clay tablets shows

¹⁷⁰ It is a corpus of Assyrian-Babylonian divinatory omens written in cuneiform script on clay tablets. Labat, *Un Calendrier Byblosien*. Parker, A Vienna Demotic Papyrus.

¹⁷¹ “*Enūma Anu Enlil* [...]” (when the gods Anu and Enlil) were opening words, after which a collection of omina predictions are titled. Rochberg-Halton, *Aspects of Babylonian Celestial Divination*, 5.

¹⁷² Hübner and Hunger, “Astrology.”

¹⁷³ Rochberg-Halton, *Aspects of Babylonian Celestial Divination*, 36. Parker, A Vienna Demotic Papyrus, 29.

that the structure of the predictions has a characteristically Babylonian schematic fashion, which can also be found in the texts of other ancient cultures.¹⁷⁴

“If the beginning of the year on the 14th day of Nisannu a lunar eclipse occurs: There will be lamentation in the land of the enemy and the land will dwindle; the king will die.

If [...] on the 15th day an eclipse occurs: famine; the people will sell their children for money.

If an eclipse occurs on the 16th day: A destructive wind will rise and Mars will rise and destroy the herds [...].”¹⁷⁵

Meteorological phenomena constitute a third technique (3) used in the *malhamah* to make predictions. These terrestrial signs included

¹⁷⁴ Cf. the Arabic *malhamah* with the text about lunar and solar eclipses in Parker, A Vienna Demotic Papyrus.

¹⁷⁵ Rochberg-Halton, Aspects of Babylonian Celestial Divination, 253. For more examples see also Labat, Un Calendrier Byblosien, 143–151.

thunder (*ra‘d*),¹⁷⁶ observed during different days of the month, lightning (*barq*),¹⁷⁷ rainbow (*qawsu quzahin*)¹⁷⁸ the appearance of meteors and comets (*kawkab la-hu dhanab* “a star with a tail”),¹⁷⁹ winds (*rīyāh*) and storms (*zawābi*)¹⁸⁰—observed throughout the year, as can be seen from the following example:

¹⁷⁶ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 51a–54a. Cf. J. Lydus, *Liber de Ostentis et Calendaria Graeca Omnia*, ed. by C. Wachsmuth, Lipsiae: Teubner 1897, 54f.

¹⁷⁷ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 50a–50b. Cf. Lydus, *Liber de Ostentis*, 95f.

¹⁷⁸ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 50b–51a.

¹⁷⁹ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 54b–56a. See another kind of predictions of disastrous events based on the appearance of comets in different zodiacal signs in Anonymous, *Kitāb gharā’ib al-funūn wa-mulāḥ al-‘uyūn. The Book of Curiosities*: A Critical Edition by E. Savage-Smith and Y. Rapoport

(Online

<http://cosmos.bodley.ox.ac.uk/content.php/boc?expand=732%20%80%8>), Bodleian Library, MS. Arab. c. 90, fols. 13a–14b. Cf. Lydus, *Liber de Ostentis*, 28f.

¹⁸⁰ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 56a–57b.

“If in February (Shubāt) something similar to a fire or a column of light or a comet appears in the sky, nothing good is to be expected in that year. Hot wind (*shawb*) will afflict the crops; earthquakes (*zalāzil*) and lunar eclipses (*khusūfāt*) will be frequent; rivers will rise to an extreme height; rains will be out of season; a non-Arab king will die [...].”¹⁸¹

Except for the omens connected with lightning and rainbow, all of the predictions begin with April (Nīsān) and end with March (Ādhār). These entries, initially used to predict future events, were likely based on Assyrian-Babylonian omens.¹⁸² During the later centuries, some of the entries initiated specific branch of Arabic *malhamah* related to thunder,¹⁸³ known also in Greek tradition as *Brontologia* or

¹⁸¹ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fol. 55b.

¹⁸² Labat, *Un Calendrier Byblosien*, 9. Rochberg-Halton, *Aspects of Babylonian Celestial Divination*, 36.

¹⁸³ See, for example, the anonymous manuscript *Hawādith al-nujūm wa-al-ru‘ūd wa-al-zalāzil wa-al-khusūf fī shuhūr al-sanah*, known as *al-Ra‘diyah* (*The Book of Thunder*), Egyptian National Library, Ms. TM 214, copied

Tonitrualia.¹⁸⁴ These handbooks were already widely spread in the Byzantine Empire.¹⁸⁵

The fourth technique (4) in Ibn Zunbul's *malhamah* includes omens derived from geophysical events like earthquakes (*zalāzil*).¹⁸⁶ With some textual variations, these techniques appear in all of the *malhamah* astro-meteorological texts. One example of portents related to the occurrence of earthquakes during a specific month is as follows:

1321/1903, which was probably compiled by a twelfth century A.D. Christian author.

¹⁸⁴ In the Byzantine Empire, texts classified as *Brontologia* or *Tonitrualia* were predictions related to the occurrence of thunder. Gundel and Gundel, Astrologumena, 260–261. C. Bezold and F. Boll, Reflexe astrologischer Keilinschriften bei griechischen Schriftstellern, in *Sitzungsberichte der Heidelberger Akademie der Wissenschaften*, Heidelberg: Carl Winter's Universitätsbuchhandlung 1911. Lydus, Liber de Ostentis, 54f.

¹⁸⁵ Greenfield and Sokoloff, Astrological and Related Omen Texts, 447–448.

¹⁸⁶ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 49b–50a. Cf. Lydus, Liber de Ostentis, 107f.

“If it [an earthquake] occurs in Tammūz (July), the Nile will rise in that year. Looting and rise in prices will spread in the lands of the Byzantines and Syria.”¹⁸⁷

This type of prediction shows similarities not only with Assyrian-Babylonian omina, but also with the Greek Hermetic text on earthquakes, probably compiled by Byzantine author Johannes Laurentius Lydus in the sixth century A.D.¹⁸⁸ A comparative analysis of these texts shows that they share a common structure, but the Greek and the Assyrian-Babylonian texts are more laconic than Ibn Zunbul’s version. The latter includes a number of geographical names and refers to historical events which are absent in the Greek

¹⁸⁷ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fol. 49b. Cf. the following manuscripts: Anonymous, *Kitāb Hirmis*, Ms. Ms. Фирк. Сам. VII 13, fols. 21b–22a. Anynomous, Ms. Arabe 4441, National Library of France, and Fodor, *Malhamat Daniyal*, 113.

¹⁸⁸ Lydus, *Liber de Ostentis*, 110f. Bezold and Boll, *Reflexe astrologischer Keilschriften*, 50–52. F. Boll, *Codices Germanicos. Catalogus Codicum Astrologorum Graecorum*, vol. 7, Bruxellis: In Aedibus Henrici Lamertin 1908, 167f.

prototype. Moreover, earthquakes in the *malḥamah* are interpreted not only as bad omens, causing calamities, but also as good omens such as the prognoses concerning the good harvest and profits for the merchants, which is not the case in the above-mentioned prototypes.

The third section (III) of Ibn Zunbul's *malḥamah* begins with predictions of omens linked to January (Kānūn al-thānī), coinciding with the seven days of the week. It is plausible that this fifth technique (5) generated from the prototype, which originated after the 1st century B.C. when Julius Caesar introduced the calendar reform in 46 B.C. This kind of prediction is very popular and can be found in most of the *malḥamah* texts. This method of prediction also appears in *Thousand and one Nights* as mentioned previously.¹⁸⁹ The predictions in both texts start with Saturday.¹⁹⁰ The following example is drawn from Ibn Zunbul's *malḥamah* and illustrates what would happen if the 1st of January had fallen on a Wednesday:

¹⁸⁹ Kitāb alf laylah, 524. The Book of the Thousand Nights, 183. See p. 92f.

¹⁹⁰ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 57b–60a.

“If January falls on Wednesday, hot winds will spoil the crops. But the fruits will become numerous [...]. The Muslims will attack the Byzantine [...]. In Syria and the land of Persia, people will die because of the plague (*tā‘ūn*). The lands of Egypt and Fayyūm will be much exposed to them. Rains will be scarce [...]. In the end of February there will be strong winds, thunderbolts, lightning, thunders and earthquakes [...].”¹⁹¹

This kind of prediction had existed in the manuals of the so-called *Kalandologion* long before Ibn Zunbul’s *malhamah* was compiled. A Coptic text with a similar structure and closely related Vienna papyrus K 5506 belong to this group of predictions,¹⁹² which are related to the coincidence of 6 Ṭūbah/ca. 14 January with each of the seven days of the week. The schematic outline of these Coptic texts shows parallels with Ibn Zunbul’s *malhamah* and another anonymous

¹⁹¹ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 59a.

¹⁹² Anonymous, *Kalandologion*, Coptic Texts, Ms. P. Mich inv. 590, 9th century A.D., published in G. Browne, *Michigan Coptic Texts*, Barcelona: Papyrologica Castroctaviana 1979, 45–47.

Arabic manuscript titled *Kitāb gharā'ib al-funūn wa-mulāḥ al-‘uyūn* (*The Book of Curiosities [Oddities] of the Sciences and Marvels for the Eyes*).¹⁹³ According to Emilie Savage-Smith, an anonymous eleventh A.D. century author probably compiled this unique treatise, which an Egyptian or a Syrian scribe then copied during the thirteenth or fourteenth centuries A.D.¹⁹⁴

“When the sixth of *tūbeh* falls on the first day of the week (Sunday) [...] the winds will bring severe storms. The summer heat will be moderate, pains and fevers will increase, the waters of the Nile will rise, intense war will break out. A king will appear, the fruit of the vineyards will become scarce, the

¹⁹³ Anonymous, *Kitāb gharā'ib*, Bodleian Library, MS. Arab. c. 90.

¹⁹⁴ E. 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*, ed. K. Raflaub and R. Talbert, London: Wiley-Blackwell 2010, 291–292.

ships of the sea will have a safe journey, and wheat will become scarce and expensive.”¹⁹⁵

The fourth and final section (IV) of Ibn Zunbul’s *malḥamah* includes an agricultural almanac (*taqwīm*).¹⁹⁶ This sixth technique (6) not only predicts events for the whole year with reference to Egypt, Syria, Babylon, Persia and other parts of the world, but also mentions events connected with the rise of the Nile, the days when important Coptic-Christian, Jewish and Muslim feasts are celebrated and certain agricultural crops are to be cultivated.¹⁹⁷ Predictions, which resemble the previously mentioned examples, are derived from the position of

¹⁹⁵ This passage is E. Savage-Smith’s translation taken from the edition of the anonymous *Kitāb gharā’ib*, Bodleian Library, MS. Arab. c. 90, fol. 22a. See also Anonymous, Hādhihi *malḥamah*, Staatsbibliothek zu Berlin, Ms. Mo 197 (5903).

¹⁹⁶ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 57b–88a. See about agricultural almanacs footnote 1, p. 53f.

¹⁹⁷ Cf. Varisco, A Rasulid Agricultural Almanac, 110.

the lunar mansions (*manāzil*) and the *anwā'*¹⁹⁸ for each day of the solar calendar beginning with January.¹⁹⁹

“January begins on the 6 of Tūbah. It is said that there are good things and blessing in that month. And if it thunders during the first half of it, the year will not be good. If it thunders towards the end, there will be battles on the shore of the sea. People will suffer from eye disease. The year will be cold; the fruits will be in abundance. Cows will die. There will be earthquakes in the East [...]. On the 6 [of January] [...] it is said that epidemics disappeared in Egypt and blessing came down to the Nile and all waters. [...].”²⁰⁰

The last seventh technique (7) for predictions is specifically related to the state of the Nile and its impact during the year.²⁰¹ Although not

¹⁹⁸ See about *anwā'* footnote 1, p. 53.

¹⁹⁹ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 63a–88b.

²⁰⁰ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 65a–65b.

²⁰¹ See the anonymous manuscript, *Hādhā kitāb qā'idat al-Nil*, Staatsbibliothek zu Berlin, Ms. Mo 198 (5915).

included in Ibn Zunbul's *malḥamah*, it is obvious that texts of this kind are to be classified in the *malḥamah* genre not only because of the striking parallels between them, but because some *malḥamah* texts include it as a separate section.²⁰² To arrive at an idea of what these predictions look like an example is included here taken from a manuscript entitled *Risālah fī ma'rufat ziyādat al-Nil wa-al-hawādith al-mustaqbalah 'alā hasab al-kawākib (An Epistle Comprising Knowledge about the Inundation of the Nile and Future Events depending on the Planets)*:

“Mushtarī (Jupiter). [...] The Wise said [...]: ‘If the “drop” (*al-nuqtah*)²⁰³ falls on Thursday night, the blessed Nile will reach that year twenty-two cubits and some fingers.²⁰⁴ The Nile will be great and it will be blessed for everything that year [...]. If the planet, which is called Mushtarī (Jupiter), appears, there

²⁰² Anonymous, *Hādhā kitāb qā'idat al-Nil*, Staatsbibliothek zu Berlin, Ms. Mo 198 (5915), fol. 3b.

²⁰³ See the explanation of this term below, p. 130.

²⁰⁴ See more about the measurement units in cubits and fingers in footnote 25, p. 419; footnote 137, p. 453; footnote 172, p. 463; footnote 304, p. 501.

will be disasters (*shiddah ‘azīmah*), 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!”²⁰⁵

In this passage, the anonymous author, probably an astrologer, referring to the knowledge of the “Wise” (supposedly Hermes), compiled general predictions about the maximum level of the Nile’s rise²⁰⁶ and its impact during the year. The predictions are derived

²⁰⁵ Anonymous, *Risālah fī ma‘rufat zīyādat al-Nīl wa-al-ḥawādith al-mustaqbalah ‘alā hasab al-kawākib*, Egyptian National Library, Ms. MM 89 (Microfilm 5275), 1050/1640, fols. 3r–4v and another copy of the same manuscript: Anonymous, *Risālah tatadammana al-Nīl wa-al-kawākib wa-ghayr dhālika*, Egyptian National Library, Ms. ZK 326 (Microfilm 58697), copied 1294/1877, fols. 4a–4b.

²⁰⁶ See more about the measuring of the Nile’s level in *Chapter 5.5.1. “The Good News” (al-Bishārah)*, 460f. and different methods for the prediction of the Nile’s rise in *Chapter 5.3.2. Explanations about the Causes of Periodical Flood*, 441f.

from the position of seven planets and the day of the week, during which the so-called “drop” (*nuqtah*) would occur.

In fact, on the night of “St. Michael’s Feast” (*‘Ayd Mīkā’il*) on 12 Ba’ūnah/ca. 19 June—which was also called “the Night of the Drop” (*Laylat al-nuqtah*) and which was a popular festive day up until the 19th century A.D.²⁰⁷—people (the Copts)²⁰⁸ believed that the Archangel Michael²⁰⁹ asked God for the rise of the Nile.²¹⁰ Thereafter,

²⁰⁷ W. Lane, *The Manners and Customs of the Modern Egyptians*, London: J.M. Dent & Sons Ltd. 1923, 495.

²⁰⁸ See more about the term *Qibṭ* in T. Wilfong, The Non-Muslim Communities: Christian Communities, in *The Cambridge History of Egypt*, C. Petry (ed.), Cambridge: University Press 1998, 179.

²⁰⁹ According to the Coptic Christians, the Nile rises through the power of Christ at the intercession of the archangel Michael and the saints. (L. Kakosy, The Nile, Euthenia, and the Myths, *The Journal of Egyptian Archaeology* 68 (1982), 297. Oestigaard, Water, Culture and Identity, 144.) In Coptic Christian tradition, St. Michael the Archangel plays an important role, comparable to that of the Virgin Mary. Among the functions ascribed to him are: the role of God’s Angel, praying to God, welcoming the souls of the dead to heaven, and achieving victory over the devil. M. van Esbroeck,

during that night²¹¹ people thought that a “miraculous drop” was to fall into the Nile, causing its annual rise.²¹² Astrologers used this belief to calculate the precise moment of the drop (*nuqtah*),²¹³ making diverse predictions about the Nile and its impact during the year.²¹⁴

“Michael the Archangel, Saint,” *The Coptic Encyclopedia*, vol. 5, New York: Macmillan Publishing Company 1991, 1616–1620.

²¹⁰ W. Popper, *The Cairo Nilometer. Studies in Ibn Taghī Birdī’s Chronicles of Egypt*: I, Berkeley: University of California Press 1951, 68, 64.

²¹¹ 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, *The Manners and Customs*, 495f.

²¹² Lane, *The 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, *The Cairo Nilometer*, 68.

²¹³ Lane, *The Manners and Customs*, 495.

²¹⁴ See also p. 443f.

The late Mamlūk chronicler Ibn Iyās²¹⁵ records in the annals of 916/1510 and 920/1514 attest to the significance of this astro-meteorological 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 the weighing of “the mud” (*al-tīnah*)²¹⁶—as another method

²¹⁵ Ibn Iyās (d. 930/1524) is the principal chronicler of the late Mamlūk period. Witnessing the end of the Mamlūk Sultanate and the transition of power from the Mamlūk to Ottoman rule, he gave the most detailed account of the last decades of the realm. Much of his earlier *akhbār* was most probably borrowed from al-Maqrīzī’s *Kitāb al-sulūk* and ‘Abd al-Bāsiṭ’s *Nayl al-amal*. Massoud, The Chronicles and Annalistic Sources, 69f. Bacharach, Circassian Mamluk Historians, 81. W. Brinner, “Ibn Iyās,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1971, 812–813. H. Krauss-Sánchez, “Ibn Iyās,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 834–835. Winter, The Ottoman Occupation, 490–491.

²¹⁶ During this night, a certain amount of mud (sixteen qīrāṭ/1 qīrāṭ = 0,064l: Wehr, Dictionary, 804) was wetted with the Nile water. The mud was weighed the next morning, and in proportion to the increase in weight, the ultimate rise in the height of the Nile that year was predicted. (Ibn Iyās, *Baddā'i' al-zuhūr fi waqā'i' al-duhūr*, ed. by M. Muṣṭafā, vol. 4, İstānbūl: Maṭba‘at al-dawlah 1931, 193–194. Popper, The Cairo Nilometer,

for predicting the Nile's rise, occurred on a Monday, upon which *al-Khamāsin*²¹⁷ passed through without harm and no spread of plague in Old Cairo was reported.²¹⁸

68.) See other methods for predictions connected with this specific day in Lane, *The Manners and Customs*, 495–496.

²¹⁷ *al-Khamāsin* (“the fifties”), which are reflected in the Coptic tradition, in particular in the Feast of Pentecost, the fiftieth day after the Resurrection (al-Maqrīzī, *al-Mawā‘iz wa-al-i‘tibār fī dhikr al-khiṭāṭ wa-al-āthār*, ed. by A. Sayyid, vol. 1, London: Mu’assasat al-furqān lil-turāth al-islāmī 1423/2002, 714f. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,8, 106. Ibn Iyās, *Badā’i‘*, vol. 4, 297. B. Gregorios, “Pentacost,” *The Coptic Encyclopedia*, vol. 4, New York: Macmillan Publishing Company 1991, 1105–1106), are local dust-laden hot winds blowing in spring. The chronicles often mention a spread of epidemics during and after this period. (Ibn Iyās, *Badā’i‘*, vol. 4, 307f., 375, 445. M. Abdel Salam and M. Sowelim, Dustfall Caused by the Spring Khamasin Storms in Cairo: A Preliminary Report, *Atmospheric Environment* 1/3 (1967), 221.) According to a belief, the spread of epidemics usually declined after “St. Michael’s Feast” as all angels had to cease striking the people of Egypt with plague. M. Ensor, Learning from Disasters in Egypt: The Role of History, Oral Traditions, and Local Knowledge, in *A Comparative*

To conclude, most of the astro-meteorological *malhamah* handbooks, not necessarily containing the word *malhamah* in the title, include all sections with either the seven previously described techniques or some parts of them. These techniques are rooted in the handbooks' origins in long-term processes of cultural and textual interactions.

With regard to the structure of *malhamah*, all predictions share the same outward form developed in the Assyrian-Babylonian prototype. Its opening consists of the “*if*”—“*then*” clauses that describe the relation between hypothetical causes and their effects: *If* something happens at a specific time, *then* disastrous or non-disastrous events, with nearly identical pattern, are to be expected. This structure was rather easy to remember²¹⁹ and met the needs of ordinary people who wished to understand why calamities afflicted them.

and Transcultural Survey between Asia and Europe, ed. G. Schenk, Heidelberg: Springer forthcoming. See also p. 334 and footnote 626, p. 589.

²¹⁸ Ibn Iyās, *Badā'i*, vol. 4, 375.

²¹⁹ Fodor, *Malhamat Daniyal*, 95.

The calendar was another structural element used for making predictions. Most of the examples presented above started their predictions in Nīsān (April), which is a remnant of the Assyrian-Babylonian omina. A few exceptions have developed under the influence of Julian and Muslim calendars. Finally, because of Egyptian and later Hellenistic innovations, such as the introduction of the zodiac,²²⁰ more elaborate techniques for making predictions found their way into the Arabic *malḥamah*.

With regard to the content, astro-meteorological *malḥamah* predictions, like its prototypes, were concerned in particular with the welfare of different countries and sovereigns. Disastrous events were there described as dependent on astro-meteorological signs and these events included floods, the delay of the rains, variations in the regular seasons, earthquakes, eclipses, storms, hot winds, famines, epidemics, appearance of locusts, the spread of rats, diseases, the destruction of cities, chaos, wars, an enemy incursion, the fates of kings and ordinary people, cities and regions.

²²⁰ Koch-Westenholz, Mesopotamian Astrology, 132, 163–164.

In order to fit the interests and circumstances of the particular recipients, anonymous copyists or authors like Ibn Zunbul adapted predictions to the regional perspective of the time by means of analogies. They included historical events known to the Arab audience in the framework story of the *malḥamah*. For example, Ibn Zunbul mentions the Mongol (Tatār) invasions or the raids of the crusaders,²²¹ which cannot be found in the versions of *malḥamah* predating the thirteenth century A.D.²²²

1.7. The Origins of *Malḥamah*: a Relic of Assyrian-Babylonian Omina and Hermetic Tradition of Late Antiquity

Now that we are more familiar with the structure and content of Ibn Zunbul's *malḥamah* and have grappled with the problems of its interpretation, we can inquire into its origins. It is evident that *malḥamah* were copied from some prototype that originated in the pre-Islamic period. However, as this analysis has shown, they do not originate from one particular prototype but from several: Assyrian-Babylonian, Egyptian-Hellenistic, Jewish, Byzantine Greek, and

²²¹ Ibn Zunbul, al-Kitāb naql min kitāb al-qānūn, fols. 79a, 44a.

²²² Cf. an earlier *malḥamah* in Fodor, *Malhamat Daniyal*.

Coptic. This becomes clear from the techniques and other elements used for predictions of disastrous events.

It is impossible to know exactly how and when the Assyrian-Babylonian and Hellenistic tradition was subsequently transmitted further. The assimilation of these traditions could have occurred when northern Syria and Babylonia were parts of the same political organisation, the Persian Empire, during the rule of Achemenians (ca. 550 B.C.–330 B.C.), or, more probably, that of the Seleucids (312 B.C.–63 B.C.).²²³ Though unsophisticated, these techniques came into existence in the course of complex transcultural interactions and different textual influences. The textual traditions represented in the Mesopotamian omen series spread by means of cultural interchange to Egypt, Greece, and as far as India.²²⁴

²²³ Peters, *Hermes* and Harran, 69.

²²⁴ D. Pingree, *Jyotiḥśāstra. Astral and Mathematical Literature*, ed. by J. Gonda, *A History of Indian Literature*, Wiesbaden: Otto Harrassowitz 1981, 67f. Fodor, Malhamat Daniyal, 89.

Arabic astro-meteorological *malḥamah* originated as a result of its transmission, whereby ancient Mesopotamian concepts were modified and integrated during Hellenistic times.²²⁵ But exact sources are difficult to come by across the centuries and cultures. This complexity stems from the fact that *malḥamah* handbooks were copied by scholars interested more in gathering information than in preserving any author's work, except for the most authoritative such as Hermes, Daniel, or Aristotle. Earlier texts of Arab *malḥamah* which were ascribed to these pseudo-authors probably came to existence in Iraq during the 'Abbāsid era.²²⁶ There are implications that during this period (eight–ninth century A.D.), known as the “golden age of Islam,” most famous astrologers of the time, such as Māshā'īllāh (d. ca. 200/815)²²⁷ and Abū Ma'shar (d. 272/886),²²⁸ to whom Ibn

²²⁵ Rochberg-Halton, Aspects of Babylonian Celestial Divination, 12–14.

²²⁶ Fodor, Malhamat Daniyal, 88.

²²⁷ Māshā'īllāh, Abū Ma'shar, and other scholars probably translated antique *Astologumena* during the reign of Caliph al-Ma'mūn (r. 813–833 A.D.). Gundel and Gundel, Astrologumena, 14, 275.

²²⁸ Abū Ma'shar is known to have transmitted a treatise titled *Kitāb al-malḥamah al-murawīyah 'an al-Iskandar*, Egyptian National Library, Ms. S

Zunbul refers in his treatise, translated the main classical texts into Arabic and made use of them in Baghdad.²²⁹

The transformation of *malhamah* probably took place during this period via translations of classical Greek texts into Pahlavi,²³⁰

4467, 1200 A.H. Muslim scholar and bibliographer Ibn al-Nadīm (d. 385/995) also mentions in his *Fihrist* that Abū Ma'shar wrote a number of astrological treatises, many of which have survived only as titles. For example, he compiled a *Kitāb al-malāhim* as well as a treatise titled *Kitāb al-amṭār wa-al-riyāḥ wa-taghayyur al-ahwiyah*, which must have dealt with predictions. Sezgin, Geschichte, vol. 7, 328.

²²⁹ Most of the scholars of the eighth and ninth centuries A.D. were bilingual and were acquainted with Greek, Syriac, and Pahlavi literature A. Etman, Translation at the Intersection of Traditions: The Arab Reception of the Classics, in *A Companion to Classical Receptions*, ed. L. Hardwick and Ch. Stray, Malden: Blackwell 2008, 142. Rosenthal, The Classical Heritage, 6–7.

²³⁰ During the Sasanian period (224–651 A.D.) a great number of Greek astrological texts were translated into Pahlavi. D. Pingree, From Alexandria to Baghdad to Byzantium. The Transmission of Astrology, *International Journal of the Classical Tradition* 8/1 (2001), 5.

Syrian,²³¹ Nabatean (*ahl Harrān*)²³² or directly into Arabic. There is, indeed, a rather voluminous branch of predictions extant in these and other languages, which shows that this kind of literature was extremely popular in the Middle East, especially in Mesopotamia.²³³ However, the examination of the existing Syrian texts²³⁴ reveals that they have only some echoes of Arabic *malhamah*.

²³¹ Sezgin, Geschichte, vol. 7, 313.

²³² Anonymous, *Kitāb Hirmis al-Harāmisah* [...], Ms. Mf. 39,6 (5914), copied 1000/1591 fols. 85–96. Anonymous, *Kitāb Hirmis* [...] *fī al-ḥikm ‘inda ṭulū‘ al-shi‘rā wa-mā la-hā min al-hawādith*, Egyptian National Library, Ms. 132 DM, 1100 A.H, 92 fols. (copies Ms. DM 575, 48 fols.; Ms. DH 16,2, fols. 73v–117v; Ms. K 3852, 68 fols.).

²³³ Fodor, Malhamat Daniyal, 89.

²³⁴ Anonymous, *The Book of the Zodiac (Sfar Malwašia)*, tr. by E. S. Drower, London: The Royal Asiatic Society 1949. Syriac omens are also found in several small tracts, of which only parts have been published and translated. (See, for example, G. Furlani, Astrologisches aus syrischen Handschriften, *Zeitschriften der Deutschen Morgenländischen Gesellschaft* 75 (1921), 202.) One is the *Book of Prognostications Kitāb al-dalā‘il (Ktōbō d-ṣhūdō‘ē)* of al-Hasan Ibn Bahlūl, dating from 556/1160–1, (Fahd, “Malḥama,” 247) and the other is *Syrian Anatomy Pathology and Therapeutics or The Book of*

Instead more similarities can be found in the so-called “Book of the Zodiac” copied in the Mandaic language of lower central Iraq in twelfth and thirteenth centuries A.D.²³⁵ A striking divergence between *malhamah* and the Mandaic text is, however, the lack of any reference to the Tigris or the Nile, though the latter plays an important role in all the types of the Arab *malhamah*.

There are more indications that astro-meteorological *malhamah* could have been transmitted directly from classical Greek²³⁶ into Arabic²³⁷.

Medicines with an English translation by W. Budge, vol. 1, London: Oxford University Press 1913, copied probably in the twelfth century A.D. (Fodor, Malhamat Daniyal, 85). These texts deal with weather and medical prognostications derived from the astrological phenomena.

²³⁵ Anonymous, The Book of the Zodiac. Savage-Smith, Introduction, xxxvi.

²³⁶ References to Greek narrators can be found in Anonymous, *Kitāb Hirmis*, Egyptian National Library, Ms. 132 DM; Ms. DM 502; Anonymous, *Hādhā kitāb malhamah*, Staatsbibliothek zu Berlin, Ms. Spr 1936 (5912); National Library of France, Ms. Arabe, 2578, Ms. Arabe 2579.

²³⁷ As mentioned above, we can find some fractions of *Malhamah* in Lydus, Liber de Ostentis and Boll, Catalogus, 167f.

Although there is no thorough verbal congruence between the Greek texts and *malhamah*, there is a substantial agreement in their structure and specific points, especially regarding the types of calamities listed in them.

Based on this information, I conclude that the *malhamah*, inspired by a diversity of influences, lacks a direct literary link, but drew inspiration from several, many of which I have identified above. Concepts that were modified during the Hellenistic period originated in ancient Mesopotamia. During the course of its origination, this ancient connection with the classics was bequeathed by the Arab scholars of the ‘Abbāsid period to the authors of later centuries, like Ibn Zunbul. The universal desire to predict and possibly avert future disastrous events²³⁸ ensured both the survival of this ancient tradition

²³⁸ In the Assyrian-Babylonian tradition appropriate rituals played a significant role for the aversion of disastrous events. (Koch-Westenholz, Mesopotamian Astrology, 13.) We do not have any evidence for similar rituals conveyed in the Arabic *malhamah*, which does not mean that they do not exist. In the Arab culture magic, which ‘seeks to alter the course of events, usually by calling upon a superhuman force (most often God or one

and the subsequent development of the Arabic genre of astro-meteorological *malḥamah* predictions.

It is also clear that the astro-meteorological *malḥamah* stand quite apart from the apocalyptic *malḥamah*, with which it is often confused in western secondary literature. The material's actual function is unknown, however, it can be assumed that people would believe in warnings encased in astro-meteorological handbooks during times of political crisis or natural disasters, as they were designed to encourage and warn the believer, and to show him his place in God's plan.

During the Mamlūk period, Muslim scholarly interest in copying and commenting upon the old traditions of *malāhim* had received a new impetus, a task that certainly helped to save this kind of material from withering away. The existence of this astro-meteorological genre reflects a contemporary social need for this kind of popular belief.

of his intercessors),' (Savage-Smith, Introduction, p. xiii.), plays a significant role. The use of magic can be seen as an equivalent to the rituals. See, for example, J. Ruska, *Kazwīnistudien*, *Islam* 4 (1913), 19, 22.

The repetitive nature of predictions supported the deterministic character of this belief and helped people cope with disasters, which increased especially during the last decades of the Mamlūk reign.²³⁹ In particular, the belief in the astro-meteorological predictions foretelling the Nile's level and the consequences this could have for the year,²⁴⁰ attest to the significance of this belief among the population.²⁴¹

²³⁹ See the discussion in *Chapter 5.8. Case Studies of Disastrous Droughts: Causes, Effects, and Cultural Responses*, p. 555f.

²⁴⁰ al-Maqrīzī, al-Khiṭāṭ, vol. 1, 180–181, 155. al-Qalqashandī, *Kitāb ṣubḥ al-aṣhā*, vol. 3, al-Qāhirah: al-Maṭba‘ah al-amīriyah 1332/1914, 293–294. Ibn Iyās, *Nashq al-azhār fī ‘ajā’ib al-aqtār*, Institute of Oriental Manuscripts, Russian Academy of Sciences, Ms. B 1033, 1007/1599, fols. 436. al-Suyūṭī, *Kawkab al-rāwḍah fī ta’rīkh al-Nīl wa-Jazīrat al-Rāwḍah*, ed. by al-Shishtāwī, al-Qāhirah: Dār al-Āfāq al-‘arabiyyah 2002, 149. Popper, The Cairo Nilometer, 215. al-‘Asqalānī, *Inbā’ al-ghumr bi-anbā’ al-‘umr*, vol. 4, ed. H. Ḥabashī, al-Qāhirah: al-Majlis al-a‘lā lil-shu’ūn al-islāmiyah, lajnat ihyā’ al-turāth al-Islāmī 1419/1998. 180. See a practical example of one kind of prediction in Ibn Iyās, *Badā’i‘*, vol. 4, 194.

²⁴¹ See more sources in K. Chalyan-Daffner, Predictions of “Natural” Disasters in the Astro-meteorological Malḥamah Handbooks, in *Occult*

Drawing conclusions, the importance of Ibn Zunbul's *malḥamah* can be summarised as follows: It has preserved a pre-Islamic heritage—it is a relic of Assyrian-Babylonian omnia and the Hermetic tradition of Late Antiquity—and was passed on as a matter of tradition. Its content contains a mixture of thoughts and ideas derived from various sources with evidence existing of its transformation from the Assyrian-Babylonian omnia, Egyptian-Hellenistic, Greek, Jewish, and Coptic scripts. In addition, by finding its way into Arab tradition, the text has gone through various modifications. Equally important are the changes and adaptations of the perception of disasters to Mamlūk culture, beliefs, and history.

All this confirms that the astro-meteorological *malḥamah* absorbed, reflected, and modified interpretations of natural phenomena through the transference of transcultural knowledge. In this respect, Mamlūk authors like Ibn Zunbul reworked interpretations of disasters that they knew from pre-Islamic ancient cultures by adding new understandings gleaned during transcultural interactions.

Sciences in Pre-Modern Islamic Culture, N. El-Bizri, E. von Orthmann, S. Leder (ed.), *Beiruter Texte und Studien*, forthcoming 2015.

CHAPTER 2

NATURAL DISASTERS IN COSMOGRAPHIC WORKS: ARABIC LITERARY GENRE

OF ‘AJĀ’IB WA-*GHARĀ’IB*

2.1. Introduction of Cosmographic Works

This chapter is devoted to the interpretations of natural hazards found in the Arabic cosmographic works of the Mamlūk period. Although no Mamlūk scholar identified himself as a “cosmographer,” nor is there any Arabic word at the time that corresponds to this term, I use it because the sources under scrutiny here treat topics that belong to the cosmographic genre. By giving a “general description of the world” and “the constitution of the whole order of nature,¹ this literature—defined by Syrinx von Hees in a specific context as “an Arabic encyclopaedia of natural history”²—brings together not only

¹ B. Varenius, Cosmography and Geography, ed. by N. Sanson and R. Blome, London: S. Roycroft 1683, 1. Ch. Bouyahia, “al-Ķazwīnī,” *The Encyclopaedia of Islam*, vol. 4, Leiden: Brill 1973, 865–867. “Cosmography,” Webster’s New Encyclopedic Dictionary, Cologne: Könemann 1994, 227.

² S. von Hees, The Astonishing: a Critique and Re-reading of ‘Aḡā’ib Literature, *Middle Eastern Literatures* 8/2 (July 2005), 102.

information on physical aspects of natural phenomena, but also numerous fictional tales about why catastrophes happen.

Generally speaking, this genre covers subjects such as geography, meteorology, mineral, vegetable, animal and human world, ancient myths, stories of prophets, and famous architectural structures of world significance. It includes accounts of planetary motion, the recurrence of the seasons as well as natural disasters like earthquakes, excessive floods, and droughts. What is noteworthy here is that natural disasters in this context are usually referred to as “strange” (*gharīb*) “wonders of creation” (*‘ajā’ib al-makhlūqāt*).³ Since these terms often appear in the titles of books, western scholars classified this type of literature under the so-called genre of *‘ajā’ib*.⁴

³ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 10–13. The genre of “marvels of creation” has ancient roots. Cf. *Naturalis Historia* of Roman writer Caius Plinius Secundus (d. ca. 79 A.D.), author of an extensive natural history, who treats similar topics in *Die Naturgeschichte des Caius Plinius Secundus*, ed. by M. Vogel and L. Möller, Wiesbaden: Marix 2007. See more details about this scholar in the introductory part of the same book, p. 9–30.

⁴ von Hees, The Astonishing, 102.

In the following, I will present some of the major trends in the interpretation of natural disasters in these *‘ajā’ib* works, which offer a completely different focus from that conveyed in the previous chapter. The examination in this part will start with the definition and explanation of the constituent elements of the *‘ajā’ib* literature, before giving an overview of how Mamlūk authors of this genre treated catastrophes, namely not as disastrous events but as “marvellous oddities”—a term coined in the course of the research.

The purpose here is to draw attention to the development of two specific interpretative patterns, which elucidate another approach to natural disasters such as earthquakes, floods, and water-induced droughts. Firstly, there are the physical explanations of “marvellous oddities” based on the knowledge of Greek philosophers and early Muslim savants and, secondly, widely spread fictional explanations of these “oddities” by Muslim storytellers (*qīṣāṣīyūn* or *qassāṣ*).⁵

⁵ Wehr, Dictionary, 765, 766. Ibn al-Wardī, *Kharīdat al-‘ajā’ib wa-farīdat al-gharā’ib*, Miṣr: Maṭba‘at Muṣṭafā al-Bābī al-Ḥalabī 1358/1939, 16. Khoury, Un Fragment astrologique, 139.

In order to understand these two different interpretations of natural disasters in the Mamlūk writings, I will observe them from a transcultural perspective, that is to say, comparing the influence of foreign traditions, which played a significant role in their development and maintenance. The aim is to show how they were formed and to what extent their plots depended on their pre-Islamic counterparts. Therefore, the information presented in this chapter is not only drawn from the works of the Mamlūk scholars, but those of their Muslim ancestors, who ensured the continuity of the knowledge gleaned during the centuries of cultural encounters, exchange and entanglements.

2.2. The Arabic Literary Genre of ‘Ajā’ib wa-Gharā’ib: Disasters as “Marvellous Oddities”

In the medieval Arabic and Persian literature, we frequently come across the terms ‘ajā’ib and gharā’ib (“marvels” and “oddities”). They not only appear in the body of the texts,⁶ but in a large number of

⁶ Ibn al-Wardī, Kharīdat al-‘ajā’ib. al-Dimashqī, Kitāb nukhbat al-dahr. Ibn Iyās, *Nuzhat al-umam fī ‘ajā’ib wa-al-hikam*, ed. by M. ‘Azab, al-Qāhirah:

titles.⁷ Both of these terms have a range of meanings depending on the context in which they appear.⁸ In general, ‘ajā’ib, the plural form of ‘ajībah, indicates “amazing,” “marvellous,” and “wondrous”⁹ things, referring usually to objects that exist in reality, and the term plays an important role in the context of a religious worldview, in the sense of something that astonishes. Here it designates the wonders of God’s creation (*‘ajā’ib al-makhlūqāt*), to which all natural phenomena belong.¹⁰

Maktabat Mabdūlī 1995. Ibn Qayyim al-Jawziyah, *Miftāh dār al-sa‘ādah*, vol. 1–2.

⁷ von Hees, *The Astonishing*, 102.

⁸ von Hees, *The Astonishing*, 113.

⁹ C. Dubler, “Adjā’ib,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill 1960, 203–204. Wehr, *Dictionary*, 591. A. Hunsberger, “Marvels,” *Encyclopaedia of the Qur’ān*, vol. 3, Leiden: Brill 2003, 287–288.

¹⁰ von Hees, *The Astonishing*, 105–106.

Likewise, the wonderful is often the strange and the inexplicable.¹¹

This link is reflected in the term *gharā'ib*, the plural form of *gharībah*, which signifies not only “strange,” “uncommon,” “rare,” “unfamiliar,” “extraordinary” and “odd,” but also “astonishing, amazing, and marvellous” things or events.¹² Both of these words were borrowed from categories which form the basis of at least two genres: (a) *'ilm* (science, religious knowledge) and (b) *adab* (literature).¹³

As a technical term in *'ilm* (science, religious knowledge)—in *qur'ānic* and *hadīth* studies—the *'ajīb* (wondrous) signifies God’s creation, its entities, and processes, viewed as part of God’s “signs.” As these signs play a significant role in the *Qur'ān*, studying the features of creation and the marvels of the world became one form of worshipping God.¹⁴

¹¹ C. Bynum, Wonder, *The American Historical Review* 102/1 (February 1997), 23.

¹² Wehr, Dictionary, 668.

¹³ N. Rabbat, ‘Ajīb and Gharīb: Artistic Perception in Medieval Arabic Sources, *The Medieval History Journal* 9/1 (2006), 107.

¹⁴ Hunsberger, “Marvels,” 287. Netton, “Nature as Signs,” 528f.

Gharib (“odd”) designates in this context rare and unfamiliar expressions in the *Qur’ān* and in *Hadīth*.¹⁵

In the second group of texts belonging to *adab* (literature) these terms spanned the scope of cognitive reactions to the extraordinary and unusual, with ‘ajā’ib as the more encompassing term and *gharā’ib* as a rhyming complement rather than a denotative extension of it.¹⁶ The latter is probably positioned deliberately to evoke the readers’ attention.¹⁷

¹⁵ S. Bonebakker, “*Gharīb*,” *The Encyclopaedia of Islam*, vol. 2, Leiden: Brill 1965, 1011.

¹⁶ We also find these terms in the description of art like figural paintings, rare architectural structures, which also fall in the category of marvellous things. See examples in Rabbat, ‘Ajīb and *Gharīb*, 106–108. Cf. L. Daston and K. Park, *Wonders and the Order of Nature 1150–1750*, New York: Zone Books 1998, 67–100, 255–290. L. Bernburg-Richter, Between Marvel and Trial: al-Harawī and Ibn Jubayr on Architecture, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. U. Vermeulen and K. D’Hulster, Leuven: Peeters 2010, 115–145.

¹⁷ von Hees, *The Astonishing*, 102.

al-‘Ajā’ib and *al-gharā’ib* topics in *adab* (literature), which is under consideration here, had a long history in the Arabic sources. We can find them, for example, in the famous early ninth century A.D. *Kitāb al-hayawān* (*Book of Animals*)¹⁸ compiled by the well-known Arab prose writer al-Jāḥīz (d. 255/868–9).¹⁹ However, the best-known forerunner of this genre²⁰ encompassing these motives is al-Qazwīnī’s (d. ca. 682/1283)²¹ ‘Ajā’ib *al-makhlūqāt wa-gharā’ib al-mawjūdāt* (*The Wonders of Creation and the Oddities of Existent Things*).²² Mamlūk

¹⁸ al-Jāḥīz, *Kitāb al-hayawān*, vols. 1–2, Bayrūt: Dār al-‘Irāq 1956.

¹⁹ Rabbat, ‘Ajīb and Gharīb, 106. See biographical information on al-Jāḥīz Ch. Pellat, “al-Djāḥīz,” *The Encyclopaedia of Islam*, vol. 2, Leiden: Brill 1965, 385–387.

²⁰ Although al-Qazwīnī’s *The Wonders of Creation* is regarded as the archetype of ‘ajā’ib literature, the origin of this genre goes back to the late twelfth century A.D. al-Qazwīnī’s predecessor Muḥammad Ibn Maḥmūd-i Ṭūsī compiled a source with the similar content entitled ‘Ajā’ib *al-makhlūqāt*. B. Radtke, Die älteste islamische Kosmographie Muḥammad-i Ṭūsīs ‘Aḡā’ib *ul-makhlūqāt*, *Islam* 64 (1987), 279–286.

²¹ See about al-Qazwīnī footnote 63, p. 43.

²² In this book, which consists of two parts: ‘Ajā’ib *al-makhlūqāt* (*The Wonders of Creation*) and Āṭhār *al-buldān* (*The Ancient Monuments of*

authors consulted this early thirteenth century A.D. work a lot, and in the western literature it is often referred to as the *Cosmography* because it covers all those topics with which a cosmographic work generally deals.²³ In this book, al-Qazwīnī (d. 682/1283) gives a clear definition of these terms, showing an obvious distinction between them.

According to him, *al-‘ajab* (wonder, astonishment) is a source of “bewilderment to which a person is exposed because of the lack of

Countries), al-Qazwīnī (d. ca. 682/1283) sets out to give a description of all the phenomena of the natural world. For more details about its content and structure see M. Goeje, Kazwini’s Cosmography (Book Review), *Academy* 1 (1869/1870), 111. S. von Hees, al-Qazwīnī’s ‘ajā’ib al-makhlūqāt: An Encyclopædia of Natural History? in *Organising Knowledge. Encyclopædic Activities in the Pre-Eighteenth Century Islamic World*, ed. D. Pingree and H. Daiber, Brill: Leiden 2006, 171–186. Dubler, “Adjā’ib,” 204. C. Bosworth and I. Afshar, “‘Ajā’eb al-makhlūqāt,” *Encyclopædia Iranica*, vol. 1, London: Routledge 1985, 696–699. Radtke, Die älteste islamische Kosmographie, 279.

²³ See the topics of the cosmographic genre on p. 147.

knowledge about the cause of the thing or how it is affected.”²⁴ In this case, the “wonder” (*al-‘ajab*) is in particular the familiar, everyday occurrence of life such as the rising of the sun, the growing of plants and the digestion of food,²⁵ whereas “strange,” “extraordinary,” and “odd” (*al-gharīb*) things occur rarely and stand in contradiction to normal things. Their occurrence can relate to the astral phenomena or the wondrous influence of prophets or saints through God’s power.²⁶

In al-Qazwīnī’s description, among other phenomena, the following events belong to the category of *gharīb*: tremors and earthquakes, thunderbolt, prediction of the soothsayers, appearance of comets (“stars with tails”), falling of meteors, out of season snowfall and hailstorm, transformation of a dry land into a sea and sea into a dry land, and monstrosity.²⁷ All these events are called *gharīb*²⁸ because

²⁴ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 5. Cf. Daston and Park, Wonders, 109, 111.

²⁵ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 5–9.

²⁶ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 9.

²⁷ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 10–13.

they are so extraordinary and rare that their causes are not immediately understood. Taking into consideration the obvious distinction between these terms it is henceforth plausible to define this genre, instead of just ‘ajā’ib, as ‘ajā’ib wa-gharā’ib (“wonders and oddities”).

2.3. Disasters as “Marvellous Oddities” in the Cycle of Destruction and Revival (*al-Fasād wa-al-Kawn*)

²⁸ This differentiation is typical of the Arabic genre of ‘ajā’ib wa-gharā’ib, as compared to the Western Medieval tradition of “wonders,” which does not make clear distinction between the “marvellous” and “odd”. (Cf. Daston and Park, *Wonders*, 10, 23–24, 40, 49–52, 57). Instead, in the western medieval tradition, we have another distinction for the modern English concept of “wonder,” which derives from the Latin concepts of “admiratio” “mirabilia” and “miracula.” The first, “admiratio,” refers to the emotion itself, the second, “mirabilia” (marvels), which, broadly speaking, corresponds to the Arabic ‘ajā’ib wa-gharā’ib, refers to mysteries or natural things of great significance, and the third, “miracula” (miracle), is done by God directly or through the saints outside the ordinary course of nature. See other details in Bynum, *Wonder*, 8. Savage-Smith, *Introduction*, xxix. Daston and Park, *Wonders*, 16.

“Marvellous oddities” like earthquakes, floods, droughts, and storms are treated as normal happenings in *‘ajā’ib wa-gharā’ib* literature. They reoccur over and over as a part of “God’s plan” also revealed in the *Qur’ān* 30:19,²⁹ in which the earth is in constant process of transformation, which happens through periodical destruction and revival (*al-fasād wa-al-kawn*).³⁰ Some of the Mamlūk scholars regarded this process as an ordered whole governed by natural laws. Although it is generally accepted that during the Mamlūk period interest in natural sciences (*al-ilm al-tabi’ī*)³¹ gradually diminished and the physical perspective of natural phenomena was not closely

²⁹ Netton, “Nature as Signs,” 528–536. *Qur’ān* 30:19: “He [it is who] brings forth the living out of that which is dead, and brings forth the dead out of that which is alive, and gives life to the earth after it had been lifeless.” (Muhammad, *the Qur’ān*, 619.) See also p. 181.

³⁰ Dubler, “*‘Adjā’ib*,” 203. Bosworth and Afshar, “*Ajā’eb*,” 697. See also Ibn al-Dawādārī, *Kanz al-durar wa-jāmi‘ al-ghurar*, ed. by H. Roemer, vol. 9, al-Qāhirah: al-Ma‘had al-almānī lil-āthār 1379/1960, 104f.

³¹ E. Kheirandish, Organizing Scientific Knowledge: The “Mixed” Sciences in Early Classifications, in *Organising Knowledge. Encyclopaedic Activities in the Pre-Eighteenth Century Islamic World*, ed. D. Pingree and H. Daiber, Brill: Leiden 2006, 135, 139.

discussed,³² in their works we encounter allusions to the transformation theory and physical explanations of natural phenomena, derived from Aristotle's (d. 322 B.C.) "natural philosophy."³³

³² M. Abdalla, Ibn Khaldūn on the Fate of Islamic Science after the 11th Century, *Islam & Science* 5/1 (2007), 61–70. See further analysis of factors for the "Decline of Science," among which natural disasters, in particular the spread of the plague and the increase of famines in the fourteenth and fifteenth century A.D., played a significant role. (Y. Ahmad, Factors Behind the Decline of Islamic Science after the Sixteenth Century, *History of Science and Technology in Islam*, <http://www.history-science-technology.com/articles/articles%208.htm>). See detailed discussion of the increase of natural disasters in Egypt in *Chapter 5.8. Case Studies of Disastrous Droughts: Causes, Effects, and Cultural Responses*, p. 555f. Cf. "the theory of the decline of the East" in the tenth and eleventh centuries A.D. due to climatic disasters like droughts. Ellenblum, The Collapse of the Eastern Mediterranean.

³³ St. Menn, "Aristotle (384BCE–322 BCE)," *Encyclopedia of Philosophy*, vol. 1, Detroit: Thomson Gale 2006, 263–282. "Aristoteles," *Enzyklopädie Philosophie und Wissenschaftstheorie*, vol. 1, Stuttgart: Verlag J. B. Metzler 1995, 167–175. Aristotle, *Physics*, tr. by R. Waterfield with an

These theories, based on deductive methods and abstract reasoning, found their way into the Mamlūk ‘ajā’ib wa-gharā’ib as well as historiographical literature³⁴ through the works of earlier Arab scholars, who played a dominant role in the development of the sciences³⁵ in Islam. Among these scholars are the following early Muslim savants of the ninth–eleventh century A.D.: Yaḥyā Ibn al-Bitrīq (d. ca. 215/830), Ḥunayn Ibn Ishāq (d. 262/876),³⁶ al-Mas‘ūdī

Introduction and Notes by D. Bostock, Oxford: Oxford University Press 1996. Aristotle, *Meteorology*, Book I-II, ed. by E. Webster, Raleigh: Alex Catalogue 2000. I. Bodnar, “Aristotle’s Natural Philosophy,” *The Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/archives/spr2012/entries/aristotle-natphil/>: Spring 2012. M. Leunissen, *Explanation and Teleology in Aristotle’s Science of Nature*, Cambridge: Cambridge University Press 2010.

³⁴ See Ibn al-Dawādārī, Kanz al-durar, vol. 9, 105–106. Mufaddal Ibn Abī al-Faḍā’il, al-Nahj, vol. 3, 89f. [595f.].

³⁵ See some of the early Arab classifications of the fields of “science” in Kheirandish, Organizing Scientific Knowledge, 135–155, 143.

³⁶ Both of these authors, Yaḥyā Ibn al-Bitrīq and Ḥunayn Ibn Ishāq, have paraphrased Aristotle’s *Meteorology*. See, for example, their physical

(d. 345/956),³⁷ the anonymous tenth A.D. century authors Ikhwān al-Ṣafā' ("the Brethren of Purity"),³⁸ al-Maqdīsī (al-Muqaddasī) (d. ca. 390/1000 century),³⁹ Ibn Sīnā (Avicenna) (d. 428/1037),⁴⁰ al-Bīrūnī

explanations about the cause of earthquakes connected with the Aristotelian exhalation theory. Lettinck, Aristotle's Meteorology, 183, 212. See also footnote 36, p. 31.

³⁷ See the transformation theory in al-Mas'ūdī, *Muřij al-dhahab wa-ma'ādin al-jawhar*, vol. 1, Bayrūt: al-Jami'ah al-lubnāniyah 1965, 111f. al-Mas'ūdī was a prominent Arab historian and geographer of the tenth century A.D.. Ch. Pellat, "al-Mas'ūdī," *The Encyclopaedia of Islam*, vol. 6, Leiden: Brill 1991, 784–788.

³⁸ Ikhwān al-Ṣafā', *Die Abhandlungen der Ichwān es-Safā in Auswahl*, tr. by Fr. Dieterici, vol. 2, Leipzig: Hinrichsche Buchhandlung 1884, 66f. Y. Marquet, "Ikhwān al-Ṣafā'," *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1965, 1071–1076. G. de Callataj, World Cycles and Geological Changes according the Brethren of Purity, in *In the Age of al-Farābī: Arabic Philosophy in the Fourth/Tenth Century*, ed. P. Adamson, London: The Warburg Institute 2008, 188.

³⁹ al-Maqdīsī, *al-Bad' wa-al-ta'rikh*. al-Mansūb ilā Abī Zayd Aḥmad Ibn Sahl al-Balkhī, vol. 2, Ṭihrān: Maktabat al-Asadī 1962, 36. al-Maqdīsī is the best representative of Arabic geography in the second half of the tenth

(d. 440/1048),⁴¹ and other scholars.⁴² It is well known that they widely used and commented on Aristotle's *Meteorology*, which served as a basis for the evolution of meteorology (*'ilm al-āthār al-'ulwīyah* "science of the upper signs") as a discipline.⁴³ Hence the following pages are devoted to the discussion of these theories and their reflection in the Mamlūk sources.

century A.D. A. Miquel, "al-Mukaddasī," *The Encyclopaedia of Islam*, vol. 7, Leiden: Brill 1993, 492–493.

⁴⁰ Ibn Sīnā, *al-Shifā'*. *al-Ṭabī'iyāt. al-Samā' wa-al-'ālam*, ed. by I. Madkūr, vol. 4, al-Qāhirah: Dār al-kātib al-'arabī lil-ṭabā'ah wa-al-nashr 1389/1969, 209–210. Goichon, "Ibn Sīnā," 941–947. See about Ibn Sīnā in footnote 34, p. 29.

⁴¹ See about al-Bīrūnī in footnote 35, p. 30 and his reflection of natural phenomena based on his own observations in al-Bīrūnī, *Kitāb taḥdīd*, 43–44. al-Bīrūnī, *The Determination of the Coordinates*, 18.

⁴² See more authors in Sezgin, *Geschichte*, vol. 7, 203–205. K. Kennedy-Day, "Aristotelianism in Islamic Philosophy," *Routledge Encyclopedia of Philosophy*, vol. 1, London: Routledge 1998, 382–386.

⁴³ Although this discipline was generally known as the "science of the upper signs" (*'ilm al-āthār al-'ulwīyah*), it not only covered meteorological subjects but also subjects of the subterranean core. Sezgin, *Geschichte*, vol. 7, 214. Lettinck, Aristotle's Meteorology, 1.

According to Aristotle's theory of the earth's transformation,

“[...] the same parts of the earth are not always moist or dry, but they change according as rivers come into existence and dry up. And so the relation of land to sea changes too and a place does not always remain land or sea throughout all time, but where there was dry land there comes to be sea, and where there is now sea, there one day comes to be dry land.”⁴⁴

These changes occur gradually under the influence of the sun. However, they follow an order and a cycle, “just as winter occurs in the seasons of the year, so in determined periods there comes a great winter of a great year and with it excess of rain.”⁴⁵

Despite the similarities between these theories in the Greek and Arabic sources,⁴⁶ the undefined “great year” in Aristotle's citation

⁴⁴ Aristotle, Meteorology, Book I, 18.

⁴⁵ Aristotle, Meteorology, Book I, 20.

⁴⁶ Cf. p. 162–165, 172–174 and 175f.

obviously caused some confusion. According to Godefroid de Callataÿ, the cycle which Aristotle (d. 322 B.C.) had in mind was the Great Platonic Year, a period in which all heavenly bodies would come back into conjunction. Plato (d. 347 B.C.) subdivided this period into ages separated from one another by major floods or conflagrations.⁴⁷

What the Arab authors mean by the transformation cycle—as will become clear later in this chapter⁴⁸—is the conjunctional “Great Year” consisting of 36,000 years, which corresponds to “the cycle of equinoctial precession.” Hipparchus presumably first identified it in the second century B.C. and Ptolemy (ca. d. 100 A.D.) then popularised it a few centuries later.⁴⁹

⁴⁷ de Callataÿ, *World Cycles*, 183.

⁴⁸ See p. 175.

⁴⁹ de Callataÿ, *World Cycles*, 184. Ptolemy, *Ptolemy's Almagest*, translated and annotated by G. J. Toomer, Princeton: Princeton University Press 1998.

One of the earliest examples illustrating Aristotle's transformation theory, which is not specifically linked to the revolution of the sun⁵⁰ but to subterranean movements of water, is conveyed in al-Mas'ūdī's prominent work on history and geography *Murūj al-dhahab wa-ma'ādin al-jawhar* and known as *The Meadows of Gold and Mines of Gems*. There he mentions that, according to the logicians (*ṣāḥib al-mantiq*),⁵¹ the earth is never the same: there is no spot on earth that is always wet or dry.⁵²

⁵⁰ Cf. Aristotle's theory, p. 162f.

⁵¹ al-Mas'ūdī, *Murūj*, vol. 1, 111. al-Mas'ūdī (d. 345/956) does not identify who the logicians were. According to the definition taken from *The Encyclopaedia of Islam*, *'ilm al-mantiq* is the “science of logic”—also called the science of balance (*'ilm al-mizān*), “because this is a means of weighing arguments (*hudjadj*) and demonstrative proofs (*barāhīn*).” From this definition, which shows that *'ilm al-mantiq* is a method rather than a science itself, corresponding to the distinction made by Aristotle between “common axioms” and “entirely demonstrated conclusions,”—we can imply that *ṣāḥib al-mantiq* refer mainly to the classical Greek philosophers and their Arab followers, like those listed in footnotes 36–42, p. 159f. See also on *'ilm al-mantiq* R. Arnaldez, “Mantık,” *The Encyclopaedia of Islam*, vol. 6, Leiden:

Although this theory formed part of the common knowledge in the earlier Arab sources, only a few Mamlūk authors reflected on it. One of the Mamlūk representatives, who alluded to the transformation theory and discussed physical interpretations of natural phenomena, was al-Dimashqī (d. 727/1327).⁵³ His book, *Nukhbat al-dahr fī ‘ajā’ib al-barr wa-al-bahr* (*Selected Passages on Wonders of Lands and Seas*),⁵⁴ compiled in al-Qazwīnī’s style,⁵⁵ through nine chapters treats subjects of the ‘ajā’ib wa-gharā’ib genre, such as knowledge of the shape of the world, descriptions of its regions with their peculiarities (mountains, seas, lakes, rivers, wells, springs, vegetation, ancient monuments, animals and human beings), regarded as “wonders of creation.”

Brill 1991, 442–452. Ibn Qayyim al-Jawzīyah, *Miftāḥ dār al-sa‘ādah*, vol. 1, 162f.

⁵² al-Mas‘ūdī, *Murūj*, vol. 1, 111.

⁵³ See data about this author in footnote 64, p. 44.

⁵⁴ al-Dimashqī, *Kitāb nukhbat al-dahr*, 3.

⁵⁵ Dunlop, “al-Dimashqī,” 291.

al-Dimashqī (d. 727/1327) opens one of the chapters about the formation of mountains and their indispensable function in nature⁵⁶ with an introduction of a physical explanation, according to which, mountains and hills sometimes “come into existence as a result of earthquakes caused by winds which are accumulated under the earth. They sway underneath and lead to the rise of one part of it [earth] and the sinking of the other.”⁵⁷

Implicit in this explanation is, first, the theory of the cyclic transformation of the earth, causing creation and destruction interchangeably⁵⁸ while, second, it delineates causes of an earthquake

⁵⁶ See also about the function of mountains in Ibn Sīnā, *al-Shifā'*. *al-Tabī'iyāt*. *al-Ma'ādin wa-al-āthār al-'ulwīyah*, ed. by 'A. Muntasir, vol. 5, al-Qāhirah: al-Hay'ah al-'ammah li-shu'ūn al-maṭābi' al-amīriyah 1385/1965, 10–12. Ibn Qayyim al-Jawzīyah, *Miftāḥ dār al-sa'ādah*, vol. 1, 226f. al-Nuwayrī, *Nihāyat al-arab fī funūn al-adab*, vol. 1,1, al-Qāhirah: Maṭābi' Kūstātsūmās wa-shurakā'hu 1970, 218. al-Qazwīnī, 'Ajā'ib al-makhlūqāt, 150–151.

⁵⁷ al-Dimashqī, *Kitāb nukhbāt al-dahr*, 84.

⁵⁸ Aristotle, Meteorology, Book I, 18–21.

from a physical perspective.⁵⁹ Both of these explanations go back to Aristotle's *Meteorology*.⁶⁰ To support and enliven his statement, al-Dimashqī (d. 727/1327) adds three stories about earthquakes and his own reflections on their effects. This inclusion of historical events in the ‘ajā’ib wa-gharā’ib genre with the purpose of elucidating his topic, distinguishes his approach from that of his predecessors.

The first earthquake he uses as an example to support his statement happened in Syria in 723/1323–4.⁶¹ According to al-Dimashqī (d. 727/1327), it rained little that year (723/1323–4) so that the sources of the wells almost dried out. Therefore, God sent an earthquake

⁵⁹ Aristotle, *Meteorology*, 36–42. Lettinck, Aristotle's *Meteorology*, 209. See the details of physical explanations for earthquakes in *Chapter 2.4. Physical Explanations of Earthquakes Based on the Knowledge of Greek Philosophers and Early Muslim Savants of the Ninth–Eleventh Centuries*, p. 187.

⁶⁰ Aristotle, *Meteorology*, Book I, 18–21. Aristotle, *Meteorology*, Book II, 36–42.

⁶¹ al-Dimashqī, *Kitāb nukhbat al-dahr*, 84. The occurrence of this earthquake is also mentioned in Emanuela Guidoboni's and Muṣṭafā Anwār Ṭāhir's catalogue of earthquakes. Guidoboni and Comastri, *Catalogue of Earthquakes*, 375. Ṭāhir, *Les grandes zones sismiques*, 95.

during summer days. As a result, the wells sprang out and the rivers rose so much that they surpassed its usual amount by three or four times.⁶² He continues that “this is true. Strong winds sometimes overcome some parts of the earth laying them open, making holes and snatching everything on its way until they sink.”⁶³ This example does not depict an earthquake as a disaster but as something which brings forth new sources of water, vital for the people to survive the drought.⁶⁴

⁶² al-Dimashqī, *Kitāb nukhbat al-dahr*, 84.

⁶³ al-Dimashqī, *Kitāb nukhbat al-dahr*, 84. Cf. the references to the theories of Aristotle, Isidor of Seville and Albertus Magnus presented in Schenk, ‘... prima ci fu la cagione de la mala prodenza de’ Fiorentini...’ Disaster and ‘Life World,’ 365–369.

⁶⁴ al-Maqrīzī (d. 845/1442), writing in the end of the same century, in fact, noticed in his chronicle that “black hot winds” in Damascus in 723/1323–4 led to “numerous” deaths, drought and destruction of the harvest. al-Maqrīzī, *Kitāb al-sulūk li-ma‘rifat duwal al-mulūk*, ed. by M. Ziyādah, vol. 2,1–2,3, al-Qāhirah: Maṭba‘at lajnat al-ta’lif wa-al-tarjamah wa-al-nashr 1941, 250.

al-Dimashqī (d. 727/1327) offers two more examples of earthquakes, not mentioned in any of the modern catalogues, to further support his statement. He says that an earthquake occurred near the mountain Aqra⁶⁵ (Syria)⁶⁶ in 719/1320. Apart from this he reports that in this region there were more than three hundred olive trees which the wind uprooted and carried away with the dust to a remote place.⁶⁷ In the same year, the wind swept away the nearby Monastery of St. Simeon (Dayr Simān known also as Qal'at Simān),⁶⁸ along with its stones, monks and all that was inside it, including wheat, provisions, and cattle. Afterwards it seemed as if they never existed there and nobody had ever heard of them. According to him, a legal report

⁶⁵ al-Dimashqī, *Kitāb nukhbāt al-dahr*, 85.

⁶⁶ al-Dimashqī, *Kitāb nukhbāt al-dahr*, 23.

⁶⁷ al-Dimashqī, *Kitāb nukhbāt al-dahr*, 85. Historical evidence for this destructive wind can be found in the report of another contemporary Damascene chronicler Ibn Kathīr (701–774/1301–1373). Ibn Kathīr, *al-Bidāyah wa-al-nihāyah*, vol. 2, Bayrūt: Bayt al-afkār al-dawliyah 2004, 2151.

⁶⁸ The Monastery of St. Simeon is a historical Byzantine construction in northeast Aleppo, dating back to the fifth century A.D. F. Scheck and J. Odenthal, *Syrien: Hochkulturen zwischen Mittelmeer und Arabischer Wüste*, Köln: Dumont 2006, 283–290.

about this event was even written and presented to the Sultan al-Nāṣir Muḥammad Ibn Qalāwūn (d. 741/1341).⁶⁹

al-Dimashqī's third story is even more impressive as he says that an earthquake led to the sinking of a mountain in Jerusalem near the wellspring of Farrūj (unidentified) in 700/1301, creating a deep ravine. He described the latter as one of the "marvellous wonders" (*min al-‘ajab al-‘ajīb*), called "the cave of wonder" (*Maghārat al-‘ajab*), "which existed up until [his] lifetime." The cave al-Dimashqī most probably refers to is Maghārat al-Shamū‘, known among other names as the Soreq stalactite cave.⁷⁰ The author described the cave by comparing it with an oblong, beautifully vaulted structure. The water

⁶⁹ al-Dimashqī, *Kitāb nukhbāt al-dahr*, 85. See about al-Nāṣir Muḥammad Ibn Qalāwūn footnote 127, p. 100.

⁷⁰ It is surprising that this cave, described by the 14th century author al-Dimashqī so picturesquely as a well-known place, was accidentally discovered in 1968 during rock-blasting for a nearby quarry and is nowdays a national nature reserve of Israel. See about this cave in M. Bar-Matthews et al. (ed.), *The Eastern Mediterranean Paleoclimate as a Reflection of Regional Events: Soreq Cave*, *Earth and Planetary Science Letters* 166 (1999), 85–95.

in the cave dripped down from the sides, picturesquely shaping the stones underneath the drops which formed crystals of different colours and shapes.⁷¹

All of the three stories support al-Dimashqī's statement that earthquakes occur from time to time, changing the surface of the earth, a process which causes, on the one hand, periodical destruction of some places and, on the other hand, initiating the creation of new mountains, hills and ravines. But this destruction is not necessarily envisaged in a negative sense. After all it replants trees, gives birth to mountains, and creates new sources of water and beautiful ravines. It even leads to the disappearance of "undesirable monks," which must have been regarded more as a wonder than a disaster, at least from the Muslim perspective of the time. Such an attitude was obviously the result of the tensions between Muslims and Christians which would have been fresh in al-Dimashqī's mind after the bloody conflict

⁷¹ al-Dimashqī, *Kitāb nukhbat al-dahr*, 85.

of the last crusades in 690/1291, which he must have experienced as a contemporary.⁷²

The idea that an earthquake causes changes on earth is also conveyed implicitly in the previously mentioned manuscript, *The Book of Curiosities*.⁷³ Its author mentions that “some earthquakes cause fires. Others fling out huge stones. Others cause springs to gush forth that were previously dry, while others desiccate springs that were flowing.”⁷⁴

⁷² See more about the warfare against the Crusaders during the Fātimid times in M. Brett, *The Fatimids and the Counter-Crusade, 1099–1171*, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. U. Vermeulen and K. D’Hulster, Leuven: Peeters 2007, 15–25. Northrup, *The Bahri Mamlük Sultanate, 251–252, 273–286*, and the fall of Acre in 1291 in D. Nicolle, *Acre 1291: Bloody Sunset of the Crusader States*, Oxford: Osprey Publishing 2005.

⁷³ See p. 125.

⁷⁴ Anonymous, *Kitāb għarā’ib*, Bodleian Library, Ms. Arab. c. 90, fol. 21b.

“Sometimes these earthquakes occur under the sea, in which case they cause the sea to cast things from one place to another. Other times the waves roll up on top of each other, creating a huge wave that clashes into one spot and so the sea is transported onto the land. Yet other times it lifts things from the sea, causing springs to appear and rivers to flow. This occurs repeatedly in the depths of the sea until the water [sea level] swells and the waves dwindle.”⁷⁵

The Mamlūk chronicler Ibn al-Dawādārī (687–736/1288–1336),⁷⁶ who was al-Dimashqī’s contemporary, expressed in his chronicle

⁷⁵ Anonymous, *Kitāb gharā’ib*, Bodleian Library, Ms. Arab. c. 90, fol. 21b.

⁷⁶ Ibn al-Dawādārī was an Egyptian historian who lived in Cairo and Damascus. We have little information about his life and career but it is known that his father and grandfather were in the service of Mamlūk officials. (Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 11–22). See more about his life and chronicle in U. Haarmann, *Quellenstudien zur frühen Mamlukenzzeit*, Freiburg: D. Robischon 1969, 61–84. B. Lewis, “Ibn al-Dawādārī,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1971, 744. R. Grawe, “Ibn al-Dawādārī,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 823–824. N. Singh and A. Samiuddin, “Ibn al-Dawādārī,”

similar views about the relationship between the natural phenomena and the periodical change of the earth. After depicting the effects of the historical disastrous earthquake of 702/1303,⁷⁷ he devoted a separate chapter, explaining the causes of earthquakes:

“It is claimed that mountains appear when water and clay combine under the heat of the sun. What concerns the cause for their rising high, it could happen because of shaking caused by an earthquake (*zalzalah*) with a tremor. Some regions sink whereas others arise. What has ascended turns into stone, as it was mentioned in the first example [described previously]. It can also happen, when the wind takes the dust from one place to another making hills and lowlands. Then it becomes hard as stone just as it has been mentioned in the first example.

Encyclopaedic Historiography of the Muslim World, vol. 2, Delhi: Global Vision Publishing House 2003, 363–364.

⁷⁷ This earthquake will be discussed in detail in *Chapter 4.4. The Disastrous Earthquake of 702/1303: A Comprehensive Account of Effects and Attitudes*, p. 323.

The author of the Almagest said that every 36,000⁷⁸ year stars change their directions and make one circle within the twelve zodiacal signs. When they move from the north to the south, poles of the stars as well as projections of their rays on parts of the earth change. Night and day, four seasons and the earth [also] undergo change so that the populated lands devastate. Lands turn into seas, seas into lands; plains turn into mountains, mountains into plains [...].

Sometimes the sea turns into a dry land and a dry land turns into a sea because the more the part of the sea rises, as it was mentioned, the more the water rises. It flows over its banks and covers some of the land with water. This continues that way until a land turns into a sea [...].⁷⁹

This passage must have been drawn almost word for word from al-Qazwīnī's *'Ajā'ib al-makhlūqāt*.⁸⁰ It is noteworthy that al-Qazwīnī (d.

⁷⁸ Cf. p. 163.

⁷⁹ Ibn al-Dawādārī, Kanz al-durar, vol. 9, 105–106.

⁸⁰ al-Qazwīnī, *'Ajā'ib al-makhlūqāt*, 149–150.

682/1283) regards these changes on earth as “marvellous events” (*hawādīth ‘ajibah*), which occur in the world during the regular repetition of years, “with the appraisal of the all-knowing and almighty God.”⁸¹ In comparison to al-Dimashqī (d. 727/1327), who also treats these events as wonders, Ibn al-Dawādārī (d. 736/1336) and al-Qazwīnī (d. 682/1283), by mentioning Ptolemy’s Almagest,⁸² connect the transformation of the earth with the astral phenomena, a theory that was especially popular in the earlier period of Islam.

We can find it in one form or another in the anonymous writings of the tenth A.D. century Ikhwān al-Ṣafā’ (“the Brethren of Purity”),⁸³ al-Bīrūnī (d. 440/1048),⁸⁴ Ibn Sīnā (d. 428/1037),⁸⁵ and al-Mas‘ūdī (d.

⁸¹ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 87.

⁸² Ptolemy, Ptolemy’s Almagest.

⁸³ al-Ṣafā’, Ichwān es-Safā, 66f. de Callataÿ, World Cycles, 188. See also footnote 38, p. 160.

⁸⁴ al-Bīrūnī, Kitāb taḥdīd, 43–44. al-Bīrūnī, The Determination of the Coordinates, 18. See about al-Bīrūnī footnote 35, p. 30.

⁸⁵ Ibn Sīnā, al-Shifā’, vol. 4, 209–210. See about Ibn Sīnā footnote 34, p. 29.

345/956).⁸⁶ Some of them also held celestial movements responsible for the changes on earth and linked these changes to Ptolemy's "cycle of equinoctial precessional cycle," consisting of 36,000 solar years,⁸⁷ which were required for the transformation of mainlands and seas.⁸⁸

Likewise important for the transformation of the world in this theory is the revolution of the Sun through the signs of the Zodiac. According to al-Bīrūnī (d. 440/1048),⁸⁹ this process brings order out of chaos and generates, among other things, greater cycles governing historical and geological changes.⁹⁰ In his book on India, al-Bīrūnī (d.

⁸⁶ al-Mas‘ūdī, *Murūj*, vol. 1, 111. See about al-Mas‘ūdī footnote 37, p. 160.

⁸⁷ See p. 163.

⁸⁸ de Callataj, *World Cycles*, 185–187.

⁸⁹ See about al-Bīrūnī footnote 35, p. 30.

⁹⁰ S. Nasr, *An Introduction to Islamic Cosmological Doctrines. Conceptions of Nature and Methods used for its Study by the Ikhwān al-Ṣafā’i, al-Bīrūnī, and Ibn Sīnā*, London: Oxford University Press 1964, 119. al-Bīrūnī, *The Chronology of Ancient Nations*.

440/1048) clarifies this notion further by citing the opinion of the “ancient Greeks”:⁹¹

“The catastrophe⁹² comes on like a deluge or an earthquake, bringing destruction either by the breaking in of the surface, or by drowning with water which breaks forth, or by burning with hot stones and ashes that are thrown out, by thunderstorms, by landslips, and typhoons; further by contagious and other diseases, by pestilence, and more of the like. Thereby a large region is stripped of its inhabitants, but when after a while, after the disaster and its consequences have passed away, the country begins to recover and to show

⁹¹ al-Bīrūnī, *India. The Land and the People*. Abridged Edition of E. Sachau’s English Translation, ed. by Q. Ahmad, New Delhi: National Book Trust 1993, 175. al-Bīrūnī (d. 440/1048) does not identify whose opinions he specifically means. He simply refers to the opinions of “the ancient Greeks,” most probably having in mind the opinions of the Greek philosophers.

⁹² In the original text, the Arabic plural form of the word “catastrophe” (*al-āfāt*) is used. al-Bīrūnī, *Kitāb al-Bīrūnī fī taḥqīq mā lil-Hind*, Ḥaydar Ābād: Maṭba‘at majlis dā’irat al-ma‘ārif al-‘uthmāniyah 1377/1958, 317.

new signs of life, then different people flock there together like wild animals, who formerly were dwelling in hiding-holes and on the tops of the mountains. They become civilized by assisting each other against common foes [...].”⁹³

What is most striking about this passage is the shift of focus from purely physical discussion of natural phenomena to their social impact, something which is absent in ‘ajā’ib wa-gharā’ib works. In al-Bīrūnī’s discourse, a natural phenomenon acquires a new, social significance. He calls natural hazards catastrophes, which influence the rhythm of history and the rise and fall of civilisations. This perception partially reflects the ideas of the prominent Mamlūk scholar Ibn Khaldūn (d. 808/1406)⁹⁴ when he spoke in his famous *Muqaddimah* about the causes of the rise and fall of cities and dynasties.⁹⁵ Calling a natural phenomenon a disaster emphasises the difference between the discourses on natural disasters in ‘ajā’ib wa-gharā’ib literature—which treats them as God’s “marvellous

⁹³ al-Bīrūnī, India, 175–176. al-Bīrūnī, Kitāb al-Bīrūnī, 317–318.

⁹⁴ See about Ibn Khaldūn footnote 73, p. 85.

⁹⁵ Ibn Khaldūn, Muqaddimah, vol. 2, 135f.

oddities”—and in the historiographic genre, to be presented in Part II of this thesis, which is more concerned with the social impact of disasters.

The main conclusion to be drawn from the above analysis is that the reception of classical Greek heritage on natural phenomena did not end during the Mamlūk period, as is generally accepted.⁹⁶ Apart from the early Arab sources, which served as a basis for the Mamlūk authors, we even have references showing the direct transmission of Greek thought into the sources of the Mamlūk period.⁹⁷ The evidence presented here highlights the continuity of the knowledge transfer as having foreign roots.

Ancient Greek theories and Islamic revelation shaped knowledge about natural phenomena in the ‘ajā’ib wa-gharā’ib works, elaborating it into a system of its own. The few Mamlūk narrators of Aristotle’s

⁹⁶ See footnote 32, p. 158.

⁹⁷ See the diagram of winds with Greek names for the types of wind, written in Arabic letters in Anonymous, *Kitāb gharā’ib*, Bodleian Library, MS. Arab. c. 90, fol. 21b..

theory were stimulated, on the one hand, by their Arab ancestors who favoured classical Greek heritage; on the other hand, they found legitimation for this theory in the *Qur'ān*, which emphasises the marvels of God's creation and their role in the governing of these cycles. After all, "He [it is who] brings forth the living out of that which is dead, and brings forth the dead out of that which is alive, and gives life to the earth after it had been lifeless" (the *Qur'ān* 30:19).⁹⁸

2.3.1. Cycles of Destruction and Revival in Other Cultures

An interesting parallel to the idea of the earth's transformation, though in a more complex form and referring to the destruction of the whole universe by a cataclysm, can be found in other cultures.⁹⁹ The most prominent example of this belief is the universally known

⁹⁸ Muhammad, *the Qur'ān*, 619.

⁹⁹ L. Gray, A. Jeremias et al., "Ages of the World," *Encyclopædia of Religion and Ethics*, vol. 1, Edinburgh: T. & T. Clark 1908, 183. A. Jones (ed.), *Weltende. Beiträge zur Kultur- und Religionswissenschaft*, Wiesbaden: Harrassowitz Verlag 1999.

doctrine of the deluge.¹⁰⁰ One of the earliest cyclic theories of ever-renewing world-ages goes back to the Babylonian conception of the universe. The cyclic theory was current among the Pythagoreans and

¹⁰⁰ Claus Wilcke, Weltuntergang als Anfang. Theologische, anthropologische, politisch-historische und ästhetische Ebenen der Interpretationen der Sintflutgeschichte im babylonischen *Atram-hasís*-Epos, in *Weltende. Beiträge zur Kultur- und Religionswissenschaft*, ed. A. Jones, Wiesbaden: Harrassowitz Verlag 1999, 64–66. “The Flood,” *Religion Past and Present: Encyclopedia of Theology and Religion, Brill Online* 2013. St. Dalley, *Myths from Mesopotamia: Creation, The Flood, Gilgamesh and Others*, tr. by St. Dalley, Oxford: Oxford University 1991. A. Harris, *Flood Myths in the Religions of the Ancient World*. G. Smith, *The Chaldean Account of Genesis: Containing the Description of the Creation, the Fall of Man, the Deluge, the Tower of Babel, the Times of the Patriarchs and Nimrod; Babylonian Fables, and Legends of the Gods; From the Cuneiform Inscriptions*, Minneapolis Wizard, Nachdr. d. Ausg. 1876 1977. H. Talkenberger, *Sintflut: Prophetie und Zeitgeschehen in Texten und Holzschnitten astrologischer Flugschriften 1488–1528*, Tübingen: Max Niemeyer Verlag 1990. U. Brunotte, Water Catastrophes—Catastrophic Water. From the Flood to the Maelstrom, *Daidalos: Architektur Kunst Kultur* 55 (März 1995). M Mulsow and J. Assmann (ed.), *Sintflut und Gedächtnis: Erinnern und Vergessen des Ursprungs*, Tübingen: Max Niemeyer Verlag 1990.

was introduced into Greece by Berosus (ca. 290 B.C.), a Babylonian priest.¹⁰¹ The traces of this theory, which shows that much of the world was subject to decay as well as growth, can be seen in the cosmology of Ancient Egypt,¹⁰² in the religion of the Avesta,¹⁰³ in Indian mythology¹⁰⁴ and the myths and doctrines of different cultures.¹⁰⁵ This theory was founded on the belief that, “after the analogy of day and night, of the waxing and waning of the moon, and of the eternal round of the seasons, the entire Universe itself is subject

¹⁰¹ E. James, Preface, in *Creation and Cosmology. A Historical and Comparative Inquiry. Studies in the History of Religions*, ed. E. James, Leiden: Brill 1969, 83. Gray, Jeremias et al., “Ages of the World,” 183, 197.

¹⁰² J. Plumley, The Cosmology of Ancient Egypt, in *Ancient Cosmologies*, ed. C. Blacker and M. Loewe, London: George Allen & Unwin Ltd 1975, 24.

¹⁰³ Avesta is a collection of sacred texts of Zoroastrianism composed in the Avestan language. J. Rypka, *Iranische Literaturgeschichte*, Leipzig: Otto Harrassowitz 1959, 7.

¹⁰⁴ D. Mackenzie, *Indian Myth and Legend*, London: Adamant Media Corporation 2005.

¹⁰⁵ Gray, Jeremias et al., “Ages of the World,” 184f.

to an ever-recurring circle of change,” which goes through phases of creation and destruction.¹⁰⁶

While looking for analogies in other cultures,¹⁰⁷ one notices that the idea of cyclic renewal of the earth developed even further: for example, Hindu¹⁰⁸ and Buddhist¹⁰⁹ systems agree that the universe

¹⁰⁶ Gray, Jeremias et al., “Ages of the World,” 197.

¹⁰⁷ See, for example, the Mexican mythology in V. Garcia-Acosta, Risks and Disasters in the History of the Mexico Basin: Are they Climatic or Social? *The Medieval History Journal* 10/1&2 (2007), 133.

¹⁰⁸ Orthodox Hindus recognise four Ages of the World (*yugas*). (Gray, Jeremias et al., “Ages of the World,” 200). See more on the Hindu ancient literature of the period of epic (A. Keith, Indian Mythology, in *The Mythology of all Races*, ed. L. Gray and G. Moore, Boston: Marshall Jones Company 1917, 103.) In the Vedic cosmology, we find that the universe goes through cycles of creation and destruction. In the *Purāṇas* these cycles are assumed to be of 8,64 billion years. S. Kak, Greek and Indian Cosmology: Review of Early History, *History of Physics* (2003), 4. Mackenzie, Indian Myth.

¹⁰⁹ The notions of the Buddhists about the Ages of the World are similar to those of the orthodox Hindus. (Gray, Jeremias et al., “Ages of the World,”

moves in vast cycles, each of which contains four ages, and which have been and are to be repeated in infinite succession.¹¹⁰ Thus they disagree as to whether these cycles go on forever.¹¹¹ In this process, the four major material elements in all things—earth, water, fire and earth—play a significant role. Any disturbance in their balance has an effect on the world and if the balance is severely disturbed the result is a cosmic disaster whose nature is determined by one of the elements that has gained prevalence.¹¹² Hence it is believed that major periods end in the destruction of the universe by fire or water.¹¹³

202, 188.) In the Buddhist conception of China and Japan, the universe is also in a state of perpetual cyclic change. James, *Creation and Cosmology*, 47–48.

¹¹⁰ Gray, Jeremias et al., “Ages of the World,” 183f.

¹¹¹ R. Gombrich, Ancient Indian Cosmology, in *Ancient Cosmologies*, ed. C. Blacker and M. Loewe, London: George Allen & Unwin Ltd 1975, 119–120.

¹¹² Gray, Jeremias et al., “Ages of the World,” 199.

¹¹³ Gombrich, Ancient Indian Cosmology, 119–120.

One can therefore conclude from the preceding discussion that, according to the belief held in ancient cultures, the universe changes perpetually and goes through cycles of gradual creation and destruction. In this plan, floods, earthquakes, droughts and other phenomena play a crucial role, and some authors of the Mamlūk period, especially those who valued the findings of the Greek philosophers and their own observations, regarded natural disasters as indispensable for this process. In their *'ajā'ib wa-gharā'ib* works, they observed catastrophic events from the perspective of nature and its laws—which caused changes on the earth—Independent of their damaging effects on human beings. For this reason these authors did not treat them as disasters but instead classified them under the category of “marvellous oddities” or “marvels of God’s creation,” which can be understood through minute observation.¹¹⁴

Another remarkable aspect is that the theory about the periodical changes of the earth has existed in various forms in different cultures,¹¹⁵ which emphasises both its “commonness” and its

¹¹⁴ al-Qazwīnī, *'Ajā'ib al-makhlūqāt*, 5–11.

¹¹⁵ See footnotes 101–113, p. 183.

“transculturality.” However, in the Arab–Mamlūk sources, “marvellous oddities” which are responsible for the change of the world had no universal consequences, as is the case, for example, in the Buddhist or Hindu doctrines. Moreover, in the *‘ajā’ib wa-gharā’ib* works the catastrophes do not annihilate the entire world, ensuring an essentially new creation. Instead, the change happens gradually at regional levels, without any implication to religious doctrines. This approach partially resembles Aristotle’s view, which also rejects the universal implication of such catastrophes. Though for him the universe is eternal: there is no coming into existence or perishing.¹¹⁶

2.4. Physical Explanations of Earthquakes Based on the Knowledge of Greek Philosophers and Early Muslim Savants of the Ninth–Eleventh Centuries A.D.

Apart from the transformation theory to elucidate the causes of natural disasters, early Mamlūk authors like al-Tifāshī (d. 651/1253),¹¹⁷ al-Qazwīnī (d. 682/1283),¹¹⁸ al-Dimashqī (d.

¹¹⁶ Aristotle, *Meteorology*, Book I, 20.

¹¹⁷ al-Tifāshī, *Surūr al-nafs*, 326. See about al-Tifāshī footnote 62, p. 43.

727/1327),¹¹⁹ Ibn Qayyim al-Jawzīyah (d. 751/1350),¹²⁰ (d. 911/1505),¹²¹ and Ibn Iyās (d. ca. 930/1524)¹²² discussed the physical causes of specific phenomena, like earthquakes or floods¹²³ in ‘ajā’ib wa-gharā’ib works. By treating physical explanations of earthquakes, primarily based on Aristotle’s *Meteorology*,¹²⁴ some of them wished to

¹¹⁸ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 149f. See about al-Qazwīnī footnote 63, p. 43.

¹¹⁹ al-Dimashqī, *Kitāb nukhbat al-dahr*, 84. See about al-Dimashqī footnote 64, p. 44.

¹²⁰ Ibn Qayyim al-Jawzīyah, *Miftāh dār al-sa‘ādah*, vol. 1, 229. See about Ibn Qayyim al-Jawzīyah footnote 65, p. 44.

¹²¹ al-Suyūtī, *Kashf al-ṣalṭalah*, 135–136. See about al-Suyūtī footnote 66, p. 45.

¹²² Ibn Iyās, *Nashq al-azhār* fols. 462–463. See about Ibn Iyās footnote 215, p. 132.

¹²³ See the perception and interpretation of Nile floods in ‘ajā’ib wa-gharā’ib genre in *Chapter 5.3. The Nature of the Nile*, p. 424.

¹²⁴ Aristotle, *Meteorology*, 36–42. See also references to ancient theories on the causes of earthquake in Guidoboni and Ebel, *Earthquakes and Tsunamis*, 147f. G. Waldherr, *Erdbeben: das außergewöhnliche Normale; zur Rezeption*

show their familiarity with Greek philosophy,¹²⁵ stemming from the works of early Muslim savants of the ninth–eleventh centuries A.D.¹²⁶ Some of the authors, such as for example, al-Suyūṭī (d. 911/1505),¹²⁷ included these interpretations as a form of critique and a means of disagreeing with non-Islamic theories. The choice of explanation thus depended much on the authors' interest and educational and social background.

According to the widely spread view among these Mamlūk scholars, earthquakes happened either because of vapours or winds, circulating under the surface of the earth and striving to break through. Here is how Ibn Iyās (d. ca. 930/1524)¹²⁸ presents this process in the

seismischer Aktivitäten in literarischen Quellen vom 4. Jahrhundert v. Chr. bis zum 4. Jahrhundert n. Chr., Stuttgart: Steiner 1997, 47f.

¹²⁵ Ibn Qayyim al-Jawzīyah, *Miftāḥ dār al-sa‘ādah*, vol. 1, 229. See about Ibn Qayyim al-Jawzīyah footnote 65, p. 44.

¹²⁶ See footnotes 36–42, p. 159f.

¹²⁷ al-Suyūṭī, *Kashf al-ṣalṭalah*, 135–136. See about al-Suyūṭī footnote 66, p. 45.

¹²⁸ See about this Mamlūk author in footnote 215, p. 132.

unpublished manuscript *Nashq al-azhār fī ‘ajā’ib al-aqtār* (*Smell of the Flowers in the Wonders of Lands*), which emphasises the function of vapour:

“In the Greek books, the earthquake (*al-zalzalah*) and the sinking (*al-khasf*)¹²⁹ happen because of the vapour which accumulates under the earth and is not exposed to coldness so that it can turn into water. This substance is in huge amount and is not dissolvable with the heat. The surface of the earth is hard, does not have holes, and pores. And when the vapour strives to rise and does not find holes and pores, areas of the earth shake because of it. It [the earth] shivers like a feverish body suffering high temperature because of moisture and rottenness of the earth detained in the limbs of the body.¹³⁰ It does not stop trembling until this rottenness comes out of it.

¹²⁹ See also p. 364.

¹³⁰ Cf. with Aristotle’s view about the parallels between the power of an earthquake and the processes in human bodies. Aristotle, Meteorology, 37. Lettinck, Aristotle’s Meteorology, 210.

And this is what Greek philosophers reported [...]. But God knows better the truthfulness of this.”¹³¹

This passage seems to be the shortened version, probably adopted from al-Qazwīnī’s ‘Ajā’ib al-makhlūqāt.¹³² However, in contrast to al-Qazwīnī (d. 682/1283), who often presented longer explanations accompanied by tales, Ibn Iyās (d. ca. 930/1524) sticks to the basic information, in order to keep his ‘ajā’ib wa-gharā’ib encyclopaedic work short. We also find a similar explanation in al-Tifāshī’s book, compiled in the form of *qaṣīdah* (poetic verse), in which vapour (*bukhārī*) is the element that causes an earthquake.¹³³

Concerning the approach, which holds winds responsible for earthquakes, two reports stand out. One is Ibn Qayyim al-Jawzīyah’s description, which links the occurrence of winds (*rīyāḥ*) as causes of earthquakes to God’s wrath sent to frighten people and make them

¹³¹ Ibn Iyās, *Nashq al-azhār*, fols. 462–463.

¹³² Cf. al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 149f.

¹³³ al-Tifāshī, *Surūr al-nafs*, 326.

repent their sins.¹³⁴ This theological expansion of the physical explanation derives from the latter's specific interest and motivation as a theologian of the Ḥanbalī religious school.¹³⁵

The other report, relating the causes of earthquakes to winds, is the previously mentioned anonymous *Book of Curiosities*,¹³⁶ copied by an Egyptian or Syrian scribe in the thirteenth or fourteenth century A.D. Emilie Savage-Smith's translated version of this passage goes as follows:

“When the disruptive winds over time grow very strong inside the earth, and they break out from their [trapped] position and tremble and move about, they shake the earth above them.

When these winds are abundant and forceful, and they leave their place so that all of them rise at the same time, then they are [called] *al-rajīyah*. May God protect us from His wrath.”¹³⁷

¹³⁴ Ibn Qayyim al-Jawzīyah, *Miftāḥ dār al-sa‘ādah*, vol. 1, 229.

¹³⁵ See biographic data on Ibn Qayyim al-Jawzīyah in footnote 65, p. 44.

¹³⁶ See p. 125.

¹³⁷ Anonymous, *Kitāb gharā’ib*, Bodleian Library, Ms. Arab. c. 90, fol. 21b.

Emilie Savage-Smith draws attention in her translation to a probable spelling error of the term *al-raj̄iyah*. In fact, it may refer to the specific type of earthquake which Ibn Sīnā (d. 428/1037)¹³⁸ called *al-raj̄fiyah*. From the latter's classification, we learn that earthquakes differ depending on the motion of the enclosed wind which he describes in detail. Accordingly, some earthquakes are like a throb called a *raj̄fiyah*, or like a tremor *ikhtilājīyah* *‘aradīyah* *ri‘shīyah*, while others are known as *qitqit* and *sullamīyah*.¹³⁹

¹³⁸ See about Ibn Sīnā footnote 34, p. 29.

¹³⁹ Ibn Sīnā, *al-Shifā'*, vol. 5, 19. Lettinck, Aristotle's Meteorology, 220. Ibn Sīnā also adopted the Aristotelian vapour and exhalation theory. However, he emphasised that an earthquake may also be caused by flowing water or collapsing earth, air, or fire (Ibn Sīnā, *al-Shifā'*, vol. 5, 15f.), which are essential elements, mentioned in Aristotle's *Meteorology* with regard to the theories of Anaximenes of Miletus, Anaxagoras of Clazomenae and Democritus of Abdera. Aristotle himself points out that “the true cause [of earthquakes] is the wind,” while water and collapsing earth, which have been known to cause earthquake, are only “material causes (being patients, not agents).” Aristotle, Meteorology, 36, 40.

As both Ibn Iyās (d. 930/1524) and the anonymous Egyptian author mention, these interpretations indeed reflect classical Greek theories of earthquakes. They are presented not only in Aristotle's *Meteorology*,¹⁴⁰ which has a chapter about the causes of earthquakes and the signs preceding them, but also in Arabic excerpts from Theophrast's¹⁴¹ meteorological work¹⁴² and in Qusṭā Ibn Lūqā's (d. ca. 300/912–3)¹⁴³ Arabic translation of the *Placita Philosophorum*

¹⁴⁰ Aristotle, *Meteorology*, 36–42. Lettinck, Aristotle's *Meteorology*, 209.

¹⁴¹ Theophrast/Theophrastus (d. ca. 282 B.C.) was a Greek scholar, who was Plato's and Aristotle's student. H. Baltussen, "Theophrastus," *Encyclopedia of Philosophy*, vol. 9, Detroit: Thomson Gale 2006, 411–412.

¹⁴² See German translation of this meteorological treatise in Theophrast, *Neue meteorologische Fragmente des Theophrast arabisch und deutsch* ed. by G. Bergsträsser, Heidelberg: Carl Winters Universitätsbuchhandlung 1918, 25–27 and the English translation of this work from the Syriac text in Rosenthal, *The Classical Heritage*, 176, 180–181.

¹⁴³ Qusṭā Ibn Lūqā was a translator and scholar of Greek origin working in Baghdad during the ninth century A.D. Kheirandish, Organizing Scientific Knowledge, 139, 148f. D. Hill, "Qusṭā b. Lūqā," *The Encyclopaedia of Islam*, vol. 5, Leiden: Brill 1986, 529–530. H. Daiber, *Die arabische Übersetzung der Placita Philosophorum*, Saarbrücken: Universität des Saarlands 1968, 3–5.

(*Opinions of the Philosophers*).¹⁴⁴ The latter was attributed to Plutarch, the Greek scholar of the second century A.D., but was most probably compiled by Aetius Arabus (ca. 150 B.C.).¹⁴⁵ It includes Aristotle's recast theory of the causes of earthquakes and other opinions about them not specifically mentioned in Aristotle's *Meteorology*,¹⁴⁶ such as the views of the Greek philosophers Thales of Miletus (d. ca. 546 B.C.), Metrodorus,¹⁴⁷ Parmenides (fifth century B.C.), Plato (d. ca. 347 B.C.), and Epicurus (d. ca. 270 B.C.).

¹⁴⁴ See more about this compendium in H. Daiber, *Aetius Arabus. Die Vorsokratiker in arabischer Überlieferung*, Wiesbaden: Franz Steiner Verlag 1980, 1–2.

¹⁴⁵ Daiber, Aetius Arabus, 1. H. Daiber, "Aetius," *The Encyclopaedia of Islam*, 3rd ed. 2013. See about Aetius impact on Islamic thought in H. Daiber, "Pythagoras and Pythagoreanism [Addendum 2]," *Encyclopedia of Philosophy*, vol. 8, Detroit: Thomson Gale 2006, 188.

¹⁴⁶ According to Aristotle, "the theories [of earthquakes] that have been put forward up to the present date are three, and their authors three men, Anaxagoras of Clazomenae, and before him Anaximenes of Miletus, and later Democritus of Abdera." Aristotle, *Meteorology*, Book I, 36.

¹⁴⁷ Several Greek historical figures had the name Metrodorus. Here it is not clear, which one the author of the *Placita Philosophorum* means.

These purely physical observations, like the theory about the transformation of the earth, also found their way into Mamlūk ‘ajā’ib *wa-gharā’ib* works through Yaḥyā Ibn al-Bīrūq (d. 214/830), Ḥunayn Ibn Ishāq (d. 260/873),¹⁴⁸ al-Maqdisī (al-Muqaddasī) (d. ca. 390/1000 century),¹⁴⁹ and Ibn Sīnā (Avicenna) (d. 428/1037).¹⁵⁰ All of them adopted the Aristotelian vapour and exhalation theories,¹⁵¹ in which the latter emphasises that “not water nor earth is the cause of earthquakes but wind—that is the inrush of the external evaporation into the earth,” and the strongest driving force capable to shake it.¹⁵² al-Tīfāshī (d. 651/1253), al-Qazwīnī (d. 682/1283) and Ibn Iyās (d. 930/1524), who mention only vapours as the driving force, either miss this point or imply it. al-Dimashqī (d. 727/1327), Ibn Qayyim al-

¹⁴⁸ See Yaḥyā Ibn al-Bīrūq’s and Ḥunayn Ibn Ishāq’s physical explanations about the cause of earthquakes connected with the Aristotelian exhalation theory in Lettinck, Aristotle’s Meteorology, 183, 212.

¹⁴⁹ al-Maqdisī, al-Bad’ wa-al-ta’rīkh, 36.

¹⁵⁰ Ibn Sīnā, al-Shifā’, 15f.

¹⁵¹ Aristotle, Meteorology, 36–42.

¹⁵² Aristotle, Meteorology, 36.

Jawziyah (d. 751/1350) and the anonymous Egyptian author, mainly focus on the theory of winds when describing the causes of earthquakes. The anonymous Egyptian author even includes a diagram of winds¹⁵³ in his work with their Greek names spelled out in Arabic, thus showing the importance of Greek sources in the interpretation of natural phenomena. This diagram of winds is remarkable as it implies the direct influence of Greek theories until the Mamlūk period when the manuscript was copied.

Nonetheless, regardless of the ‘ajā’ib wa-gharā’ib books which presented these views, physical explanations of earthquakes did not enjoy wide acceptance especially among the Mamlūk theologians (‘ulamā’). These interpretations even aroused hostile attitudes as we can see from al-Suyūtī’s treatise on earthquakes and from the treatise of his follower Ibn al-Jazzār (d. after 984/1576). Both of them were arduous opponents of Greek theories, calling them corrupt and reprehensible,¹⁵⁴ an attitude which derived from their own personal

¹⁵³ See Anonymous, *Kitāb gharā’ib*, Bodleian Library, MS. Arab. c. 90, fol. 21b.

¹⁵⁴ al-Suyūtī, *Kashf al-ṣalṭalah*, 136. Ṭāhir, *Taḥṣīn al-manāzil*, 143.

interests and social backgrounds, as they were more interested in interpretations in which God was the only force mentioned. More neutral positioning can be seen in the works of Mamlūk encyclopaedists,¹⁵⁵ who completely eschewed making references to this theory in their chapters on *'ajā'ib wa-gharā'ib*. This restraint from mentioning any of these well-known physical interpretations was because the evident acquisition of ancient Greek knowledge was regarded as disputable.

This attitude may also be the reason why it is generally claimed that the scientific approach declined during the Mamlūk period.¹⁵⁶ In view of all these texts, however, we should refine this argument by stating that in comparison to the earlier periods of Islam, when books on natural phenomena flourished,¹⁵⁷ we can find no outstanding treatise

¹⁵⁵ al-Nuwayrī al-Iskandarānī, *Kitāb al-ilmām bi-al-i'lām fīmā jarat bi-hi al-ahkām al-umūr al-maqdīyah fī waq'at al-Iskandariyah*, ed. by 'A. 'Atīyah, vol. 4, Haydar Ābād: Dā'irat al-ma'ārif al-'uthmāniyah 1390/1970, 125–126. al-Qalqashandī, *Kitāb şubḥ*, vol. 2, 177.

¹⁵⁶ See footnote 32, p. 158.

¹⁵⁷ Sezgin, *Geschichte*, vol. 7, 233f.

that focuses on a physical view of earthquakes produced in the Mamlūk period, let alone new observations or extensions of Aristotelian theories. However there is a definitive innovation that Mamlūk sources do convey: namely, that physical explanations seeped into the most thriving genre of the time, the Mamlūk chronicles. The best examples of this are found in the previously mentioned chronicle of Ibn al-Dawādārī (d. after 736/1336)¹⁵⁸ and the work of the Coptic historian Mufaḍḍal Ibī Abī al-Faḍā'il (d. ca. 759/1358).¹⁵⁹ Their depictions of the disastrous earthquake of

¹⁵⁸ Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 101f. Little, *Data on Earthquakes*, 137. See about Ibn al-Dawādārī footnote 76, p. 173.

¹⁵⁹ Mufaḍḍal Ibī Abī al-Faḍā'il, *al-Nahj*, vol. 3, 89f. The date of al-Mufaḍḍal Ibī Abī al-Faḍā'il's birth and death are not recorded. We only know that he finished his manuscript in 759/1357–8. (Ibn Abī al-Faḍā'il, *Ägypten und Syrien zwischen 1317 und 1341 in den Chroniken des Mufaddal ibn Abi'l-Fadā'il*, ed. by S. Kortantamer, Freiburg im Breisgau: Schwarz 1973, 3. J. den Heijer, “al-Mufaḍḍal Ibī Abī al-Faḍā'il,” *The Encyclopaedia of Islam*, vol. 7, Leiden: Brill 1993, 305.) Concerning his chronicle, the title reveals that it was a continuation of his great-uncle al-Makīn Ibī al-‘Amīd's universal chronicle *al-Magmū‘ al-mubārak*, which served as a source for al-Nuwayrī (d. 733/1333), Ibī al-Furāt (d. 807/1405), Ibī Duqmāq (d. 809/1407), al-

702/1303¹⁶⁰ in Egypt, an event which was treated in much detail in most of the Mamlūk chronicles, consist not just of a straightforward account of what happened—a typical form of narration in this genre—but are accompanied by a physical explanation of an event in which they connect their description of an earthquake with the exhalation theory, probably adapted from al-Qazwīnī’s ‘ajā’ib wa-gharā’ib work.

The inclusion of topics from the ‘ajā’ib wa-gharā’ib genre, which do not only cover purely physical observations of natural phenomena,¹⁶¹ was an attempt to slacken the factual narrative frame of the

Qalqashandī (d. 821/1418), and al-Maqrīzī (d. 845/1442). (Ibn Abī al-Fadā’il, Ägypten und Syrien zwischen 1317 und 1341, 7–8.) See more on some characteristic features of his chronicle in Haarmann, Quellenstudien, 142f.

¹⁶⁰ See the detailed discussion of this disastrous earthquake in *Chapter 4.4*.

The Disastrous Earthquake of 702/1303: A Comprehensive Account of Effects and Attitudes, p. 323f.

¹⁶¹ See p. 147 and *Chapter 2.5. Interpretation of Earthquakes in “Marvellous” Stories of ‘Ajā’ib wa-Gharā’ib Genre*, p. 204f.

historiographical genre thus making it more attractive to a wider audience.¹⁶² This becomes evident from the title of Ibn al-Dawādārī's explanatory section on physical causes of earthquakes: *Min kitāb ‘ajā’ib al-makhlūqāt wa-badā’i‘ al-mawjūdāt* (*The Wonders of Creation and the Marvels of Existent Things*).¹⁶³ Unsurprisingly, this title does not contain any explicit reference to Greek philosophers and their theories.

We can thus conclude that those authors who found physical explanations worth including in their works wished to stimulate their readers to look at the alternatives, which entailed the desire to investigate. Such an approach left room for reasoning (*fikr al-ma‘qūlāt*) which, as al-Qazwīnī (d. 682/1283) states in his book, “is given only to someone who has thorough knowledge of sciences and mathematics along with the refinement of character and cultivation of the spirit. This opens one’s eye of mental perception, and one sees

¹⁶² Little, Data on Earthquakes, 137–138.

¹⁶³ Ibn al-Dawādārī, Kanz al-durar, vol. 9, 108.

in every object something wonderful.”¹⁶⁴ However, to avoid the criticism of the ‘ulamā’, who could be affronted by the inclusion of physical explanations, most of these authors relativised them by referring, usually at the end of the message, to almighty God as the Master of all sciences. After all, God was for them the only one who could discern the truthfulness of any knowledge.¹⁶⁵ Aristotle’s reasoning, however, did not exclude God’s evidence, as his following thoughts underline: “(1) God is thought to be among them causes of all things and to be a first principle, and (2) such a science either God alone can have, or God above all others.”¹⁶⁶ The references by Mamlūk authors to God harmonised and brought knowledge which

¹⁶⁴ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 4. Cf. the citation of the Italian astronomer, doctor and clock-maker Giovanni Dondi (d. 1388 A.D.) in Daston and Park, Wonders, 135. According to him, Aristotle also expressed the view that in “every natural phenomenon there is something wonderful—rather, many wonders.” See the references to Aristotle in Daston and Park, Wonders, 135.

¹⁶⁵ von Hees, The Astonishing, 106.

¹⁶⁶ Aristotle, *Metaphysics*. Book I, ed. by W. Ross, Raleigh: Alex Catalogue 2000, 3.

evidently had foreign roots into conformity with Islamic traditions and thought.

This point suggests that the genre of ‘ajā’ib wa-gharā’ib definitely treated subjects of philosophical lore, as opposed to the widely spread opinion of the western scholars. The latter thought that ‘ajā’ib, as the word itself implies, covered only unreal and fictional themes, an aspect which encouraged them to regard the whole genre as unscientific.¹⁶⁷ However, the examples provided above and the Aristotelian words cited from his *Metaphysics*, best refute this perception “for it is owing to their wonder that men both now begin and at first began to philosophize.”¹⁶⁸

Indeed, the awareness of the wonders of creation was the first step towards the acquisition of universal knowledge about natural phenomena. Since the ‘ajā’ib wa-gharā’ib topics were of global

¹⁶⁷ von Hees, al-Qazwīni’s ‘ajā’ib al-makhlūqāt, 104–106.

¹⁶⁸ Aristotle, *Metaphysics*. Book I, 3. Aristotle’s this view is also quoted in von Hees, al-Qazwīni’s ‘ajā’ib al-makhlūqāt, 111 and Daston and Park, *Wonders*, 111.

common interest, the authors of the Mamlūk period could not dispense with them. Yet they treated them selectively. The choice of whether to include physical explanations or not depended much on the authors' personal and professional interests, as presented above. This fact underpins Ansgar Nünning's theory in which the narratology of any event "is a product of selection, abstraction and distinction,"¹⁶⁹ dependent not only on the observer's (narrator's) temporal and spacial perception but also on his/her "ideological perspective" i.e. values and norms.¹⁷⁰

2.5. Interpretation of Earthquakes in "Marvellous" Stories of '*Ajā'ib wa-Gharā'ib* Genre

As I mentioned at the beginning of this chapter, the majority of Mamlūk authors of the '*ajā'ib wa-gharā'ib* genre included stories of marvels alongside physical interpretations of natural disasters. These

¹⁶⁹ Nünning, Krise als Erzählung und Metapher, 121. See also footnote 71, p. 48.

¹⁷⁰ Nünning, Krise als Erzählung und Metapher, 130.

stories have a fictional core and are based on beliefs¹⁷¹ rather than on physical observations of natural phenomena. Such an approach has been known since the dawn of humankind: in the process of making sense of catastrophic events, different civilisations have looked for answers in ancient tales. Accordingly, this subchapter explores fictional interpretations as to why certain events, in particular earthquakes, occur. What is noticeable here is that these explanations not only appear in the ‘ajā’ib wa-gharā’ib genre but also in the stories of the prophets, in *hadīth*, *tafsīr* (*qur’ānic* commentaries), history and mysticism.

In most cases marvellous stories about earthquake causes are taken from the myths of creation or the so-called “cosmological myths” popular among the Muslim *qaṣṣāṣ*,¹⁷² reciters of stories (*qīṣāṣ*) of

¹⁷¹ P. MENDIA-LANDA, Myths and Legends on Natural Disasters: Making Sense of our World, 2007,
<http://www.yale.edu/ynhti/curriculum/units/2007/4/07.04.13.x.html>.

¹⁷² IBN AL-WARDI, Kharīdat al-‘ajā’ib, 16. YĀQŪT AL-HAMAWĪ, *Kitāb mu‘jam al-buldān. al-Jughrāfiyah al-islāmiyah*, vol. 4, Frankfurt am Main: Ma‘had ta‘rīkh al-‘ulūm al-‘arabīyah wa-al-islāmiyah 1994, 23. AL-MAQDISĪ, al-Bad'

marvels for entertainment.¹⁷³ As traditional narratives¹⁷⁴ of “collective significance,” they explain the creation of the world and its order using a purely fictional narrative,¹⁷⁵ as opposed to the accounts presented in the previous chapters. These stories of marvels—

wa-al-ta’rīkh, 47. D. Macdonald, Job and Muslim Cosmography, *The American Journal of Semitic Languages and Literatures* 15/3 (1899 April), 168. See more about storytellers in Mamlūk Egypt in J. Berkey, Storytelling, Preaching, and Power in Mamluk Cairo, *Mamlūk Studies Review* 4 (2000), 53–73.

¹⁷³ Ch. Pellat, “Kāṣṣ,” *The Encyclopaedia of Islam*, vol. 4, Leiden: Brill 1978, 733–735.

¹⁷⁴ See more about the discourse on the narrative in L. Hinchman and S. Hinchman, Introduction: Toward a Definition of Narrative, in *Memory, Identity, Community: The Idea of Narrative in the Human Sciences*, ed. L. Hinchman and S. Hinchman, New York: State University of New York 2001. H. Blumenberg, Die Lesbarkeit der Welt, Frankfurt am Main: Suhrkamp 1981.

¹⁷⁵ F. Graf, A. Zgoll et al., “Myth,” *Brill’s New Pauly. Encyclopaedia of the Ancient World*, vol. 9, Leiden: Brill 2006. G. Kirk, *Myth: Its Meaning and Functions in Ancient and Other Cultures*, London: Cambridge University Press 1970.

mediating “between self and world,” and evoking order and meaning¹⁷⁶—usually show how human beings perceive natural phenomena and the world in which they live in a symbolic and picturesque way.

To better understand these stories, we first need to delineate the general Islamic perception of the universe, which took a great variety of forms and interpretations. Then we will delve into the backgrounds of these stories and detect the symbolic features conveyed in them by exploring their interrelations with early Islamic traditions and the traditions of other cultures. In order to understand the place these stories had in the Mamlūk ‘ajā’ib wa-gharā’ib genre, such as the works of al-Qazwīnī (d. 682/1283),¹⁷⁷ al-Nuwayrī (d. 733/1333),¹⁷⁸ al-

¹⁷⁶ Hinchman and Hinchman, *Memory, Identity, Community*, xvi.

¹⁷⁷ See about al-Qazwīnī footnote 63, p. 43.

¹⁷⁸ al-Nuwayrī was an Egyptian Mamlūk scribe and financial official, who compiled an encyclopedia covering a large spectrum of topics. Its last four volumes are devoted to the history of Mamlūk Sultanate. R. Irwin, *Mamluk Literature*, *Mamlūk Studies Review* 7 (2003), 8. M. Chapoutot-Remadi, “al-Nuwayrī,” *The Encyclopaedia of Islam*, vol. 8, Leiden: Brill 1995, 156–160.

‘Umarī (d. 749/1349),¹⁷⁹ al-Nuwayrī al-Iskandarānī (d. after 775/1372),¹⁸⁰ al-Qalqashandī (d. 821/1418),¹⁸¹ Ibn al-Wardī (d.

M. Chapoutot-Remadi, “al-Nuwayrī,” *Encyclopaedic Historiography of the Muslim World*, vol. 3, Leiden: Brill 2003, 711–721.

¹⁷⁹ al-‘Umarī served in the chancery of Cairo and Damascus under the rule of al-Nāṣir Muḥammad Ibn Qalāwūn. He was author of important works on the organisation and administration of the Mamlūk government and the encyclopaedic work *Masālik al-abṣār fī mamālik al-amṣār*, which covers subjects of ‘ajā’ib wa-gharā’ib genre, literature, history, geography, religion and law. K. Salibi, “Ibn Faḍl Allāh al-‘Umarī,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1965, 758–759.

¹⁸⁰ al-Nuwayrī al-Iskandarānī was a local historian of Alexandria. He wrote history of his home city titled *Kitāb al-ilmām fīmā jarat bi-hi al-ahkām al-umūr al-maqdīyah fī waq‘at al-Iskandariyah*, which aimed to describe the Frankish Crusaders’ short occupation of Alexandria in 767/1365. C. Bosworth, “al-Nuwayrī,” *The Encyclopaedia of Islam*, vol. 8, 1995, 155. J. van Steenbergen (ed.), *The Alexandrian Crusade (1365) and the Mamlūk Sources: Reassessment of the Kitāb al-Ilmām of an-Nuwayrī al-Iskandarānī, East and West in the Crusader States: Context—Contacts—Confrontations*, Leuven: A. A. Bredius Foundation 2000, 123–137.

861/1457),¹⁸² al-Suyūṭī (d. 911/1505),¹⁸³ and Ibn Iyās (d. 930/1524),¹⁸⁴ I will go back to the compilations of ancient myths about the world creation. By looking at these we can recognise the common ideas and transcultural elements on which these stories build their plots. Only in this way can one understand why Mamlūk authors chose a particular set of symbols to describe natural phenomena, excluding other possibilities, as “storytelling inevitably involves

¹⁸¹ al-Qalqashandī was a legal scholar and secretary in the Mamlūk chancery. He was an author of several books dealing with matters of law, literature, and secretarial art. His encyclopedic work *Kitāb ṣubḥ al-aṣḥā* also treats, among other themes, topics of ‘ajā’ib wa-gharā’ib genre. C. Bosworth, “al-Ḳalḳashandī,” *The Encyclopaedia of Islam*, vol. 4, Leiden: Brill 1973, 509–511.

¹⁸² Ibn al-Wardī was a Shāfi‘ī scholar, geographer and historian, an author of *Kharīdat al-‘ajā’ib wa-farīdat al-gharā’ib*, which is considered a “plagiarism” of the *Jāmi‘ al-funūn wa-salwat al-maḥzūn* by Najm al-Dīn Aḥmad b. Ḥamdān Ibn Shabīb al-Ḥarrānī al-Hanbalī. The latter lived in Egypt around 732/1331–2. M. Cheneb, “Ibn al-Wardī,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1965, 966.

¹⁸³ See about al-Suyūṭī footnote 66, p. 45.

¹⁸⁴ See about Ibn Iyās footnote 215, p. 132.

selectivity, rearrangement of elements, redescription, and simplification.”¹⁸⁵

2.5.1. The Picture of the Universe according to Mamlūk Authors and their Predecessors

Throughout history fictional descriptions of the universe and natural phenomena have been products of human imagination in which speculations about the creation of the universe varied. The symbols used to interpret and understand nature depended upon the form of revelation or beliefs that were dominant in a particular society as these sanctified a particular set of symbols as being distinct from the general symbols inherent in the nature of things.¹⁸⁶

In order to shed light on the causes of earthquakes in the stories of marvels, it is useful to start with a general Islamic perception of the

¹⁸⁵ Hinchman and Hinchman, Memory, Identity, Community, xvi. Cf. Nünning, Krise als Erzählung und Metapher, 117–145. See p. 204.

¹⁸⁶ Nasr, An Introduction to Islamic Cosmological Doctrines, 3.

universe, which is inseparable from the revelation of the *Qur'ān*.¹⁸⁷ Broadly speaking the *Qur'ān* does not contain a systematic description of the universe¹⁸⁸ but we can obtain a holistic picture about its essence through the descriptions in numerous scattered *Qur'ānic sūrah*s. There, heaven and earth are originally one solid mass which God separated (the *Qur'ān* 21:30), creating heaven and the earth in six days (the *Qur'ān* 11:7). Other passages tell us of seven heavens and seven earths (the *Qur'ān* 65:12; 78:12), which Muslim cosmographers associated with the seven traditional climatic zones.¹⁸⁹ Above the heavens God's footstool (*kursī*) (*Qur'ān* 2:255) and the throne ('arsh) are situated, which rest on the water (*Qur'ān* 11:7). We also learn that God spread out the earth and placed the mountains on it as a support (the *Qur'ān* 13:3, 78:6–7), “lest it sway with you” (the

¹⁸⁷ E. Jachimowicz, *Islamic Cosmology*, in *Ancient Cosmologies*, ed. C. Blacker and M. Loewe, London: George Allen & Unwin Ltd 1975, 144.

¹⁸⁸ U. Marzolph, “Cosmos,” *The Arabian Nights Encyclopedia*, vol. 1, Santa Barbara: 2004, 530.

¹⁸⁹ W. Lane, *Arabian Society in the Middle Ages. Studies from the Thousand and one Nights*, ed. by S. Lane-Poole, London: Curzon Press 1987, 97–98. See about the origin of the concept of climatic zones, p. 432.

Qur'ān 16:15; 31:10). He holds the celestial bodies so that they do not fall on the earth (the *Qur'ān* 22:64), and directs all affairs and natural phenomena (the *Qur'ān* 13:12).¹⁹⁰

These *qur'ānic sūrāhs* as a whole convey the impression that the structure of the universe is composed of horizontal levels: the throne being the uppermost level, followed by the footstool, then the seven heavens and the seven earths.¹⁹¹ This was the core idea,¹⁹² which

¹⁹⁰ A. Heinen, *Islamic Cosmology. A Study of as-Suyūṭī's al-hay'a as-saniya fī al-hay'a as-sunniya with Critical Edition, Translation, and Commentary*, vol. 27, Beirut Texte und Studien, Beirut: 1982, 78. Cf. Bible, Book of Genesis, 1.

¹⁹¹ Heinen, Islamic Cosmology, 78.

¹⁹² In fact, the idea that the earth or its inseparable elements rest on a series of different things, each coming stage-wise before the other, is far from being limited to Muslim perceptions of the world. (Macdonald, Job and Muslim Cosmography, 168. C. Blacker and M. Loewe (ed.), *Ancient Cosmologies*, London: George Allen & Unwin Ltd 1975. L. Gray, A. Sayce et al., "Cosmogony and Cosmology," *Encyclopædia of Religion and Ethics*, vol. 4, Edinburgh: T. & T. Clark 1911.) There is a huge amount of literature on parallel views in the traditions of other cultures. See, for example, about the structure of universe in Hindu and Buddhist mythology in J. Charpentier, A

schools of cosmological thought further elaborated in a variety of theories. Mamlūk authors used this vision of the universe in the chapters about the creation of the world, which made up an integral part of any ‘ajā’ib wa-gharā’ib work. Relying on the achievements of their predecessors, they expanded the *qur’ānic* perception of the universe with ideas compiled from different sources. In this way they ensured the maintenance and continuity of these old stories of marvels.

2.5.2. Nature as a Book of Marvellous Symbols

Treatise on Hindu Cosmography from the Seventeenth Century (Brit. Mus. MS. Sloane 2748 A), *Bulletin of the School of Oriental Studies* 3/2 (1924), 322. J. Charpentier (ed.), *The livro da seita dos indios orientais of Father Jacobo Fenicio*. Brit. Mus. MS. Sloane 1820, Uppsala: Almqvist & Wiksells 1933, 11–13. *Last Days of the Buddha: the Mahā Parinibbāna Sutta*, tr. from the Pali and ed. by S. Varjirā and F. Story Sri Lanka: Buddhist Publication Society 2007, 34. L. Poussin, “Cosmogony and Cosmology (Buddhist),” *Encyclopædia of Religion and Ethics*, vol. 4, Edinburgh: T. & T. Clark 1911, 131. Mackenzie, Indian Myth, 97–118.

The first example of the expanded *qur'ānic* vision of the universe to be presented here was widely circulating in most of the *'ajā'ib wa-gharā'ib* books of the Mamlūk period. It is taken from Ibn al-Wardi's chapter about the peculiarities of the earth and its divisions (*Faṣl fī ṣifat al-ard wa-taqṣīmihā [...]*).¹⁹³ In this he gives the following extra-*qur'ānic* basic perception of the universe and what it rests on. The earth (seven earths)¹⁹⁴ was originally unstable, swaying like a ship (*safinah*) on the water. Therefore God sent an angel (*malak*) to hold it on his shoulders. With hands outstretched to the east and west, the angel clutched the seven earths. But as he did not stand on solid ground, God sent a bull (*thawr*)¹⁹⁵ from paradise to stabilise his feet.

¹⁹³ Ibn al-Wardī, *Kharīdat al-'ajā'ib*, 11–17.

¹⁹⁴ See the names of the earths and their qualities in Ibn al-Wardī, *Kharīdat al-'ajā'ib*, 240. Heinen, *Islamic Cosmology*, 143.

¹⁹⁵ Ibn al-Wardī, *Kharīdat al-'ajā'ib*, 16. Cf. al-Qazwīnī (d. 682/1283) mentions that the name of the bull is *Kiyūbān/Kibūthān*. (al-Qazwīnī, *'Ajā'ib al-makhlūqāt*, 145.). Hermann Ethé translated it as *Leviathan*. *al-Qazwīnī, Zakarija Ben Muhammed Ben Mahmūd el-Kazwīni's Kosmographie. Die Wunder der Schöpfung*, tr. by H. Ethé, vol. 1, Nach der Wüstenfeldschen Textausgabe, mit Benutzung und Beifügung der Reichhaltigen Anmerkungen und

This giant bull had forty thousand horns and the same number of feet.¹⁹⁶ But his feet still did not reach the bull's hump. Thereupon, on its hump God placed a green hyacinth (*yāqūtah khadrā'*) from paradise stretching over a distance of a "thousand years." The bull's horns protruded from the regions of the earth to God's throne ('arsh). Its nostrils—two holes in that green hyacinth—were in the sea, and it breathed twice every day. When it exhaled, the sea rose; when it

Verbesserungen des Herrn Prof. Dr. Fleischer, Leipzig: Fues's Verlag 1868,
298.

¹⁹⁶ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 16. The description and the measures of these marvellous creatures vary from text to text. Ibn al-Wardī (d. 861/1457), for example, depicts the bull in another passage as having four feet, forty horns and forty humps. (Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 239.) al-Jazzār (d. after 984/1576) describes it as having two horns and three feet. (Tāhir, *Tahṣīn al-manāzil*, 146.) In al-Qazwīnī's version, it has forty thousand eyes, the same number of ears, noses, mouths, tongues and feet. (al-Qazwīnī, *‘Ajā’ib al-makhlūqāt*, 145.) Cf. Yāqūt al-Ḥamawī, *Kitāb mu‘jam al-buldān*, vol. 4, 23. al-Maqdisī, *al-Bad’ wa-al-ta’rīkh*, 48. al-Tha‘labī, *Qisāṣ al-anbīyā’ al-musammā ‘arā’is al-majālis*, al-Qāhirah: Dār iḥyā’ al-kutub al-‘arabiyyah Ḫāṣidah 2005, 4.

inhaled, it ebbed. However, there was still no support for the bull, so God created a sandhill, a rock, (*kathīb*).¹⁹⁷ But as it was not stable enough, God created a whale/a big fish (*hūt*) called *Bahamūt* (Behemoth) which held it.¹⁹⁸

The narrator of this story, Wahb Ibn Munabbih (d. seventh century A.D.),¹⁹⁹ claimed that the bull and the whale swallowed the

¹⁹⁷ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 16. In the encyclopedic works of early Arab scholars, such as al-Maqdīsī (d. ca. 390/1000 century) and Yāqūt (d. 626/1229), this sandhill is called *Kumkum*. al-Maqdisī, al-Bad’ wa-al-ta’rīkh, 48. Yāqūt al-Hamawī, *Kitāb mu‘jam al-buldān*, vol. 4, 23.

¹⁹⁸ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 16, 15. al-Maqdīsī (d. ca. 390/1000 century) and Yāqūt (d. 626/1229) call it *Balhūt*, whereas al-Qazwīnī (d. 682/1283) refers to it as *Bahamūt*. al-Maqdisī, al-Bad’ wa-al-ta’rīkh, 48. Yāqūt al-Hamawī, *Kitāb mu‘jam al-buldān*, vol. 4, 23. al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 145. See the image of Behemoth and Leviathan in Illustrations to the Book of Job by William Blake, the Butts Set, object 15 (Butlin 550.15), <http://www.blakearchive.org/>.

¹⁹⁹ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 145. See about the Yemenite narrator Wahb Ibn Munabbih (d. ca. 114/732), who is often mentioned as the narrator of this marvellous story, footnote 60, p 81.

waters of the earth rising in the seas, in a way regulating its amount. When their bellies were full of water they became agitated.²⁰⁰ According to another storyteller Ka'b al-Aḥbār,²⁰¹ Iblīs (the Devil) tempted the whale to rebel,²⁰² but God made it obey by sending bugs into its eyes which troubled it. Furthermore, from the hyacinth God created Mount *Qāf*, which is made of green emerald (*zumurrudah khadrā'*). All mountains arise from its roots.²⁰³

Ibn al-Wardī (d. 861/1457) sums up that the earth is upon water; the water—upon the rock; the rock—on the back of the bull; the bull—on a sandhill; the sandhill—on the whale/fish; the fish—upon a futile wind; the wind—on a veil of darkness and the darkness—on the

²⁰⁰ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 15.

²⁰¹ Ka'b al-Aḥbār, another Yemenite Jew who probably converted to Islam in 17/638, was considered the oldest authority on Jewish-Islamic tradition. M. Schmitz, “Ka'b al-Aḥbār,” *The Encyclopaedia of Islam*, vol. 4, Leiden: Brill 1978, 316–317. al-Tha‘labī, *Qīṣāṣ al-anbīyā'*, 4.

²⁰² Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 15. al-Suyūṭī, *Kashf al-ṣalṣalah*, 134. al-Tha‘labī, *Qīṣāṣ al-anbīyā'*, 4. Ṭāhir, *Tahṣīn al-manāzil*, 146.

²⁰³ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 15.

humid ground. As to what is beneath the darkness, the knowledge of humankind fails. “Nobody knows it but God, who is the creator of heavens and earths.”²⁰⁴

Ibn al-Wardī’s passage represents a basic picture of the universe inherited from the earliest period of Islamic history, and it is of interest here because some of the symbols such as the image of the giant bull, the whale and the Mount *Qāf*, played a significant role in the fictional interpretations of earthquakes. They appear in numerous books, with some variations related to the sequence of the levels, on which the universe rests. For example, we find these symbolic images in al-Suyūṭī’s *Kashf al-ṣalṣalah ‘an waṣf al-zalzalah*,²⁰⁵ in which he presents the whole scope of earthquake interpretations.²⁰⁶ Here he tries to furnish these fictional stories with the chain of authoritative Muslim narrators of tradition—a method typical for the legitimisation

²⁰⁴ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 15–16. al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 145.

²⁰⁵ al-Suyūṭī, *Kashf al-ṣalṣalah*, 133–135. See more about al-Suyūṭī in footnote 66, p. 45 and about this treatise, p. 280.

²⁰⁶ al-Suyūṭī, *Kashf al-ṣalṣalah*, 137–156.

of *hadīth*. What is also remarkable is that he lists traditional views without being concerned about apparent contradictions.

(a) The *Bull* and the *Whale/Fish*

From a tradition presented in al-Suyūtī's *Kashf al-ṣalṭalah 'an wasf al-zalzalah* (*The Examination of the Rattle Describing the Earthquake*), we learn that one of the supports of the earth, the rock, rests on the horns of the bull.²⁰⁷ The extended version of this view appears in the treatise of al-Suyūtī's follower, al-Jazzār (d. after 984/1576). There he writes that different rumours were circulating among the population about the cause of the 984/1576 earthquake.²⁰⁸ In looking for the causes of this earthquake, some people revived their memories of an ancient story according to which the bull carrying the earth on one of its horns causes an earthquake whenever it shifted the earth from one horn to the other.²⁰⁹ Similarly, al-Suyūtī (d. 911/1505) and

²⁰⁷ al-Suyūtī, *Kashf al-ṣalṭalah*, 133–135. Heinen, *Islamic Cosmology*, 145.

²⁰⁸ Tāhir, *Taḥṣīn al-manāzil*. See the historical record of this earthquake in Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 55–56. al-Għunaym, *Sijill al-zalāzil*, 240.

²⁰⁹ Tāhir, *Taḥṣīn al-manāzil*, 142, 147.

al-Jazzār (d. after 984/1576) further elaborated the account of the whale/fish, which caused an earthquake when it moved. In their stories, Iblīs (the Devil), by telling the whale/fish how great and powerful it is, makes it feel so proud of itself that it shakes causing an earthquake. As a response to its behaviour, God sends a small fish to calm it down.

In contrast to Ibn al-Wardī's report, which is not charged with any religious implications, both al-Suyūtī (d. 911/1505) and al-Jazzār (d. after 984/1576) stress through their narratives the magnitude of almighty God. According to them he is the one who sends earthquakes as a punishment for different "immoral" behaviour or as a sign of the approaching "Judgement Day." Moreover, they present these fictional stories as an alternative to the physical explanations of the Greek philosophers, which they regarded as corrupt (*fasād*).²¹⁰

(b) Mount *Qāf*

²¹⁰ al-Suyūtī, Kashf al-ṣalṭalah, 134–135. Tāhir, Tahṣīn al-manāzil, 146–147.

See also p. 189.

Concerning Mount *Qāf*, which owes its name to an angel in charge of it,²¹¹ it not only supports the earth—an idea comparable with the role of mountains in the *Qur'ān* (13:3; 16:15; 31:10) and tradition²¹²—but it also causes earthquakes. Ibn al-Wardī (d. 861/1457), al-Suyūtī (d. 911/1505), Ibn Iyās (d. 930/1524) and others cite numerous traditions about this mountain, which is the “mother” of all mountains encircling the lower earth. Its roots are connected with the rock on which the earth is situated. If God wishes to shake a part of the earth, he orders the mountain to move those parts of it which border that specific place.²¹³

²¹¹ Ibn Iyās (d. 930/1524) mentions that an angel named *Qāf* serves as an intermediary between God and the mountain. It stirs the mountain whenever God wishes it. Ibn Iyās, *Nashq al-azhār*, fol. 463.

²¹² The Mount *Qāf* surrounding the earth is the basis for the pegs (*awtād*) of the earth. (Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 239.) According to ‘Abdallāh Ibn ‘Abbās (d. 68/687–8), scholar of the first generation of Muslims, (L. Vaglieri, “Abd Allāh b. al-‘Abbās,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill 1960, 40–41) “the mountains are quite proud on earth because it is firmly established through them.” Heinen, *Islamic Cosmology*, 171.

²¹³ al-Suyūtī, *Kashf al-ṣalṭalah*, 133. Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 463. al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 170. Ṭāhir, *Tahṣīn al-manāzil*, 147. Heinen,

In comparison to the story about the whale, which stirs and causes an earthquake in general, the story about *Qāf* distinguishes between the region affected by the earthquake and the rest of the world.²¹⁴ This explanation probably sounded more plausible to the narrators and readers, which is why it established itself in Islamic tradition and literature. However, there are two more reasons for the wide acceptance and popularity of this story. The first reason relates to the legacy of its narrator, ‘Abdallāh Ibn ‘Abbās,²¹⁵ the prophet’s cousin and the greatest authority, “father of Ḳur’anic exegesis.”²¹⁶ The ‘ulamā’ regarded traditions derived from him as trustworthy.²¹⁷ The other reason relates to the symbolic association of Mount *Qāf* with

Islamic Cosmology, 170. See the image depicting the Mount Qāf surrounding the earth in Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, p. 4.

²¹⁴ Heinen, Islamic Cosmology, 119.

²¹⁵ al-Suyūṭī, *Kashf al-ṣalṭalah*, 133. Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 5.

²¹⁶ Vagliari, “‘Abd Allāh b. al-‘Abbās,” 40.

²¹⁷ Vagliari, “‘Abd Allāh b. al-‘Abbās,” 40–41.

the name of the *Qur'ān sūrah* 50,²¹⁸ appearing in the form of the Arabic letter-symbol (ق), which is pronounced *Qāf*. Some *Qur'ān* exegetes interpreted the name of this *sūrah* as referring to Mount *Qāf*.²¹⁹ This connection to the revelation elevated this marvellous mountain to the level of a purely Islamic symbol, which further increased the importance of its role and interest in it.

Thus, numerous descriptions circulated about this primeval mountain. Since it has no fixed form we find various descriptions of it in different texts. For example, the material which it is composed of occupies a special place in many descriptions. Like Yāqūt (d. 626/1229),²²⁰ al-Qazwīnī (d. 682/1283) and Ibn al-Wardī (d.

²¹⁸ This *sūrah* is about death and resurrection. Muḥammad, the *Qur'ān*, 1017f.

²¹⁹ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 5. al-Maqdisī, *al-Bad' wa-al-ta'rīkh*, 46. Yāqūt al-Ḥamawī, *Kitāb mu‘jam al-buldān*, vol. 4, 298. al-Tha‘labī, *Qiṣaṣ al-anbīyā'*, 5.

²²⁰ Yāqūt al-Rūmī, was a geographer of non-Arab origin, who was enslaved at the age of six years and was taken from Byzantium to Baghdad where he was later emancipated and became a scholar. (Cl. Gilliot, “Yāqūt,” *The*

861/1457) depict it as composed of green chrysolite (*zabarjadaḥ khadrā*).²²¹ Other scholars, such as al-Maqdīsī (d. ca. 390/1000 century), al-Nuwayrī (d. 733/1333) and al-Suyūṭī (d. 911/1505) describe it as made of green emerald (*zumurrudah khadrā*)²²² of which the sky and, accordingly, the sea reflect their colour. Unsurprisingly, the colour of the mountain in all the reports is green, which symbolically represents the colour of Islam and thus also ascribes an Islamic value to it.

Apart from this, Mount *Qāf* plays a special role in fictional literature as the mountain appears in several stories in *Thousand and One Nights*.

(*Encyclopaedia of Islam*, vol. 11, Leiden: Brill 2002, 264–266.) See more about his book in S. von Hees, Neues zum Verhältnis von Qazwīnī's *Ātār al-bilād* zu Yāqūt's *Mu'ğam al-buldān*. Zwei geographische Texte des 13. Jahrhunderts im Vergleich. Qazwīnīs Geographie—ein Plagiat? in *Akten des 27. Deutschen Orientalistentages. Norm und Abweichung*, ed. S. Wild and H. Schild, Würzburg: Ergon Verlag 2001, 425.

²²¹ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 5. al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 170. Yāqūt al-Ḥamawī, *Kitāb mu‘jam al-buldān*, vol. 4, 298.

²²² al-Maqdīsī, *al-Bad’ wa-al-ta’rīkh*, 46. al-Nuwayrī, *Nihāyat al-arab*, vol. 1, 1, 219. Heinen, Islamic Cosmology, 171.

For example, in the Adventures of Bulūqīyah (the 495th and 496th nights)²²³ the angel in charge of this mountain explains the function of Mount *Qāf* and here we learn that it is not only responsible for earthquakes on earth—as is commonly agreed—but also for other disastrous and non-disastrous events such as famines, prosperity and killing. In this context, the fictional stories about the bull and the whale are also narrated.²²⁴

Furthermore, we learn that Mount *Qāf*, which is located in the east and the west²²⁵ and whose peak reaches almost into the heavens,²²⁶ borders the limit of the inhabited world.²²⁷ Some scholars claim that

²²³ Kitāb alf laylah, 612f. See also the adventures of Bulūqīyah in Chapter *Dhikr khabar Bulūqīyah wa-mā shāhada min ‘ajā’ib* in al-Nuwayrī, *Nihāyat al-arab*, vol. 14, 182–194.

²²⁴ Kitāb alf laylah, 612, 613–614. The Book of the Thousand Nights, 269f. al-Nuwayrī, *Nihāyat al-arab*, vol. 14, 190.

²²⁵ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 14.

²²⁶ Yāqūt al-Ḥamawī, Kitāb mu‘jam al-buldān, vol. 4, 298.

²²⁷ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 154.

the sun sets and rises from it.²²⁸ On and beyond Mount *Qāf* there are fantastic places inhabited by angels and *jinn*.²²⁹ It is the abode where the fabulous bird *Simurgh*²³⁰ has retired from the world. One can reach it only with the help of magic creatures such as huge birds, a magic carpet or *jinn*, who manage to traverse enormous distances in a flash.²³¹ In a number of accounts of Alexander's journeys, Alexander is said to have reached Mount *Qāf* at the borders of the Earth and talked to it about the causes of earthquakes.²³² Sometimes, in a geographic

²²⁸ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 14.

²²⁹ Shahrazad describes this mountain in detail during the 496th night in *Kitāb alf laylah*, 612f. The Book of the Thousand Nights, 270f. Lane, Arabian Society, 104.

²³⁰ This marvellous bird, existing since the beginning of the world, is said to live at the Mount *Qāf* in complete solitude and to be consulted as wise by kings and heroes. M. Streck and A. Miquel, “Kāf,” *The Encyclopaedia of Islam*, vol. 4, Leiden: Brill 1978.

²³¹ U. Marzolph, “Qāf,” *The Arabian Nights Encyclopedia*, vol. 2, Santa Barbara: ABC CLIO 2004, 682–683.

²³² al-Tha‘labī, *Qiṣaṣ al-anbīyā*, 5. al-Suyūṭī, *Kashf al-ṣalṭalah*, 135. B. Wheeler, *Moses in the Quran and Islamic Exegesis*, London: Routledge Curzon 2002, 97–99.

context, *Qāf* denotes the part of the high Asiatic chain of mountains, known as the Caucasus,²³³ and bordering the Muslim world to the north and the mountains of northern Persia.²³⁴

Mamlūk encyclopaedists and chroniclers such as al-‘Umarī (d. 749/1349), al-Nuwayrī al-Iskandarānī (d. after 775/1372) and al-Qalqashandī (d. 821/1418) have also integrated this marvellous story about Mount *Qāf* into the sections of their compendia dealing with ‘ajā’ib in nature.²³⁵ Their works represent contemporary tendencies regarding views of the universe and the processes occurring in it. The most striking inclusion appears in al-Nuwayrī al-Iskandarānī’s work, written after the catastrophe which befell Alexandria in 767/1365 during the crusade of Peter I Lusignan—king of Cyprus, Jerusalem—,

²³³ The Caucasus has various pronunciations in different Indo-European languages. We can discern the root *Qāf* in particular in the Russian word for Caucasus (Кавказ), which is pronounced as “Kafkaz.”

²³⁴ Streck and Miquel, “Ḳāf,” 402.

²³⁵ al-‘Umarī, *Masālik*, vol. 1, 78f. al-Qalqashandī, *Kitāb ḫubh*, vol. 2, 177.

and his allies from Europe.²³⁶ Although the author's original aim in writing this book was to record his memories and observations of the Crusaders' brief conquest of Alexandria, he was carried away by the citations of diverse fictional material on different subjects.²³⁷

In the chapter *Earthquakes, Pest, Winds, Floods and Famine*, he reports on the memorable earthquake of 702/1302 in Egypt.²³⁸ After briefly describing the effects of this disastrous event, al-Nuwayrī al-Iskandarānī (d. after 775/1372),²³⁹ unlike his fellow chroniclers Ibn al-Dawādārī (d. 736/1336),²⁴⁰ and the Coptic historian al-Mufaḍḍal

²³⁶ See more on this historical event in van Steenbergen (ed.), *The Alexandrian Crusade*, 123–137.

²³⁷ al-Nuwayrī al-Iskandarānī, *Kitāb al-ilmām bi-al-i'lām fīmā jarat bi-hi al-ahkām al-umūr al-maqdīyah fī waq'at al-Iskandariyah*, ed. by 'A. 'Atīyah, vol. 1, Ḥaydar Ābād: Dā'irat al-ma'ārif al-'uthmānīyah 1388/1968, 1.

²³⁸ al-Nuwayrī al-Iskandarānī, *Kitāb al-ilmām*, vol. 4, 124–126. See about this earthquake *Chapter 4.4. The Disastrous Earthquake of 702/1303: A Comprehensive Account of Effects and Attitudes*, p. 323f.

²³⁹ See about this author footnote 180, p. 208.

²⁴⁰ See about this author footnote 76, p. 173.

Ibn Abī al-Faḍā'il (d. after 759/1357),²⁴¹ continues with the explanation of the cause of earthquakes, which he relates to the marvellous story about Mount *Qāf*.²⁴² This example, like the one, presented in the previous subchapter on physical explanations of earthquakes,²⁴³ demonstrates that the repertoire of ‘ajā’ib wa-gharā’ib had here moved out of its specialised niche during the Mamlūk period and became incorporated in the usual curriculum of *kuttāb* (scribes). Moreover, it shows the appearance of a tendency towards the “literalization”²⁴⁴ of the most thriving genre of the time, the chronicles. However, Mamlūk authors did not make new discoveries while interpreting natural phenomena. They simply revived the attested and traditional views of their ancestors.

On closer examination, we can find these marvellous stories on earthquakes, with slight linguistic variations, in earlier sources such

²⁴¹ See about this author footnote 159, p. 199.

²⁴² al-Nuwayrī al-Iskandarānī, *Kitāb al-ilmām*, vol. 4, 124–126.

²⁴³ See p. 173, 199.

²⁴⁴ Haarmann, *Quellenstudien*, 161–200.

as al-Qazwīnī's *Kitāb ‘ajā’ib al-makhlūqāt*,²⁴⁵ al-Tha‘labī's (d. 427/1035)²⁴⁶ *Lives of the Prophets*,²⁴⁷ in Yāqūt's geographical dictionary²⁴⁸ and in al-Maqdīsī's *The Book of Creation and History*.²⁴⁹ The content of these stories of marvels is essentially the same. However, in contrast to Yāqūt (d. 626/1229) and al-Maqdīsī (d. ca. 390/1000 century), who find the stories of the *qaṣṣāṣ* ridiculous,²⁵⁰ Ibn al-Wardī (d. 861/1457) regards them as allegorical representations and as such not detestable. According to him, such stories appeal to people's imagination and increase the mental perception of religion, the estimation of the power of the lord and

²⁴⁵ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 144–145, 170.

²⁴⁶ al-Tha‘labī was known as a narrator of traditions and a *Qur’ān* commentator. G. Schoeler, “al-Tha‘labī,” *The Encyclopaedia of Islam*, vol. 10, Leiden: Brill 2000, 434.

²⁴⁷ al-Tha‘labī, *Qiṣṣat al-anbiyā'*, 4–6. al-Tha‘labī, ‘Arā’is al-majālis fī qīṣṣat al-anbiyā' or “Lives of the Prophets,” Translated and Annotated by W. Brinner, Leiden: Brill 2002, 6f.

²⁴⁸ Yāqūt al-Ḥamawī, *Kitāb mu‘jam al-buldān*, vol. 4, 23–24.

²⁴⁹ al-Maqdīsī, al-Bad’ wa-al-ta’rīkh, 47–49.

²⁵⁰ Yāqūt al-Ḥamawī, *Kitāb mu‘jam al-buldān*, vol. 4, 2324. al-Maqdīsī, al-Bad’ wa-al-ta’rīkh, 47.

bewilderment at the wonders of his creation. They are an invention of “followers of the book” (*ahl al-kitāb*),²⁵¹ who are non-Muslims, i.e. the Jews, Christians and Sabians.²⁵² They were the first to reflect on the wonders of creation and to give explanations of natural phenomena, especially in the earliest *Qur’ān* commentaries and *ḥadīth* collections. Foremost among them are the above-mentioned Wahb Ibn Munabbih (d. seventh century A.D.)²⁵³ and Ka‘b al-Aḥbār (d. seventh century A.D.),²⁵⁴ who transmitted the stories about the *whale* and the *bull*.

At the beginning of Islam, there was no consistent system relating to the creation of the world and natural disasters based on Muḥammad’s revelations. These authors gleaned information from different sources, adopting them to fill the gaps in their understanding of the *Qur’ān*.

²⁵¹ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 16.

²⁵² G. Vajda, “Ahl al-Kitāb,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill 1960, 264–266.

²⁵³ See about Wahb Ibn Munabbih footnote 60, p. 81 and footnote 199, p. 216.

²⁵⁴ See about Ka‘b al-Aḥbār footnote 201, p. 217.

Their diverse, often contradictory explanations of natural phenomena, make their narrative tradition a storehouse of ideas derived from non-Muslim traditions and the following pages will examine possible sources for the inspiration behind these marvellous stories.

2.5.3. Transculturality of Symbolic Elements in the Stories of Marvels

When tracing the roots of fictional interpretations of earthquakes in *'ajā'ib wa-gharā'ib* works, one notices on closer analysis that they contain a number of references to pre-Islamic beliefs. In fact, certain explanations in them had ancient roots and existed long before the emergence of Islam in the Middle East and probably constituted a part of the biblical and Indo-Persian tradition.²⁵⁵ For a better understanding of these marvellous stories we can look at the symbols of the *bull*, the *whale* and Mount *Qāf* from a transcultural perspective, comparing the stories around them with the revelations contained in non-Muslim sources.

²⁵⁵ Akasoy, Islamic Attitudes to Disasters, 391.

2.5.3.1. The *Bull* and the *Whale/Fish* versus the Biblical *Behemoth* and *Leviathan*

The *bull* and the *whale/fish* are remarkable creatures in ancient views of the universe and we find a number of myths about them representing a cluster of images in older beliefs.²⁵⁶ But the first explicit indication that these elements in the stories of marvels

²⁵⁶ *The Sacred Books of the East. Pahlavi Texts. The Bundahis, Bahman Yast, and Shâyast lâ-Shâyast*, tr. by E. W. West, ed. by M. Müller, vol. 5, 1, Oxford: At the Clarendon Press 1880, 31. A. Carnoy, Iranian Mythology, in *The Mythology of all Races*, ed. L. Gray and G. Moore, Boston: Marshall Jones Company 1917, 287f. A. Laouli, The Greek Myth of Pleiades in the Archaeology of Natural Disasters. Decoding, Dating and Environmental Interpretation, *Mediterranean Archaeology and Archaeometry* 6/2 (2006), 7. J. Hinnells, *Persian Mythology*, London: Chancellor Press 1985, 23. D. Vitaliano, Geomythology: Geological Origins of Myths and Legends, in *Myth and Geology. Geological Society. Special Publication* 273, ed. L. Piccardi and W. Masse, London: Cromwell Press 2007, 2. R. Ludwin and G. Smits, Folklore and Earthquakes: Native American Oral Traditions from Cascadia Compared with Written Traditions from Japan, in *Myth and Geology. Geological Society. Special Publication* 273, ed. L. Piccardi and W. Masse, London: Cromwell Press 2007, 75f.

stemmed from pre-Islamic tradition is given in Ibn al-Wardī's record itself. As previously mentioned, the stories about the *bull* and the *whale/fish* were an “invention” (*ikhtirā*) of “followers of the book” (*ahl al-kitāb*) and an elaborate embellishment by the storytellers (*qaṣṣāṣ*).²⁵⁷ Some of the sources mention their names. In the first place, it is the previously mentioned Wahb Ibn Munabbih,²⁵⁸ who inherited his knowledge of the biblical tradition from two Jewish converts, Ka'b al-Aḥbār (d. seventh century A.D.) and ‘Abd Allāh Ibn Salām (d. 43/663–4). All of them were recognised as great authorities in the study of biblical traditions²⁵⁹ and through them biblical elements found their way into Islamic thought.²⁶⁰

Another indication also arises from the text itself. We learn from the tradition narrated by Wahb Ibn Munabbih that the name of the

²⁵⁷ Ibn al-Wardī, *Kharīdat al-‘ajā’ib*, 16.

²⁵⁸ See footnote 199, p. 216.

²⁵⁹ Khoury, “Wahb Ibn Munabbih,” 34–36. Schmitz, “Ka'b al-Aḥbār,” 316–317.

²⁶⁰ Macdonald, *Job and Muslim Cosmography*, 169.

whale/fish, on which the earth rests is *Bahamūt*.²⁶¹ The confusion about the spelling of this word presented in footnote 198, p. 216 underlines its foreign origin. This confusion could have occurred during the process of copying when names were written without diacritical points.²⁶² However, we find another explanation for the diverse spellings in al-Tha'labī's book, when he clarifies that "God created a large fish (*nūn*) which is a huge whale whose name (*ism*) is *Lutīyā*, by-name (*kunyah*) *Balhūt*, and nickname (*laqab*) *Bahamūt*."²⁶³

In the same book of al-Tha'labī, the symbols of the *bull* and *whale/fish* appear in the story of Ayyūb (Job) and again transmitted by Wahb Ibn Munabbih²⁶⁴ with occasional references to Ka'b al-Aḥbār.²⁶⁵ There, in God's speech, the following passage occurs:

²⁶¹ Ibn al-Wardī, *Kharidat al-'ajā'ib*, 15. al-Qazwīnī, 'Ajā'ib al-makhlūqāt, 145. al-Tha'labī, *Qīṣāṣ al-anbīyā'*, 4. Heinen, Islamic Cosmology, 172.

²⁶² See footnote 198, p. 216. Cf. Arabic spelling بَهْوَت / *Bahamūt/Balhūt*.

²⁶³ al-Tha'labī, *Qīṣāṣ al-anbīyā'*, 4. al-Tha'labī, Lives of the Prophets, 7.

²⁶⁴ See about Wahb Ibn Munabbih footnote 199, p. 216.

²⁶⁵ See about Ka'b al-Aḥbār footnote 201, p. 217.

“Where were you on the day I created the *behemoth*, whose place is at the end of the Earth, and the *leviathan*—both of whom bear the mountains and the villages and cultivated lands, their tusks like the tall pine trees and their heads like mountains, the veins of their thighs like brass pillars?”²⁶⁶

This story is evidently based, though with curious variations, on the Book of Job (40:15),²⁶⁷ from which the whale *Bahamūt* and bull *Kiyūbān/Kibūthān* (cf. Leviathan)²⁶⁸ have been derived. We can claim

²⁶⁶ al-Tha‘labī, Lives of the Prophets, 263. al-Tha‘labī, *Qiṣaṣ al-anbiyā’*, 140.

Macdonald, Job and Muslim Cosmography, 169.

²⁶⁷ Heinen, Islamic Cosmology, 235. These animals are also mentioned in *The Books of Enoch: A Complete Volume Containing: 1 Enoch (The Ethiopic Book of Enoch), 2 Enoch (The Slavonic Secrets of Enoch), 3 Enoch (The Hebrew Book of Enoch)*, ed. by J. Lumpkin, AL: Fifth Estate Publishers 2010, 96, 425 and in the Bible, Psalm 50:10.

²⁶⁸ The word *Leviathan* has a Hebrew origin deriving from the root *l-w-y* and means “one that twists/curls up.” It denotes a serpentine marine creature mentioned in the Old Testament. B. Rebiger, “Leviathan,” *Religion Past and Present*, Brill Online 2013.

that the concepts behind these animal-monsters, which accompany us throughout the Mamlūk ‘ajā’ib wa-gharā’ib works, stemmed from the Jewish-Christian tradition. They were silently integrated into Islamic thought probably by way of oral transmission. It is also obvious that these biblical animal-monsters belong to a common reservoir of great antiquity, going back to the Babylonian tradition of the creation myth *Enūma Elish*.²⁶⁹ In this tradition, Marduk (the chief god of Babylon) kills his mother Tiamat—the divine female sea monster embodying the original chaos—, splitting her lengthwise into two halves. From the lower half he creates the earth, from the upper half the firmament of the heavens, setting up the order of the existing world.²⁷⁰ This mixture of symbolic elements and ideas stemming from Babylonian and Jewish-Christian traditions ascribed the *bull* and the *whale* in the Mamlūk ‘ajā’ib wa-gharā’ib a hybrid form.

²⁶⁹ H. Gunkel, *Creation and Chaos in the Primeval Era and the Eschaton: Religio-Historical Study of Genesis 1 and Revelation 12*, tr. by W. Whitney, Cambridge: Eerdmans Publishing Co. 2006.

²⁷⁰ Streck and Miquel, “Kāf,” 401. J. Renger, “Tiamat,” *Brill’s New Pauly*, Brill Online: 2013. S. Maul, “Enūma eliš,” *Brill’s New Pauly*, Brill Online 2013. Gunkel, *Creation and Chaos*.

However, in none of these ancient texts is *Behemoth* a fish²⁷¹ or *Leviathan* a bull and nor do they cause earthquakes. Muslim storytellers, who added new elements to the well-known ones carefully adapting them to Muslim taste, disseminated these tales.²⁷² Therefore, we can assume that the story about earthquakes linked to this transcultural symbols in ‘ajā’ib wa-gharā’ib works was a product of the early Islamic period. This belief was widespread all across the Islamic world. Especially in the Iranian tradition, the *bull* not only shifts the earth from one horn to the other when it is tired but also when the injustice in the world increases.²⁷³

²⁷¹ Heinen, Islamic Cosmology, 235.

²⁷² Macdonald, Job and Muslim Cosmography, 169.

²⁷³ X. Planhol, “Earthquakes (In Persia),” *Encyclopædia Iranica*, vol. 7, California: Mazda Publishers 1996, 634. H. Massé, *Croyances et coutumes persanes suivies de contes et chansons populaires*, vol. 1, Paris: Librairie Orientale et Américaine 1938, 181. H. Petermann, *Reisen im Orient*, vol. 2, Leipzig: Verlag von Veit & Comp 1861, 301.

In much the same way, the inhabitants of the regions round the Red Sea believed that the earth rested on the back of gigantic *bulls*,²⁷⁴ and even one of the words denoting an earthquake was known as *thirān al-dunīyah* (“bulls of the Earth”).²⁷⁵ We also come across the theme of the *bull* in Indian tales.²⁷⁶ Father Fenicio, who compiled one of the first western works on Hindu mythology during the seventeenth century A.D., reports in a biased way that the Brahmins “are most firmly convinced that the earth is supported on the top of a bull’s horn, and when he grows tired he moves the earth from one horn to another. This movement causes earthquakes.”²⁷⁷

2.5.3.2. Mount *Qāf* versus *al-Burz*

Mount *Qāf* seems to embody a wide range of symbolism and we find a crucial hint about its origin in Yāqūt’s and al-Maqdīsī’s works in

²⁷⁴ Streck and Miquel, “*Ḳāf*,” 401.

²⁷⁵ E. Rüppel, *Reise in Abyssinien*, vol. 1, Frankfurt am Main: Schmerber in Comm. 1838, 256.

²⁷⁶ Streck and Miquel, “*Ḳāf*,” 401.

²⁷⁷ Charpentier, Treatise on Hindu Cosmography, 322. Charpentier (ed.), The livro da seita, 12–13.

which they mention that the ancients called it Mount *al-Burz*.²⁷⁸ This is an important reference which Mamlūk authors of ‘ajā’ib wa-gharā’ib genre do not mention because it implies that the notion of *Qāf* as a mountain range surrounding the terrestrial world was derived from an ancient Iranian tradition,²⁷⁹ which had a great influence on the early Islamic literature.²⁸⁰

In fact, from an ancient Iranian creation myth we learn that the Evil Spirit, Angra Mainyu, plunged down onto the earth, entering straight into its centre. When it crashed down, the earth shook and the mountains arose. First, Mount *al-Burz* (Alborz) (Av. *Harā bərəzaiti*, Mid. Pers. *Harborz*)²⁸¹ with its peak Taēra in the middle was created.

²⁷⁸ al-Maqdisī, al-Bad’ wa-al-ta’rīkh, 46. Yāqūt al-Ḥamawī, Kitāb mu’jam al-buldān, vol. 4, 298.

²⁷⁹ Marzolph, “Qāf,” 682.

²⁸⁰ See about the influence of Iranian tradition on Arab literature in Rypka, Iranische Literaturgeschichte, 80–81, 475f.

²⁸¹ The earliest form of the name means in the Avesta and in Zoroastrian writings probably “high watch/guard,” a common designation for mountains and high places. Av. *Harā* “watch, guard, defence” is from the

The roots of this cosmic mountain spread under the earth, holding it together, and from them grew all the other mountains.²⁸² This view of the world consisting of a surrounding chain of mountains is similar to the image of Mount *Qāf* surrounding the world. The only difference is that the Mamlūk ‘ajā’ib wa-gharā’ib sources do not depict it as having grown from a mountain located in the centre of the world.

OIr. *har-* “to pay attention to, watch over, protect” which is equivalent to NPers. *barz/borz*, “mound,” German *Berg, Burg, Burgund* (IE. *Bheregh-*). The name also refers to real mountains which extend between the mountains of Armenia in the west and those of the Hindu Kush in the east. There are also allusions that Elbrus, the highest peak of the Caucasus, has derived its name from this mountain. M. Bazin, E. Ehlers et al., “Alborz (Elborz, Elbors),” *Encyclopædia Iranica*, vol. 1, London: Routledge 1985, 810–811, 813. See the drawing of the Mount al-Burz in the centre of the world and a mountain chain grown from it as surrounding the world in J. Hinnells, Persian Mythology, p. 22.

²⁸² Bundahis, Chapter 8, 30. Hinnells, Persian Mythology, 22. Carnoy, Iranian Mythology, 280–281.

We gain this information about Mount *Alburz* from the *Bundahishn* (“Original Creation”), which is a collection of Pahlavi translations on the creation of the world, mythology and legendary history based on the Zoroastrian scriptures.²⁸³ According to this the chief mountain took eight hundred years to grow: two hundred years to reach the star station, two hundred—to the moon station, two hundred—to the sun station and for the final two hundred it grew to the endless light.²⁸⁴ Furthermore, a number of stories concerning the mountain *al-Burz* (Alborz) are preserved in literary sources such as in al-Firdawṣī’s *Shāh-nāma*²⁸⁵ and other works. However, I will not discuss them here

²⁸³ The *Bundahishn* is one of the main sources containing material from the Older Avesta. It was composed in the ninth century A.D., but it contains much earlier material, some of it probably going back to the fifth century B.C. See The Sacred Books of the East, xxiif. D. MacKenzie, “Bundahišn,” *Encyclopædia Iranica*, vol. 4, London: Routledge 1990, 547. P. Kreyenbroek, “Cosmogony and Cosmology in Zoroastrianism/ Mazdaism,” *Encyclopædia Iranica*, vol. 6, California: Mazda Publishers 1993, 303. James, Creation and Cosmology, 60.

²⁸⁴ Bundahis, Chapter 12, 34. Hinnells, Persian Mythology, 22.

²⁸⁵ Firdusii, *Liber Regum qui inscribitur Schahname*, ed. by J. Vullers, vol. 1, Leiden: Brill 1294/1877, 38, 444 and vol. 2 Leiden: Brill 1295/1878, 947.

further but will instead restrict myself to a short outline of the parallel ideas in ancient Indian and Mesopotamian sources.

(a) The Cosmic Mountain in the Ancient Indian Sources

The Iranian view of the great central mountain has close links with that of ancient India.²⁸⁶ This is conveyed mainly in classical Hindu, Buddhist and Jain texts.²⁸⁷ Despite the differences between their doctrines,²⁸⁸ all agree that there is a world mountain running through the middle. Its centre is at our level but its top and bottom reach at least one heaven and hell. This world mountain is called Mount

Shāh-nāma, known in English as *Book of Kings*, is a heroic epic written by the great Persian poet Firdawṣī, who died about 1025 A.D. al-Firdawṣī connects in *Shāh-nāma* folk elements with the historical tradition. Rypka, *Iranische Literaturgeschichte*, 156f.

²⁸⁶ Bazin, Ehlers et al., “Alborz,” 811.

²⁸⁷ C. Blacker, Introduction, in *Ancient Cosmologies*, ed. C. Blacker and M Loewe, London: George Allen & Unwin Ltd 1975, 13–14. Keith, *Indian Mythology*, 13–14.

²⁸⁸ See the major differences between the doctrines in Blacker and Loewe (ed.), *Ancient Cosmologies*, 13–14.

*Mēru*²⁸⁹ in Sanskrit, *Sineru* or *Sumeru* in Pali. They also agree that the earth is ringed by a fabled mountain chain,²⁹⁰ which is called *Lokāloka* in the *Purāṇas*²⁹¹ and *Chakra-vāda* or *Chakra-vāla* in the Buddhist texts.²⁹² This mountain range encompasses all the continents

²⁸⁹ See the Buddhist thangka (a painting on silk with embroidery, depicting a Buddhist deity) showing Shambhala (a mythical kingdom hidden somewhere in Inner Asia) with Mount Mēru and a temple in the centre on www.heritageinstitute.com/zoroastrianism/aryans/location.htm. You can read the full description about this mountain in D. Hudson, *The Body of God: An Emperor's Palace for Krishna in Eighth-Century Kanchipuram*, Oxford: Oxford University Press 2008, 302f. Charpentier, Treatise on Hindu Cosmography, 323–324. Gombrich, Ancient Indian Cosmology, 127. I. Mabbett, The Symbolism of Mount Meru, 66f.

²⁹⁰ Gombrich, Ancient Indian Cosmology, 119.

²⁹¹ The *Purāṇas* contain the authoritative sacred texts of Hindu myth and worship, and they were mostly composed in the first millennium A.D. Gombrich, Ancient Indian Cosmology, 111. Keith, Indian Mythology, 13.

²⁹² Gombrich, Ancient Indian Cosmology, 126f. Streck and Miquel, “Kāf,” 401. J. Dowson, “A Classical Dictionary of Hindu Mythology and Religion, Geography, History, and Literature,” London: Kegan Paul, Trench, Trübner

of the earth, separates the visible from the invisible world and rises above utter darkness.²⁹³

Moreover, it is said “that it is the supporting pillar of the earth which prevents her from wobbling from one side to the other or to get into disorder, the subterrestrial part of it being bulkier at the bottom. On the top of this mountain, so they say, is the paradise.”²⁹⁴

Mount *Mēru* played an immense role in people’s imagination a fact attested to by its constant appearance in the literature of the Hindu-Buddhist world resulting in innumerable stories and legends about it.²⁹⁵ Finally yet importantly, the Hindu scriptures describe the mountains of the Himalaya bounding the Hindu world to the north as

1903, 180. Poussin, “Cosmogony and Cosmology (Buddhist),” 131–132. Bazin, Ehlers et al., “Alborz,” 811–812.

²⁹³ Streck and Miquel, “Kāf,” 401.

²⁹⁴ Charpentier, Treatise on Hindu Cosmography, 323–324. Gombrich, Ancient Indian Cosmology, 127. I. Mabbett, The Symbolism of Mount Meru, *History of Religions* 23/1 (August 1983), 66f.

²⁹⁵ Mabbett, The Symbolism of Mount Meru, 70–71.

stemming from Mount *Mēru*,²⁹⁶ as was sometimes the case with Mount *Qāf*, which is referred to as the Caucasian mountain chain.²⁹⁷

(b) The Cosmic Mountain in the Mesopotamian Vision of the Universe

The idea of a central mountain supporting the earth as appears in the Indo-Iranian tradition and other ancient cultures²⁹⁸ was also widespread among the peoples of the ancient Orient. In the final analysis we find this view in the Babylonian vision of the universe.²⁹⁹

²⁹⁶ Different cultures identified it with different mountain chains in their own environment. Streck and Miquel, “*Kāf*,” 401. Gombrich, *Ancient Indian Cosmology*, 127. Poussin, “Cosmogony and Cosmology (Buddhist),” 131.

²⁹⁷ See footnotes 281, p. 240 and 233, p. 227.

²⁹⁸ See different names for the cosmic mountain in the tradition of different cultures in R. Thompson, *Vedic Cosmography and Astronomy*, Delhi: Motilal Banarsi Dass Publishers 1989, 63–65. R. Sluijs, *The Mountain of the Gods*, 2005,

www.thunderbolts.info/tpod/2005/arch05/050510mountaingods.htm.

²⁹⁹ M. Eliade, *The Myth of the Eternal Return: or, Cosmos and History*. Translated from the French by W. Trask, New York: Princeton Univ. Press 1974, 12–13.

Although there are few allusions to the cosmic mountain in Babylonian sources,³⁰⁰ the concept of Mount *Mēru* is believed to have parallels with the ziggurats³⁰¹ of Babylon, whose seven stories represented the seven heavenly spheres.³⁰²

Besides the perception of the ziggurats as equivalents of sacred mountains, we can find a vision of a cosmic mountain, called Mount *Mashu*,³⁰³ in the Acadian Epic of Gilgamesh. The ninth and the tenth

³⁰⁰ W. Lambert, The Cosmology of Sumer and Babylon, in *Ancient Cosmologies*, ed. C. Blacker and M. Loewe, London: George Allen & Unwin Ltd 1975, 61.

³⁰¹ The ziggurats were temples—“foundations of heaven and earth,” “Mount of the House,”—built in the form of artificial sacred mountains. Eliade, The Myth, 14. H. Nissen, “Temple,” *Brill’s New Pauly. Encyclopaedia of the Ancient World*, vol. 14, Leiden: Brill 2009. H. Nissen, “Ziggurat,” *Brill’s New Pauly. Encyclopaedia of the Ancient World*, vol. 15, Leiden: Brill 2010. See the drawing of Ziggurats of Babylon in M. March et al. (ed.), *Cultural Atlas of Mesopotamia and the Ancient Near East*, Oxford: Equinox 1990, p. 104–105.

³⁰² Eliade, The Myth, 13. Mabbett, The Symbolism of Mount Meru, 64–65.

³⁰³ According to Wayne Horowitz, Mount *Mashu* is probably to be translated as “Twin mountains,” through the peaks of which the sun rises. W.

tablets describe it as a mountain of sunrise and sunset, with its peak in the sky and base in the underworld.³⁰⁴ Interestingly, we learn from Stephanie Dalley's article, in which she compares the *Epic of Gilgamesh* with that of *Bulūqīyah* in the Arabian Nights, that both protagonists travelled to the cosmic mountain: Gilgamesh to the Mount *Mashu*, and Bulūqīyah to the Mount *Qāf*.³⁰⁵

The discussion presented above leads us to the conclusion that the concept of the central cosmic world mountain, from which all the mountains of the earth stem, was deeply embedded in people's imagination. It was based on a common idea, which acquired different frames in the traditions of different cultures. The Muslim

Horowitz, *Mesopotamian Cosmic Geography*, Winona Lake: Eisenbrauns 1998, 97.

³⁰⁴ Horowitz, *Mesopotamian Cosmic Geography*, 96–98. Anonymous, The Epic of Gilgamesh and the Goddess Ishtar, in *The Sacred Books and Early Literature of the East. Babylonia and Assyria*, ed. Ch. Horne and M. Jastrow, New York: Parke 1917, 201.

³⁰⁵ St. Dalley, Gilgamesh in the Arabian Nights, *Journal of the Royal Asiatic Society* 1/1 (1991 April), 4–6.

notion of the mountain *Qāf* was probably shaped under the influence of the Indo-Iranian tradition. However, the story framework is a product of the early Arab storytellers with a Jewish background. Its legacies stem from the traditions of Islam as they are presented in the *Qur'ān* and *Hadīth*.³⁰⁶ We can conclude that the *bull*, *whale/fish* and Mount *Qāf* in the ‘ajā’ib *wa-gharā’ib* works, which are fictional agents of earthquakes, each have transcultural symbolic value since they bear a rich load of aspiration and accumulated myths adopted from cultural entanglements. The Mamlūk authors of ‘ajā’ib *wa-gharā’ib* genre reframed and shaped the fictional stories around them under the influence of the Jewish-Christian, the ancient Indo-Iranian and Babylonian traditions.

2.6. The Continuity and Transculturality of Reinterpreted Beliefs, Ideas, and Motifs

These chapters have demonstrated, first, that Mamlūk authors, while explaining the causes of natural disasters, integrated both physical and fictional interpretations into the ‘ajā’ib *wa-gharā’ib* works. However, towards the end of the Mamlūk period the physical

³⁰⁶ Streck and Miquel, “Kāf,” 401.

perception of natural disasters inherited from the Greek philosophers and the early Muslim savants gave way to more popular fictional interpretations which evoked astonishment about natural disasters. These interpretations were often reinforced by religious views that aimed either to keep people afraid of God's wrath or to discredit disseminators of physical interpretations. At the same time certain Mamlūk authors began to include the fictional stories of marvels into strictly scholarly works, like encyclopaedias and chronicles, a tendency which made their works more unconstrained and appealing to readers and thus in a way popularising them.³⁰⁷

Second, Mamlūk authors drew upon the motifs and stories found in the books of their Arab ancestors who made intensive use of ancient sources. This underpins the transculturality and continuity of their views. However, it was not a haphazard, thorough borrowing of ideas. On the contrary, the authors linked their stories with widespread motifs, prominent arguments and symbolic elements, which they picked up intentionally from renowned sources.

³⁰⁷ Little, Data on Earthquakes, 137–138. Haarmann, Quellenstudien, 161–200.

Finally, a close comparative analysis of the interpretations, conveyed in the ‘ajā’ib wa-gharā’ib works, has shown that these symbolic elements were a syncretistic inheritance from biblical and Indo-Iranian traditions. Despite the contextual differences between the plots and narratives of the sources, they reveal a common universal interest towards understanding the secrets of nature, which they presented in symbolic form.³⁰⁸ Because of their universality, these symbols travelled across space and time and as such they acquired a composite nature. Their origin, similar to the description of disastrous events in the astro-meteorological *malhamah*, cannot therefore be reduced to one single source. The “commonness” of symbols and interpretations in Wolfgang Welsch’s sense³⁰⁹ enforced their transcultural perception. However, the narration of marvellous stories around them was open to contextual changes which in turn was subject to local demands. Mamlūk authors adopted these basic concepts and introduced new elements into the established narratives. This mixture of cultural elements created its own unique vision of the

³⁰⁸ Cf. Blumenberg, Die Lesbarkeit der Welt.

³⁰⁹ See the definition of transculturality, p. 41.

natural phenomena, contextualised in conformity with the requirements of Islamic traditions.

PART II

NATURAL DISASTERS IN MAMLŪK EGYPT RECONSTRUCTED FROM THE HISTORICAL PERSPECTIVE

CHAPTER 3

REVIEW OF THE MAIN ISSUES

3.1. Introduction

In what follows the focus shifts from interpretations of natural hazards that had different narrative bases, which, depending on various causes—be they astro-meteorological, physical or fictional—saw them treated as “oddities” of creation rather than disasters. Instead Part II of this thesis will examine their perception and interpretation narrated as disastrous events in the historical context of Mamlūk Egypt. It will also show in what way the historiographic genre, which provides the basic source for the analysis in this part, reflected the transcultural interpretations presented in the preceding chapters.

Mamlūk chroniclers recorded occurrences of different extreme events (earthquakes, droughts, floods, extreme cold weather, torrential rains, windstorms, epidemics, epizootics, locust invasions, and fires)¹ with

¹ According to the categorisation of disasters, presented in footnote 15, p. 24, fires are classified to the category of social disasters. Indeed, most of the fires happened in Mamlūk Egypt as a result of human carelessness or malicious arson. The following historical records of fires in the chronicles attest this assumption: (663/1263, 691/1291, 721/1321, 740/1339, 744/1343, 751/1350, 769/1368, 778/1376, 780/1376, 800/1397, 816/1413, 828/1424, 836/1433, 862/1458, 877/1472, 881/1476, 887/1482, 888/1483, 895/1490, 898/1493, 911/1505 and 915/1509). However, as some of the fires were caused by natural phenomenon like lightning, thunderbolts and winds, leading to a lot of destruction and human losses, we can also classify fires as climatic disasters. See Syrinx von Hees' paper which positions fires in the intersection of nature and society S. von Hees, "The Great Fire in Cairo of 1321"—Interactions between Nature and Society, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. G. Schenk, Heidelberg: Springer forthcoming, and the records of fires, having natural core in: 774/1372: *al-Maqrizī, Kitāb al-sulūk li-ma‘rifat duwal al-mulūk*, ed. by M. Ziyādah, vol. 1,3, al-Qāhirah: Maṭba‘at lajnat al-ta’lif wa-al-tarjamah wa-al-nashr 1970, 205. al-Suyūtī, Ḥusn al-muḥāḍarah,

varying intensity and frequency in Egypt during the Mamlūk reign (648–922/1250–1517). As presented in the introductory part of the thesis, the focus in this study is on the most destructive environmental threats. These are, on the one hand, geophysical hazards like earthquakes, or, on the other hand, climatic extreme events like excessive floods and droughts, caused specifically by the irregularities in the rise of the Nile's level during the period of inundation. The purpose is to show their frequency,² social impact, short and long-term consequences and ways of coping with them. One

vol. 2, 304. 837/1433: al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 906. al-‘Asqalānī, *Inbā’ al-ghumr bi-anbā’ al-‘umr*, ed. by Ḥ. Ḥabashī, vol. 3, al-Qāhirah: al-Majlis al-a‘lā lil-shu‘ūn al-islāmīyah, lajnat ihyā’ al-turāth al-Islāmī 1415/1994, 514. Ibn Iyās, *Badā’i‘ al-zuhūr fī waqā’i‘ al-duhūr*, ed. by M. Muṣṭafā, vol. 2, Wiesbaden: Franz Steiner 1392/1972, 347. ‘Abd al-Bāsit, Nayl al-amal, vol. 2,6, 41. 886/1481: ‘Abd al-Bāsit, Nayl al-amal, vol. 2,7, 297–298. Ibn Iyās, *Badā’i‘ al-zuhūr fī waqā’i‘ al-duhūr*, ed. by M. Muṣṭafā, vol. 3, Istānbūl: Maṭba‘at al-dawlah 1936, 182. 898/1493: Ibn Iyās, *Badā’i‘*, vol. 3, 287–288. 917/1511: Ibn Iyās, *Badā’i‘*, vol. 4, 217.

² The frequency of these natural disasters is presented chronologically with the references to the major primary and secondary sources in the appendix, p. 643f.

of the specific questions to be answered in the final discussion is whether discernible cultural interpretations and strategies existed for dealing with these historical disastrous events.

Accordingly, Part II of the thesis treats these issues in the following three chapters: *Chapter 3 Review of the Main Issues* begins with the general introduction of common primary sources and methods of research,³ which I will further specify in *Chapter 4 Earthquakes and Chapter 5 Excessive Floods and Disastrous Droughts*.

³ In Part II, which treats natural disasters from the historical perspective, I apply research methods of historiography and literary studies, which are based on collection, analysis and interpretation of sources, using the criteria of reliability and authoritativeness. See analytical strategies and methods of source-criticism for the reading and interpreting primary sources in G. Theuerkauf, *Einführung in die Interpretation historischer Quellen. Schwerpunkt Mittelalter*, Paderborn: Schöningh 1991. M. Dobson and B. Ziemann (ed.), *Reading Primary Sources. The Interpretation of Texts from Nineteenth- and Twentieth-Century History*, London: Routledge 2009. Guidoboni and Ebel, Earthquakes and Tsunamis, 39–40. J. Robinson, Chapter 1: The Historical Point of View, in *Readings in European History. A Collection of Extracts from the Sources Chosen with the Purpose of Illustrating the Progress of Culture in*

Chapter 4 Earthquakes examines minor and major earthquakes, which struck Egypt during more than two centuries of Mamlūk rule. First, it gives a critical review of earthquakes listed in the secondary sources, like non-contemporary chronicles and modern catalogues.⁴ The aim is to highlight the validity of “doubtful”⁵ earthquakes, recorded as historical events in the secondary sources. Then it provides a detailed analysis of those earthquakes which the chroniclers perceived and interpreted as disastrous in the primary historical sources,⁶ in

Western Europe since the German Invasions. Vol. 1: From the Breaking up of the Roman Empire to the Protestant Revolt, Boston: Ginn and Company 1906, 1–13. See also the discourse on the narratology in White, *The Content of the Form*.

⁴ See the references, p. 26 and p. 286.

⁵ See the definition of “doubtful” on p. 258 and in *Chapter 4.2. Critical Review of “Doubtful” Earthquakes*, p. 288f.

⁶ The historical sources, also called documentary evidence, include all kinds of manmade sources which convey direct or indirect data about earthquakes, excessive floods and droughts. These are written narrative sources, like annals and chronicles, accounts of journeys, visual daily weather records, parish registers, personal correspondence, special prints,

particular in chronicles and annals. Finally, it summarises and explains the structure of earthquake narratology and its constituent elements.

From the perspective of historical seismology,⁷ which fully adopts the methods of historical research,⁸ I call the records of earthquakes “doubtful” for the following reasons: (1) lack of contemporary

official economic records, newspapers, pictorial documentation, stall-keepers’ and market songs, scientific papers, letters, diaries, epigraphic sources and early instrumental records. Guidoboni and Ebel, Earthquakes and Tsunamis, 41–147. R. Brázil, Z. Kundzewicz et al., Historical Hydrology for Studying Flood Risk in Europe, *Hydrological Sciences Journal* 51 /5 (2006), 742–747. Vogt, Glaser et al., Assessing the Medieval Climate Anomaly, 28.

⁷ Historical seismology, as a recently established discipline, “is the branch of seismology that uses historical data in order to assess long-term seismic activity.” The research uses “accumulation and interpretation of qualitative data, that is, descriptions of the effects of the earthquakes that occurred in recent times as well as in the distant past.” Guidoboni and Ebel, Earthquakes and Tsunamis, 6–7.

⁸ Guidoboni and Ebel, Earthquakes and Tsunamis, 39.

evidence, (2) location error, (3) probable contextual misinterpretation and language problems, (4) subjective implications of earthquakes related to the destruction of certain structures, and (5) the duplication of earthquakes. This categorisation, which I will further explain,⁹ partially stems from Emanuela Guidoboni's basic study of historical seismology. There she calls these earthquakes "false"¹⁰ due to problems in their interpretation. However, I deliberately avoid the use of the word "false," as we deal here with the events far back in history; and with the appearance of new primary sources and new evidence such a categorisation can become obsolete.

Chapter 5 Excessive Floods and Disastrous Droughts examines the population's dependence on the rise and decline of the Nile. Here, significant periods of excessive flooding and drought, which entailed environmental devastations and massive food shortages, caused by the river's extreme fluctuations, take centre stage. Thus, this chapter,

⁹ See the detailed explanation of this categorisation in *Chapter 4.2. Critical Review of "Doubtful" Earthquakes*, p. 288f.

¹⁰ See more on the distinction of "false earthquakes" in Guidoboni and Ebel, *Earthquakes and Tsunamis*, 247–251.

partially using¹¹ methods of historical hydrology,¹² shows people's attitudes to disasters which caused a great deal of suffering. Furthermore, it explores strategies employed by people to survive the catastrophe or prevent future occurrences of them. In its final discussion, it turns to the question of whether we can call Mamlūk

¹¹ Other methods will be presented in *Chapter 5.6.2. “Excessive” and “Low” Floods from the Perspective of the Nile’s Specific Hydrological History*, p. 497.

¹² Historical hydrology is a new interdisciplinary research field of natural and social sciences which links research methods of hydrology—“the science of the water cycle”—and environmental history. It reconstructs and investigates the vulnerability of past societies to extreme water events mainly “for the period prior to the creation of national hydrological networks.” See more on methods of data collection and their analysis, referring to the flood risk in Europe, as well as the sources, which are similar to those presented in footnote 6, p. 257, in Brázdil, Kundzewicz et al., *Flood Risk in Europe*, 739, 741f. R. Brázdil and Z. Kundzewicz, *Historical Hydrology—Editorial*, *Hydrological Sciences Journal* 51/5 (2006), 733–735. D. Gutknecht (ed.), *Extreme Abflussereignisse. Dokumentation—Bedeutung—Bestimmungsmethoden*, in *Wiener Mitteilungen. Wasser. Abwasser. Gewässer*, vol. 206, Wien: Institut für Wasserbau und Ingenieurhydrologie, Technische Universität Wien 2007.

Egypt a “culture of disaster” in the sense offered by Greg Bankoff’s work.¹³

3.2. Common Primary Sources and Methods of Research

As the extent of the historiographic literature genre (*akhbār/ta’rīkh*)¹⁴ from the Mamlūk period is huge, I restrict myself to the major primary sources,¹⁵ chronicles, annals and treatises with historical

¹³ See p. 52.

¹⁴ Partially following the definition of Chase F. Robinson, by historiographic literature I mean poetic and “prose representations of the past in which chronology, whether explicit or implicit, is an essential feature.” (Ch. Robinson, *Islamic Historiography*, Cambridge: Cambridge University Press 2003, 55.) See also about the origin of Islamic historiographic genre and forms of historical writing in H. Krauss-Sánchez and P. López, “Islamic Historiography,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 883–888.

¹⁵ According to Steffen Vogt et al., “universal and town chronicles, accounts of journeys, and occasional diaries” are the potential documentary Arab sources on environmental issues. Vogt, Glaser et al., Assessing the Medieval Climate Anomaly, 28.

content,¹⁶ which treat natural disasters marginally or specifically. The principal method used to study these records is a comparative analysis of disasters reported by contemporaries, who were anxious to preserve the details of memorable events for the next generations and thus produced the main material, containing sometimes precise, sometimes brief, references to these disastrous events.

The comparative study and the study of the narrative forms¹⁷ of disastrous events are essential because the evidence in the chronicles may contain errors in dating or have been wrongly interpreted, depending on the author's presuppositions. As previously mentioned, the author's "ideological perspective" i.e. values, norms and intentions, which influence the narration,¹⁸ must be viewed critically. This method not only minimises the complete fabrication of historical events but also enables the evaluation of their effects described by

¹⁶ See the list of these sources in *Chapter 3.2.1. Overview of Historical Sources on Natural Disasters*, p. 269.

¹⁷ See Nünning, Krise als Erzählung und Metapher, 117–145.

¹⁸ Nünning, Krise als Erzählung und Metapher, 130. See p. 204.

several authors and their points of view.¹⁹ Moreover, as the famous Mamlūk chronicler al-Maqrīzī (d. 845/1442)²⁰ notes “what is heard from the past will never—and in no way—affect us as deeply as what exists at present,”²¹ which underpins the idea that personal experience of events, as the best case, leaves a more lasting impression than any lengthy accounts of past events by non-contemporaries.

The comparative study is an ideal method of historical research which is nevertheless not always possible to employ especially when there is information gap due to a lack of contemporary local sources or the sparseness of contemporary reports.²² This refers, in particular, to the study of earthquakes, excessive floods and droughts before

¹⁹ Guidoboni and Ebel, Earthquakes and Tsunamis, 227. Brázdil, Kundzewicz et al., Flood Risk in Europe, 741.

²⁰ See about al-Maqrīzī footnote 84, p. 88.

²¹ al-Maqrīzī, *Mamluk Economics. A Study and Translation of al-Maqrīzī’s Ighāthah*, tr. by A. Allouche, Salt Lake City: University of Utah Press 1994, 26.

²² Guidoboni and Ebel, Earthquakes and Tsunamis, 221–222.

654/1256–7 and roughly the period between 738/1337²³ and 770/1368.²⁴

Although there are contemporary Egyptian and Syrian historians, like Muhyī al-Dīn Ibn ‘Abd al-Zāhir (620–692/1233–1293),²⁵ al-Yūnīnī

²³ This year marks the last contemporary records for the period before 738/1337, found in al-Yūsufī’s chronicle (676–759/1277–1358) *Nuzhat al-nāżir fī sīrat al-Malik al-Nāṣir*, which covers the years 733–738/1332–1337.

See information about this chronicler in footnote 33, p. 267.

²⁴ This year marks approximately the begining of the contemporary reports recorded in al-‘Aynī’s (762–855/1361–1451) and al-Maqrīzī’s (766–845/1364–1442) chronicles, who were eight and four years old by this time.

See about al-‘Aynī footnote 31, p. 267 and about al-Maqrīzī footnote 84, p. 88.

²⁵ Muhyī al-Dīn Ibn ‘Abd al-Zāhir was an Egyptian author of the early Mamlūk period. He served as head of chancery (*dīwān al-inshā’*) to Sultan Baybars (r. 658–676/1260–1277). He wrote biographies of Sultan Baybars, Sultan Qalāwūn and Sultan al-Ashraf Khalīl Ibn Qalāwūn. See more about this historian in Muhyī al-Dīn Ibn ‘Abd al-Zāhir, *Tashrif al-ayyām wa-al-‘uṣūr fī sīrat al-Malik al-Manṣūr* (678–689), ed. by M. Kāmil, al-Qāhirah: al-Sharikah al-‘arabiyyah lil-ṭibā’ah wa-al-nashr 1961, 9f. R. Amitai-Preiss, “Ibn

(640–726/1242–1326)²⁶ and Baybars al-Manṣūrī (ca. 644–725/1246–1325),²⁷ who could provide information for the period before

‘Abd al-Żahir, Muhyi al-Dīn,” *Encyclopaedic Historiography of the Muslim World*, vol. 2, Delhi: Global Vision Publishing House 2003, 339.

²⁶ al-Yūnīnī was a Syrian historian and Ḥanbalī sheikh who travelled to Egypt in 659/1261 and 675/1276. L. Guo, *Early Mamluk Syrian Historiography. al-Yūnīnī’s Dhayl mir’āt al-zamān*, vol. 1, Leiden: Brill 1998, 10f. J. Sublèt, “al-Yūnīnī,” *The Encyclopaedia of Islam*, vol. 11, Leiden: Brill 2002, 345–346.

²⁷ Baybars al-Manṣūrī came to Egypt as a *mamlūk* (military slave) in 659/1261 at the age of fifteen. al-Manṣur Qalāwūn, who became Sultan later (r. 678–689/1279–1290), purchased him. During his reign, Baybars al-Manṣūrī became an emir. Baybars al-Manṣūrī, *Kitāb al-tuhfah al-mulūkiyah fī al-dawlah al-turkiyah: ta’rīkh dawlat al-mamālik al-baḥriyah fī al-fatrah min 648–711 hijriyah*, ed. by Ḥamdān, al-Qāhirah: al-Dār al-miṣriyah al-lubnāniyah 1407/1987, 5f. E. Ashtor, “Baybars al-Manṣūrī,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill 1960, 1127–1128. E. Ashtor, “Baybars al-Mansuri,” *Encyclopaedic Historiography of the Muslim World*, vol. 1, Delhi: Global Vision Publishing House 2003, 189–190. D. Richards, “Baybars al-Manṣūrī,” *The Encyclopedia of the Medieval Chronicle*, vol. 2, Leiden: Brill 2010, 149.

654/1256–7, their published historiographic sources either do not treat the events of this period or provide only sparse information about disastrous events. Regarding the period between 738/1337 and 770/1368, Ibn al-Furāt (735–807/1335–1405)²⁸ and Ibn Duqmāq (745–809/1349–1407)²⁹ are theoretically reliable contemporary historians. However, as I could not find published editions of their chronicles covering the events of this period, I have consulted the records of the contemporary Syrian chronicler Ibn Kathīr (700–774/1300–1373)³⁰ and later authoritative Egyptian historians al-‘Aynī

²⁸ Ibn al-Furāt was one of the Egyptian historians whose historical records were the most influential. S. Massoud, “Ibn al-Furāt,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010. Bacharach, Circassian Mamluk Historians, 76. Massoud, The Chronicles and Annalistic Sources, 34f., 191. Cl. Cahen, “Ibn al-Furāt,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1971, 768–769.

²⁹ Ibn Duqmāq, who was wālī in Damietta, also belonged to the most influential historians under the Mamlūks of the *Burjī* (Circassian) period. J. Fück, “Ibn Dukmāk,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1971, 756–757. Bacharach, Circassian Mamluk Historians, 28, 76, 191.

³⁰ Ibn Kathīr, the student of Ibn Taymīyah (d. 728/1328) (see footnote 65, p. 44), was one of the best-known historians and traditionists of Syria under

(762–855/1361–1451)³¹ and al-Maqrīzī (766–845/1364–1442).³²

They report on these years retrospectively, ensuring the survival of records not found elsewhere, due to the loss of the earlier sources. It is known that al-‘Aynī (d. 855/1451), al-Maqrīzī’s contemporary, recast records of the missing years, using al-Yūsufī’s (676–759/1277–1358)³³ *Nuzhat al-nāzir fī sīrat al-Malik al-Nāṣir*, which covered the

the Mamlūks of the *Bahri* (Turkish) period. H. Laoust, “Ibn Kathīr,” *The Encyclopaedia of Islam*, Leiden: Brill 1965, 817–818.

³¹ Born in Syria, al-‘Aynī (d. 855/1451) settled down in Cairo where he worked as Hanafī judge, religious scholar and historian. He had close relations to governmental circles. Thus, in 801/1399, he replaced al-Maqrīzī (d. 845/1442) in his position of muhtasib of Cairo. This was supposedly the reason for the conflict between the two historians. Massoud, *The Chronicles and Annalistic Sources*, 39–40. Bacharach, *Circassian Mamluk Historians*, 78. W. Marçais, “al-‘Aynī,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill 1960, 790–791. R. Preiss, “al-‘Aynī,” *Encyclopaedic Historiography of the Muslim World*, vol. 1, Leiden: Brill 2003, 115–116.

³² See about al-Maqrīzī in footnote 84, p. 88.

³³ Mūsā Ibn Muḥammad Ibn al-Shaykh Yaḥyā al-Yūsufī had close connections to Mamlūk authorities as he served in numerous war campaigns. In his chronicle, he recorded private and public events which he

period between 678–755/1279–1355. According to Donald Little, al-Yūsufī's chronicle was “the fullest, best documented contemporary source for the reign of al-Malik al-Nāṣir Muḥammad.”³⁴ However, as he further notes in his article *Historiography of the Ayyūbid and Mamlūk Epochs*, in particular al-‘Aynī's chronicle retrieves Yūsufī's records of *Nuzhah*, which have survived only in a fragment covering the years 733–738/1332–1338.³⁵ Providing the continuity of historical events, al-‘Aynī's chronicle thus acquired and retained additional reliability.³⁶ However, with the appearance of contemporary evidence we should reassess the information for the above-mentioned periods.

experienced as an eyewitness. D. Little, *Historiography of the Ayyūbid and Mamlūk Epochs*, in *The Cambridge History of Egypt (640–1517)*, ed. Carl F. Petry, Cambridge: Cambridge University Press 1998, 426.

³⁴ See about al-Malik al-Nāṣir's reign (r. 693–694/1293–1294; 698–708/1299–1309; 709–741/1310–1341) in footnote 127, p. 100.

³⁵ Little, *Historiography*, 426. D. Little, An Analysis of the Relationship between Four Mamluk Chronicles for 734–45, *Journal of Semitic Studies* 19/2 (1974), 252–268.

³⁶ Guidoboni and Ebel, Earthquakes and Tsunamis, 226.

3.2.1. Overview of Historical Sources on Natural Disasters

3.2.1.1. Annals and Local Chronicles

The most important historical sources for the reconstruction and analysis of earthquakes and water-related disasters are annals and chronicles.³⁷ Following a strict chronological framework, their authors preserved the memory of many historical events. They recorded meticulously occurrences of different “extraordinary” (*gharib*)³⁸ occurrences such as earthquakes, floods, droughts, famines, torrential rains, eclipses, meteorite falls, epidemics, epizootics, locust invasions and monstrous births. One of the drawbacks of this uniform material is that we can only look at the events through the eyes of the wealthier and better-educated strata of society.

³⁷ See more about different types of written historiographic sources and their distinctive features in Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 7. Guidoboni and Ebel, *Earthquakes and Tsunamis*, 74, 79. Haarmann, *Quellenstudien*, 148–159. Krauss-Sánchez and López, “Islamic Historiography,” 885–886.

³⁸ See al-Qazwīnī’s categorisation of *gharib*, p. 155, 151.

In this thesis, for the early Mamlūk, the so-called *Bahri* (Turkish)³⁹ period (658–784/1260–1382), I consulted the following Egyptian and Syrian chroniclers. I give their names in the order of their date of birth, followed by short titles of their books, and the years their chronicles cover as relevant only to the study of the Mamlūk period.

³⁹ According to Robert Irwin, the history of the Mamlūk reign is roughly divided into two consecutive periods: the *Bahri* (Turkish) (658–784/1260–1382) and the *Burjī* (Circassian) period (784–922/1382–1517). (Irwin, The Middle East in the Middle Ages, 157. Qāsim, ‘Aṣr salāṭīn al-mamālīk, 8–21.) Unlike the Sultans of the *Burjī* period, the early *Bahri* Sultans were generally praised in the sources as they had consolidated the military position of the state, bringing victory against the Mongols and the Crusaders. (Allouche, al-Maqrīzī’s *Ighāthah*, 1.) See more about the origin and history of the early Mamlūk period and further periodisation in Northrup, The Bahri Mamlūk Sultanate, 242–288. Irwin, The Middle East in the Middle Ages, 3f. Levanoni, The Mamluks’ Ascent to Power in Egypt, 121–144. D. Little, *An Introduction to Mamlūk Historiography. An Analysis of Arabic Annalistic and Biographical Sources for the Reign of al-Malik an-Nāṣir Muḥammad Ibn Qalā’ūn*, Wiesbaden: Steiner 1970.

1. Muhyī al-Dīn Ibn ‘Abd al-Ζāhir (620–692/1233–1293),⁴⁰ *Tashrīf al-ayyām wa-al-‘uṣūr fī sīrat al-Malik al-Manṣūr* (678–689/1279–1290)
2. al-Yūnīnī (640–726/1242–1326),⁴¹ *Dhayl mir’at al-zamān* (2 vols.): 654–686/1256–1287
3. Baybars al-Manṣūrī (ca. 644–725/1246–1325),⁴² *Kitāb al-tuhfah*: 648–711/1250–1311
4. al-Jazarī (658–739/1260–1338),⁴³ universal chronicle *Hawādith al-zamān* (2 vols.): 689–699/1290–1299 and 725–737/1324–1336

⁴⁰ See about this author footnote 25, p. 264.

⁴¹ See about this author footnote 26, p. 265.

⁴² See about this author footnote 27, p. 265.

⁴³ al-Jazarī was a Syrian scholar, who studied tradition and jurisprudence both in Damascus and Cairo. (al-Jazarī, *Ta’rīkh ḥawādith al-zamān wa-anbā’ihi wa-wafayāt al-akābir wa-al-a’yān min abnā’ihi: al-ma’rūf bi-ta’rīkh Ibn al-Jazarī*, ed. by ‘U. Tadmurī, vol. 2, Şaydā: al-Maktabat al-‘aṣrīyah 1419/1998, 35. B. Ansari, “al-Djazarī,” The Encyclopaedia of Islam, vol. 2, Leiden: Brill 1965, 522–523.) See more about his chronicle in Haarmann, Quellenstudien, 12–27.

5. al-Nuwayrī (677–733/1279–1333),⁴⁴ historical parts (vols. 29–33) of his huge encyclopaedia *Nihāyat al-arab fī funūn al-adab*: 596–730/1200–1329
6. Ibn al-Dawādārī (687–736/1288–1336),⁴⁵ universal chronicle (vols. 8–9) *Kanz al-durar wa-jāmi‘ al-ghurar*: 649–735/1252–1335
7. Mūsā Ibn Muḥammad Ibn al-Shaykh Yaḥyā al-Yūsufī (676–759/1277–1358),⁴⁶ *Nuzhat al-nāzir fī sīrat al-Malik al-Nāṣir*: 733–738/1332–1338
8. Mufaḍḍal Ibn Abī al-Faḍā’il (d. after 759/1357),⁴⁷ *al-Nahj al-sadīd wa-al-durr al-farīd fīmā ba‘d ta‘rīkh Ibn al-‘Amīd* (3 vols.): 658–716/1259–1316.

In the following, I have similarly listed those local Egyptian historians whose works are invaluable for any study of the late Mamlūk, the so-called *Burjī* (Circassian) period (784–922/1382–1517):⁴⁸

⁴⁴ See about this author footnote 178, p. 207.

⁴⁵ See about this author footnote 76, p. 173.

⁴⁶ See about this author footnote 33, p. 267.

⁴⁷ See about this author footnote 159, p. 199.

9. Ibn al-Furāt (735–807/1335–1405),⁴⁹ *Ta'rikh Ibn al-Furāt* (2 vols.): 672–696/1273–1296 and (789–792/1387–1389)
10. Ibn Duqmāq (745–809/1349–1407),⁵⁰ *Nuzhat al-anām fī ta'rikh al-islām*:⁵¹ 628–659/1261–1230
11. al-'Aynī (762–855/1361–1451),⁵² *Iqd al-jumān fī ta'rikh ahl al-zamān* (4 vols.): (648–707/1250–1307)
12. al-Maqrīzī (766–845/1364–1442),⁵³ *Kitāb al-sulūk li-ma'rifat duwal al-mulūk* (vols. 1.1–4.2): 648–841/1250–1437
13. Ibn Ḥajar al-'Asqalānī (773–852/1371–1449),⁵⁴ *Inbā' al-ghumr bi-anbā' al-'umr* (4 vols.): 773–850/1371–1446

⁴⁸ See the short description of this period in footnote 39, p. 270 and Garcin, The Regime of the Circassian Mamlūks, 290–317.

⁴⁹ See about this author footnote 28, p. 266.

⁵⁰ See about this author footnote 29, p. 266.

⁵¹ The records of the period, beginning with 659/1260; 768/1366 to 779/1378 and 804–805/1401–1402 exist in unpublished manuscripts. Massoud, The Chronicles and Annalistic Sources, 30.

⁵² See about this author footnote 31, p. 267.

⁵³ See about this author footnote 84, p. 88.

14. Abū al-Mahāsin Ibn Taghrī Bardī, also spelled as Ibn Taghrībīrdī (812–874/1410–1470),⁵⁵ *al-Nujūm al-zāhirah fī mulūk Miṣr wa-al-Qāhirah* (vols. 7–16): 648–872/1250–1467; *Muntakhabāt min kitāb ḥawādith al-duhūr fī madā al-ayyām wa-al-shuhūr* (4 vols.):⁵⁶ 845–860/1441–1456 and William Popper’s English translation Ibn Taghrī Bardī’s *History of Egypt* in 7 vols.: 784–865/1382–1461

⁵⁴ See about this author footnote 82, p. 87.

⁵⁵ Ibn Taghrī Bardī, a representative of *awlād al-nās* (“sons of the people” or “sons of the noble”), was a famous Egyptian historian, known for his close ties to the Mamlūk elite. Irwin, Mamluk Literature, 26–27. Bacharach, Circassian Mamluk Historians, 80. Massoud, The Chronicles and Annalistic Sources, 60f. W. Popper, “Abū al-Mahāsin Ibn Taghrībirdī,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill 1960, 138–139. R. Preiss, “Ibn Taghrī Birdī, Abū al-Mahāsin,” *Encyclopaedic Historiography of the Muslim World*, vol. 2, Leiden: Brill 2003, 424. H. Severt, “Ibn Taghrībirdī,” *The Encyclopedia of the Medieval Chronicle*, vol. 2, Leiden: Brill 2010, 840–841.

⁵⁶ The *Hawādith* was intended as a continuation of al-Maqrīzī’s *Kitāb al-sulūk*. A. Broadbridge, Royal Authority, Justice, and Order in Society: The Influence of Ibn Khaldūn on the Writings of al-Maqrīzī and Ibn Taghrībirdī, *Mamlūk Studies Review* 7 (2003), 241. Bacharach, Circassian Mamluk Historians, 81.

15. al-Sakhāwī (831–902/1428–1497),⁵⁷ *al-Dhayl al-tām ‘alā duwal al-islām* (2 vols.): 745–897/1344–1492
16. ‘Abd al-Bāsiṭ Ibn Khalīl al-Malaṭī (844–920/1440–1514),⁵⁸ *Nayl al-amal fī dhayl al-duwal* (vols. 1–7): 770–896/1369–1491
17. Ibn Iyās (ca. 852–930/1448–1524),⁵⁹ *Badā’i‘ al-zuhūr fī waqā’i‘ al-duhūr* (vols. 1.1–5): 648–922/1250–1517

⁵⁷ al-Sakhāwī, al-‘Asqalānī’s student, was known as sheikh *al-hadīth*. Besides his interest in tradition, he is the author of several chronicles. Massoud, The Chronicles and Annalistic Sources, 65f. al-Sakhāwī, *al-Dhayl al-tām ‘alā duwal al-islām lil-Dhahabi*, ed. by H. Marwah, vol. 1, al-Kuwayt: Maktabat dār al-‘urūbah 1413/1992, 12f. Bacharach, Circassian Mamluk Historians, 81. C. Petry, “al-Sakhāwī,” *The Encyclopaedia of Islam*, vol. 8, Leiden: Brill 1995, 8.

⁵⁸ ‘Abd al-Bāsiṭ was also a representative of *awlād al-nās*. See about this chronicler in footnote 86, p. 89. Much of his historiographic work *Nayl al-amal* was copied from al-Maqrīzī’s *Sulūk*. What is noteworthy is that the *akhbār* (news, reports) in his chronicle are very short, and bear titles, which makes a search of entries easy.

⁵⁹ See about this author footnote 215, p. 132.

Most of the above-listed chroniclers of the late Mamlūk *Burjī* period were representatives of the *awlād al-nās* (“sons of the people” or “sons of the noble”), meaning literally sons of those who mattered, that is the Mamlūks. They were freeborn of Turkish-Circassian origin who integrated into Egyptian society through intermarriages. Many of them spoke both Arabic and Turkish,⁶⁰ acting as cultural intermediaries between the Mamlūk elite and their Turkish subjects.⁶¹

All of these chronicles are invaluable sources for the reconstruction of natural disasters in Mamlūk Egypt. Due to the repetitive character of chronicles as a genre and the extent to which their authors borrowed from each other,⁶² we can find much of the information about the early Mamlūk period in the works of late Mamlūk historians. The

⁶⁰ S. Conermann and S. Saghbini, *Awlād al-Nās* as Founders of Pious Endowments: The *Waqfīyah* of Yahyā ibn Ṭughān al-Ḥasanī of the Year 870/1465, *Mamlūk Studies Review* 7 (2003), 22, 24. Schulze, Islamische Deutungen von Erdbeben, 371.

⁶¹ Irwin, Mamluk Literature, 7.

⁶² Bacharach, Circassian Mamluk Historians, 82. Ambraseys, Melville et al. (ed.), The Seismicity of Egypt, 7–8.

latter drew the information predating their lifetime from their predecessors, conflating different narrative elements.⁶³ Nevertheless, the late Mamlūk historians also provide invaluable information about natural disasters which they witnessed during their lifetime as contemporaries.

3.2.1.2. Other Historical and Non-Historical Sources

Apart from the above-listed chronicles, there are sources, (1) which either include chapters, presenting a chronological history of catastrophes in general or, (2) cover a special treatment of earthquakes and water-induced disasters in separate treatises. These are the earliest attempts at cataloguing natural disasters, isolated from other historical events reported in the chronicles. These

⁶³ Those who are interested in the purely textual interdependencies of the Mamlūk chroniclers can consult for the early Mamlūk *Bahrī* period: Little, An Introduction to Mamlūk Historiography; Haarmann, Quellenstudien; Samira Kortantamer's Ibn Abī al-Fadā'il, Ägypten und Syrien zwischen 1317 und 1341. Sami Massoud's *The Chronicles and Annalistic Sources* and Jere Bacharach's *Circassian Mamluk Historians* provide respectively information on the late Mamlūk *Burjī* period.

attempts show the interest that existed in the collation and cataloguing of disastrous events and the analysis of their causes. Although many of the records contained in them are a reproduction of events predating their authors' lifetimes—which turns them into a secondary historical material, irrespective of their validity,—they are valuable sources from a socio-cultural perspective, as they also provide interpretations of, and attitudes to, earthquakes and Nile-induced disasters in Mamlūk Egypt.

(1) al-Suyūṭī's (849–911/1445–1505)⁶⁴ *Husn al-muḥādarah fī ta'rīkh Miṣr wa-al-Qāhirah* belongs to the first category of books. Its second volume, covering different topics, has a chapter on natural disasters⁶⁵ which occurred in Egypt and other regions after the advent of Islam until 841/1437–8. The events appear in chronological order under the title *Dhikr al-ḥawādith al-gharībah al-kā'inah bi-Miṣr fī millat al-islām min ghala' wa-wabā' wa-zalāzil wa-āyāt wa-ghayr dhālika*,⁶⁶ which explicitly refers to famines, epidemics, earthquakes and other “signs”

⁶⁴ See about this author footnote 66, p. 45.

⁶⁵ al-Suyūṭī, *Husn al-muḥādarah*, vol. 2, 274–322.

⁶⁶ al-Suyūṭī, *Husn al-muḥādarah*, vol. 2, 274.

(*āyāt*) of “extraordinary events” (*ḥawādīth al-gharībah*). This reference thus reflects al-Qazwīnī’s definition of natural phenomena as *gharīb* (“marvellous oddity”).⁶⁷ It is interesting to note that, in the historical context, al-Suyūṭī does not call these events disasters but “oddities” and “signs” of God’s power, which play a significant role in al-Suyūṭī’s works in general.

Apart from al-Suyūṭī’s *Husn*, al-Nuwayrī al-Iskandarānī’s (d. after 775/1372)⁶⁸ *Kitāb al-ilmām* gives a similarly structured list of catastrophes in the chapter titled *al-Zalāzil wa-al-tā‘ūn wa-al-ahwīyah wa-al-fayḍān wa-al-ghalā’* (*Earthquakes, plagues, winds, flooding of the Nile and famines*). It covers historical disasters, which took place in different regions from the advent of Islam until 775/1373.⁶⁹ Although the information on Egypt is sparse, this work is worth mentioning as it also marks early isolated attempts at cataloguing disastrous events.

⁶⁷ See Chapter 2.2. *The Arabic Literary Genre of ‘Ajā’ib wa-Gharā’ib: Disasters as “Marvellous Oddities”* p. 149f, 155.

⁶⁸ See about this author footnote 180, p. 208.

⁶⁹ al-Nuwayrī al-Iskandarānī, *Kitāb al-ilmām*, vol. 4, 124–144.

(2) In addition to the above mentioned material which treats disasters in general, there are also specific books about earthquakes and the Nile-induced disasters. In this group is al-Suyūṭī's treatise on earthquakes *Kashf al-ṣalṣalah 'an waṣf al-zalzalah*.⁷⁰ This handbook not only records earthquakes that occurred in Mamlūk Egypt and other regions before the advent of Islam until 905/1499–1500,⁷¹ but also presents the whole scope of interpretations and Islamic attitudes to earthquakes.⁷² It inspired at least three other authors—al-Suyūṭī's two students: al-Dā'wudī (d. 945/1539)⁷³ and 'Abdulqādir al-Shādhilī (d. ca. 935/1528),⁷⁴ as well as Ibn al-Jazzār (d. after 984/1576)⁷⁵—to

⁷⁰ See the discussion of this treatise and the forerunners of this genre in Hirschler, Erdbebenberichte, 114f. Schulze, Islamische Deutungen von Erdbeben, 104f. Akasoy, Interpreting Earthquakes, 192f.

⁷¹ al-Suyūṭī, *Kashf al-ṣalṣalah*, 157–210.

⁷² al-Suyūṭī, *Kashf al-ṣalṣalah*, 137–156.

⁷³ M. al-Ḥāfiẓ, Nuṣūṣ ghayr manshūrah 'an al-zalāzil min sanah 914 wa-ḥattā sanah 1124H./1508–1712M, *Bulletin d'études orientales* 32–33 (1980–1981), 264–258.

⁷⁴ As reported in Nicholas Ambraseys' catalogue of earthquakes, we can find al-Shādhilī's records in al-Suyūṭī, *Kashf al-ṣalṣalah 'an waṣf al-zalzalah*, ed. by a. Sa'adanī, al-Rabāṭ: al-Mamlakah al-maghribiyah 1971, 62–64.

continue cataloguing and analysing earthquakes during the post-Mamlūk, Ottoman period (1517–1798 A.D.).⁷⁶

Second, al-Suyūtī's another book *Kawkab*⁷⁷ *al-rāwdah fī ta'rīkh al-Nīl wa-Jazīrat al-Rawdah* is devoted to the description of Nile-related issues. Among other topics, al-Suyūtī (d. 911/1505) included a chapter in his book entitled *Dhikr tasjīr 'iwaj 'alā al-Nīl* which provided chronological data of the Nile's abnormal rise from the advent of Islam until 822/1419–20.⁷⁸ Some of the mentioned irregularities induced droughts and excessive floods, which caused destructions and famines in Mamlūk Egypt.

⁷⁵ Tāhir, Tahṣīn al-manāzil, 131–159.

⁷⁶ See historical information about Egypt under the Ottoman rule in M. Winter, *Egyptian Society under Ottoman Rule, 1517–1798*, London: Routledge 1992.

⁷⁷ According to W. Lanes' *An Arabic-English Lexicon*, vol. 7, Beirut: Librairie du Liban 1968, 2623, the word *kawkab*, which primarily means *star*, has a number of other meanings such as *water, source, flowers, and whiteness in the eye* etc. In this context, I think it means the “source.”

⁷⁸ al-Suyūtī, *Kawkab al-rāwdah*, 217–266.

Third, in this category I also classify al-Maqrīzī's⁷⁹ treatise on famines *Ighāthat al-ummah bi-kashf al-ghummah*,⁸⁰ which has an analytical character: al-Maqrīzī's periodical occupation as a muhtasib (market instructor) gave him deep insights into the economic matters of Egypt. He wrote this book, which criticises the economic and monetary policy of the *Burjī* (Circassian) administration, in 808/1405 as a reaction to the increase in the number of famines in Egypt. This book not only provides invaluable information about droughts and famines caused by insufficient Nile floods,⁸¹ and their effects but also proposes pragmatic solutions to the problems.⁸² al-Asadī's⁸³ *al-Taysīr wa-al-i‘tibār wa-al-tahrīr wa-al-ikhtibār fīmā yajibu min ḥusn al-tadbīr*

⁷⁹ See about this author footnote 84, p. 88.

⁸⁰ al-Maqrīzī, *Ighāthat al-ummah*. Allouche, al-Maqrīzī's *Ighāthah*.

⁸¹ Broadbridge, Royal Authority, 235–236.

⁸² al-Maqrīzī, *Ighāthat al-ummah*, 108–110. Allouche, al-Maqrīzī's *Ighāthah*, 80–81.

⁸³ We do not know much about al-Asadī's life. It is known that he finished his book in 855/1451–2. See al-Asadī, *al-Taysīr wa-al-i‘tibār wa-al-tahrīr wa-al-ikhtibār fīmā yajibu min ḥusn al-tadbīr wa-al-taṣarruf wa-al-ikhtiyār*, ed. by ‘A. Ṭulaymāt, al-Qāhirah: Dār al-fikr al-‘arabī 1387/1967, 5–37.

wa-al-taşarruf wa-al-ikhtiyār,⁸⁴ written in analogy to al-Maqrīzī’s treatise in 855/1451, complements our understanding of disasters caused by the insufficient rise of the Nile.

Finally, in this category I also group a manuscript of the ‘ajā’ib wa-gharā’ib genre⁸⁵ entitled *Nashq al-azhār fī ‘ajā’ib al-aqtār*⁸⁶. Its author is Ibn Iyās (d. 930/1524), prominent chronicler of the late Mamlūk period.⁸⁷ Among other topics at the cosmographic core, this work includes a historiographic chapter *Dhikr nubdhah latīfah min akhbār al-Nīl al-mubārak wa-lam nadhkur min akhbār illā mā waqa‘a min al-gharā’ib fī amr zīyādatihī wa-nuqṣānihi* on the chronology of

⁸⁴ al-Asadī, al-Taysīr.

⁸⁵ The major characteristics of this genre were discussed in detail in *Chapter 2 Natural Disasters in Cosmographic Works: Arabic Literary Genre of ‘Ajā’ib wa-Gharā’ib*, p. 146f.

⁸⁶ Ibn Iyās, *Nashq al-azhār fī ‘ajā’ib al-aqtār wa-fīmā qūl shi‘ruhu*, Staatsbibliothek zu Berlin, Ms. or. oct. 2966, fols. 229a–248b. Ibn Iyās, *Kitāb nashq al-azhār fī ‘ajā’ib al-aqtār*, Staatsbibliothek zu Berlin, Ms. or. oct. 3940.

⁸⁷ See about this author footnote 215, p. 132.

“extraordinary” fluctuations of the Nile recorded between 23/742 and 922/1516.⁸⁸ Further complimentary literary sources for the study of the Nile-induced disasters will be introduced in *Chapter 5 Excessive Floods and Disastrous Droughts*.

⁸⁸ L. Langlès translated this chapter into French on the basis of the manuscripts from the National Library of France. (Ibn Iyās, *Nubdhah min nashq al-azhār fī ‘ajā’ib al-aqtār. Extraits de l’odeur des fleurs dans les merveilles de l’univers, (Cosmographie) de Mohammed ben-Ahhmed ben-Ayās*, tr. by Louis Langlès, Paris De l’imprimerie impériale 1810, 45–74.) However, L. Langlès omitted some parts of it, particularly poems and short verses composed on the occasion of excessive floods and droughts.

CHAPTER 4

EARTHQUAKES

4.1. Data on Historical Earthquakes in Mamlūk Egypt: Physical Aspects and Frequency

Whilst Egypt is an area of low seismic hazard, parts of it are exposed to the threat of earthquakes¹ which are mainly generated because Egypt borders on several tectonic plates: the African, Arabian, Aegean and Turkish sub-plates of southern Europe.² Situated along these zones,³ Egypt has experienced numerous minor local shocks and effects of several disastrous earthquakes during its history.⁴

¹ Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, xi. M. Degg and J. Doornkamp, *Earthquake Hazard and Urban Development in Egypt*, *Third World Planning Review* 14/4 (November 1992), 406.

² M. Degg, The 1992 “Cairo Earthquake:” Cause, Effect and Response, *Disasters* 17/3 (September 1993), 227.

³ More about the earthquake hazard assessment of Egypt see Degg and Doornkamp, *Earthquake Hazard*, 395.

⁴ Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 19f.

The material collected from all the published sources, both primary and secondary, has revealed a rough estimate of forty-six⁵ seismic activities in Mamlūk Egypt during the period of more than two centuries. However, analysis of the data shows that the majority of earthquakes were minor shocks which either caused no damage or only inflicted minor structural damage.⁶ Moreover, some records of shocks stemming mainly from non-contemporary chronicles and secondary sources such as catalogues⁷ should be viewed critically.

The main secondary sources include Nicholas Ambraseys' and Charles Melville's catalogue on the seismicity of Egypt, Arabia and the Red Sea, spanning the period between 184 B.C. and 1922 A.D.⁸ and Emanuela Guidoboni's catalogue on earthquakes and tsunamis in the

⁵ See the list of earthquakes in the appendix.

⁶ See the occurrences of the minor shocks, which are not analysed in this thesis, in the appendix, where they are described as “light.”

⁷ See more on earthquake catalogues and their history in Guidoboni and Ebel, *Earthquakes and Tsunamis*, 26–35.

⁸ Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*.

medieval Mediterranean area (eleventh–fifteenth century A.D.).⁹

Apart from these European scholars, Arab researchers like ‘Abdallāh al-Ghunaym—whose catalogue covers the period between the seventh and nineteenth century A.D.¹⁰—and Muṣṭafā Anwār Tāhir—who treated earthquakes from the sixth to the eighteenth century A.D.¹¹—have made a significant contribution to this field. ‘Abdallāh al-Ghunaym’s and Muṣṭafā Anwār Tāhir’s catalogues include the corpus of texts drawn from Arabic primary and secondary sources, whereas Emanuela Guidoboni’s catalogue, in addition, provides their English translations.

Taken together all of these catalogues give a picture of the frequency of seismic activities in the Middle East and provide the basis for the chronological reconstruction of earthquakes in Mamlūk Egypt. However, while these catalogues aimed to show every available record of earthquakes the authors of the European catalogues found it necessary to doubt the validity of some of these records.

⁹ Guidoboni and Comastri, Catalogue of Earthquakes.

¹⁰ al-Ghunaym, *Sijill al-zalāzil*.

¹¹ Tāhir, Nuşūş ‘arabīyah. Tāhir, Les grandes zones sismiques, 79–104.

4.2. Critical Review of “Doubtful” Earthquakes

In the following, I present “doubtful” earthquakes diachronically, conceived in a long-term frame, and elucidate this categorisation by means of examples. To the category of “doubtful,” which Emanuela Guidoboni calls “false and lost earthquakes”¹²—I classify earthquakes:

- (1) which were narrated only by non-contemporary chroniclers, irrespective of their reliability
- (2) which were mistakenly recorded due to a location error
- (3) which had a double meaning from the linguistic point of view and from the narratological perspective, as their cultural and linguistic contexts were subject to misinterpretations, especially for the authors writing in later centuries

¹² See also footnote 10, p. 259. Here I use only those categories, which are relevant to the study of earthquakes in this thesis. The above-mentioned list, except for the first point, stems from Emanuela Guidoboni’s categorisation of “false and lost earthquakes” with a slightly different order. Guidoboni and Ebel, *Earthquakes and Tsunamis*, 247.

- (4) which were assessed as such because of the collapse of certain buildings caused by some structural failure rather than due to a real earthquake
- (5) which were mistakenly duplicated.

4.2.1. Doubtful Earthquakes due to the Lack of Contemporary Evidence

According to this classification, the following earthquakes¹³ from the first group should be considered “doubtful” due to the lack of contemporary evidence:

660/25 November 1261–13 November 1262¹⁴

¹³ I would like to draw attention to the dates of earthquakes: there is a discrepancy of one day between Nicholas Ambraseys' and Emanuela Guidoboni's presentation of Gregorian dates and the dates I converted electronically. Cf. for example, the Hijrī date 748 4 Ramaḍān, which is presented according to the electronical computation as 7 December 1347 and as 8 December 1347, according to Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 45 and Guidoboni and Comastri, *Catalogue of Earthquakes*, 403.

al-Qalqashandī (d. 821/1418),¹⁵ who is the only source for this information, did not mention exactly when this alleged “strong earthquake” (*zalzalah shadīdah*) in 660/1261–1262 happened, even though it struck Egypt, Syria (Damascus, Ṣafad, al-Karak, al-Shawbak), the rural area of Iraq and many other places. He stated that buildings collapsed, mountains chapped and rocks split giving way to springs. People ran out of their dwellings to the open areas. They felt the effects of this earthquake along the Nile Delta. The sea [the Mediterranean] overran its shores destroying boats and ships, walls, the minarets of mosques and a great part of the lighthouse in Alexandria.¹⁶

Nicholas Ambraseys et al. call the record of this earthquake “dubious.”¹⁷ However, referring to the catalogue of the Byzantine

¹⁴ al-Għunaym, *Sijill al-zalāzil*, 180–181. Tāhir, Nuṣūṣ ‘arabīyah, 116. Tāhir, Les grandes zones sismiques, 94.

¹⁵ See about this Mamlūk author footnote 181, p. 209.

¹⁶ al-Qalqashandī, *Ma’āthir al-ināfah fī ma‘ālim al-khilāfah*, vol. 2, al-Kuwayt 1964, 114–115.

¹⁷ Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 41.

scholar Grumel, Emanuela Guidoboni registered an earthquake as having occurred in Syria some time between October 1261 and September 1262.¹⁸

693/1 December 1293–19 November 1294¹⁹

The earthquake of 693/1293–4 remains similarly unidentified. According to al-Suyūṭī (d. 911/1505)²⁰, who relied on the record of Egyptian historian Ibn Mutawwaj (d. 639–730/1241–1329),²¹ there was a strong earthquake throughout the city of Miṣr (Old Cairo).²² As

¹⁸ Guidoboni and Comastri, Catalogue of Earthquakes, 273.

¹⁹ al-Għunaym, *Sijill al-zalāzil*, 185. Tāhir, *Nuṣūṣ ḋarbiyah*, 121. Guidoboni and Comastri, Catalogue of Earthquakes, 319–320.

²⁰ See about this Mamlūk author in footnote 66, p. 45.

²¹ al-Suyūṭī, *Husn al-muḥāḍarah fī ta'rīkh Miṣr wa-al-Qāhirah*, ed. by M. Ibrāhīm, vol. 1, Qāhirah: Dār iḥyā' al-kutub al-‘arabiyyah 1387/1967, 555–556. Guidoboni and Comastri, Catalogue of Earthquakes, 319–320.

²² Miṣr can mean Egypt in general or simply Fustāṭ (Old Cairo). (C. Bosworth, A. Wensinck et al., “Miṣr,” *The Encyclopaedia of Islam*, vol. 7, Leiden: Brill 1997, 146–186.) See also about the foundation of Fustāṭ, which was replaced during the Mamlūk period by the name Miṣr, the administrative capital of Upper Egypt, in al-Maqrīzī, *al-Mawā'iz wa-al-i'tibār*

a result, some columns in the mosque of ‘Amr Ibn al-‘Āṣ²³ seceded. However, the effects were slighter than those that occurred in the mosque of al-Qāhirah (New Cairo).²⁴ Nicholas Ambraseys et al. do not

fī dhikr al-khiṭāt wa-al-āthār, ed. by A. Sayyid, vol. 2, Landan: Mu’assasat al-furqān lil-turāth al-islāmī 1423/2002, 4–172. al-Qalqashandī, *Kitāb ṣubḥ al-a‘shā*, vol. 3, al-Qāhirah: al-Maṭba‘ah al-amīriyah 1332/1914, 329f. Ibn Iyās, Nashq al-azhār, fols. 77–78. J. Jomier, “al-Fusṭāṭ,” *The Encyclopaedia of Islam*, vol. 2, Leiden: Brill 1965, 957–959. See the map of Upper and Lower Egypt in C. Petry, (ed.), *The Cambridge History of Egypt*, p. xvii and the Map of Old and New Cairo and the Island of al-Rawdah in N. Warner, *The Monuments of Historic Cairo. A Map and Descriptive Catalogue*. Cairo: the American University in Cairo Press 2005, p. 1

²³ See the map of Old and New Cairo, depicting the location of ‘Amr Ibn al-‘Āṣ Mosque in F. Hassan, *The Dynamics of a Riverine Civilization: A Geoarchaeological Perspective on the Nile Valley*, Egypt, World Archaeology 29/1 (1997), p. 61.

²⁴ al-Suyūṭī, Kashf al-ṣalṭalah, 200. al-Suyūṭī, Ḥusn al-muḥāḍarah, vol. 2, 297. al-Qāhirah (New Cairo) was established in 359/970 by the Fāṭimid caliph al-Mu‘izz. al-Maqrīzī, al-Khiṭāt, vol. 2, 172f. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 348f. Ibn Iyās, Nashq al-azhār, fol. 78. J. Rogers and J. Jomier, “al-Ḳāhirah,” *The Encyclopaedia of Islam*, vol. 4, Leiden: Brill 1978, 424–444.

give a separate entry for this earthquake but mention, with a reference to the same source, that it might be the earthquake which occurred in Palestine in 692 Ṣafar/January 1293.²⁵

741 Dhū al-ḥijjah/17 May–15 June 1341²⁶

The information about the earthquake in 741/1341 is even more doubtful and vague. The seventeenth century A.D. author Ibn al-‘Imād (d. 1089/1678–9)²⁷ as mentioned in ‘Abdallāh al-Ghunaym’s and

A. Petersen, “Cairo,” *Medieval Islamic Civilization: an Encyclopedia*, vol. 1, Routledge 2006, 129. See the map of Upper and Lower Egypt in C. Petry, (ed.), *The Cambridge History of Egypt*, p. xvii and Kennedy, H. (ed.), *Map of Cairo depicting the positions of prominent mosques, tombs and city gates. City gates are presented in green colour.* Kennedy, H. (ed.), *An Historical Atlas of Islam*, Leiden: Brill 2002, p. 31. P. Sanders, *The Fāṭimid State, 969–1171*, in C. Petry (ed.) *The Cambridge History of Egypt*, vol. 1, Cambridge: University Press 1998, 166.

²⁵ Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 41–42.

²⁶ al-Ghunaym, *Sijill al-zalāzil*, 200. Tāhir, Nuṣūṣ ‘arabīyah, 134. Tāhir, *Les grandes zones sismiques*, 95.

²⁷ Ibn al-‘Imād, *Shadharāt al-dhahab fī akhbār man dhahab*, vol. 6, al-Qāhirah: Maktabat al-Qudsī 1351/1932, 127.

Muṣṭafā Ṭāhir's catalogue recorded that there was a “violent earthquake” (*zalzalah ‘azīmah*) some day during Dhū al-ḥijjah/May-June in Old Cairo, Syria and Alexandria.²⁸ Innumerable people died under the ruins, countless mosques and minarets were destroyed, and numerous ships sank.²⁹ From the description of this event, one could imply that it was a tsunami.³⁰

Nicholas Ambraseys and Emanuela Guidoboni, who occasionally cited Ibn al-‘Imād’s chronicle in their entries,³¹ do not include this event in their catalogues, probably because they doubted the validity of the information. However, Emanuela Guidoboni mentioned the occurrence of a destructive tsunami in the autumn of “1343 or 1342” A.D. in the region of Marmara Sea and a series of earthquakes

²⁸ Ṭāhir, *Nuṣūṣ ‘arabīyah*, 134. Ṭāhir, *Les grandes zones sismiques*, 95.

²⁹ al-Ghunaym, *Sijill al-zalāzil*, 200. Ṭāhir, *Nuṣūṣ ‘arabīyah*, 134. Ṭāhir, *Les grandes zones sismiques*, 95.

³⁰ “Tsunamis are another secondary phenomenon triggered by some earthquakes and by large submarine sediment slides.” Guidoboni and Ebel, *Earthquakes and Tsunamis*, 16.

³¹ Guidoboni and Comastri, *Catalogue of Earthquakes*, 386. Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 163.

in Constantinople.³² It is probable that Ibn al-‘Imād either mistakenly recorded this event or confused it with the record of the 744/1343 earthquake in Egypt.³³

748 4 Ramadān/7 December 1347³⁴

We also learn about the earthquake in 748/1347 from the late Mamlūk sources. al-Maqrīzī (d. 845/1442),³⁵ al-Suyūtī (d. 911/1505),³⁶ and ‘Abd al-Bāsiṭ (d. 920/1514)³⁷ gave a brief record of two shocks which occurred within an hour on 4 Ramadān/7 December in New Cairo. Emanuela Guidoboni mentioned in her catalogue that the principal source for this earthquake was al-Maqrīzī,

³² See, for example, Guidoboni and Comastri, Catalogue of Earthquakes, 387–393.

³³ See footnote 119, p. 318.

³⁴ Ambraseys, Melville et al. (ed.), The Seismicity of Egypt, 45. Guidoboni and Comastri, Catalogue of Earthquakes, 403. al-Għunaym, Sijill al-zalāzil, 203. Tāhir, Nuşuṣ ‘arabīyah, 138.

³⁵ al-Maqrīzī, Kitāb al-sulūk, vol. 2,1–2,3, 741.

³⁶ al-Suyūtī, Kashf al-ṣalṭalah, 206.

³⁷ ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 1,1, 153.

“a contemporary writer from Cairo,”³⁸ which is a mistake, as al-Maqrīzī was born in 766/1364 and could not have witnessed it. Although he is a reliable chronicler, who, however, does not mention his source for this record, this earthquake remains “doubtful” until contemporary references are found.

753 Ramaḍān/10 October–8 November 1352³⁹

We find another vague record of an earthquake in al-Maqrīzī’s (d. 845/1442) chronicle. His dating is incomplete as he simply mentions that an earthquake happened in 753/1352 during Ramaḍān when people were at the last evening prayer.⁴⁰ Referring to the same record, Nicholas Ambraseys and Emanuela Guidoboni⁴¹ suggest that it

³⁸ Guidoboni and Comastri, Catalogue of Earthquakes, 403.

³⁹ Ambraseys, Melville et al. (ed.), The Seismicity of Egypt, 45. Guidoboni and Comastri, Catalogue of Earthquakes, 479. al-Ghunaym, *Sijill al-zalāzil*, 203. Tāhir, *Nuṣūṣ ‘arabiyah*, 138.

⁴⁰ al-Maqrīzī, *Kitāb al-sulūk*, vol. 2,1–2,3, 876.

⁴¹ Emanuela Guidoboni mistakenly notices that this information derives from the records of the “contemporary” chronicler al-Maqrīzī (766–845/1364–1442).

took place in Cairo, whereas ‘Abdallāh al-Ghunaym mentions in parenthesis Miṣr⁴² (Egypt or Old Cairo). As al-Maqrīzī (d. 845/1442) does not mention the location implicitly, we should treat this information as a supposition.

760 13 Dhū al-hijjah/4 November 1359⁴³

The 760/1359 earthquake is not recorded in any of the catalogues but is reported in the anonymous Arabic manuscript.⁴⁴ Its author reported that there was a series of strong earthquakes (*zalāzil qawīyah jiddan*) in Syria and Egypt, which destroyed many buildings and killed numerous people. He drew this information from certain *Khiṭat al-*

⁴² See footnote 22, p. 291.

⁴³ Anonymous, *al-Barākīn wa-al-zalāzil*, Egyptian National Library, Ms. T 114, fols. 111–112.

⁴⁴ This unpublished manuscript, most probably compiled in the nineteenth century A.D. and copied with amendments in the twentieth century A.D., treats volcanoes and earthquakes which happened in different regions of the world from 900 B.C. until the beginning of the twentieth century A.D.

tawfiqiyah.⁴⁵ Its author relied in his turn on al-Maqrīzī’s *Sulūk*, which recorded, according to this anonymous author, how a violent earthquake (*zalzalah ‘azīmah*), lasting for five *darajah*,⁴⁶ shocked people so that they thought the Resurrection Day (*al-qiyāmah*) had come. It destroyed a lot of houses, minarets, schools in Old and New Cairo, and a part of the lighthouse in Alexandria. This earthquake was followed by the flooding of the Nile and a strong hot wind (*samūm*), lasting for days. Besides this, he mentioned that people left their dwellings and camped between Būlāq⁴⁷ and al-Rawdah.⁴⁸ Given this

⁴⁵ Here the following book is probably meant: ‘Alī Bāshā Mubārak, *al-Khiṭat al-tawfiqiyah al-jadīdah li-Miṣr al-Qāhirah*, vol. 1-20, al-Qāhirah: al-Maṭba‘ah al-kubrā al-amīriyah 1306/1888.

⁴⁶ See the definition of this time unit on page 396.

⁴⁷ Būlāq was a small port on the Nile near Cairo. J. Jomier, “Būlāk,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill 1960. Jomier, “Būlāk,” 1299. See the map in F. Hassan, *The Dynamics of a Riverine Civilization*, p. 61 and C. Petry, (ed.), *The Cambridge History of Egypt*, p. xvii.

⁴⁸ al-Rawdah (“garden”) is an island in the Nile in the southern part of Cairo. Ibn Iyās, *Nashq al-azhār*, fols. 249a–251a. O. Weinritt, “Rawda,” *The Encyclopaedia of Islam*, vol. 8, Leiden: Brill 1995, 463. See the map in

situation thieves plundered the empty houses.⁴⁹ However, it must be mentioned here that neither al-Maqrīzī's *Sulūk*, nor the chronicles of Ibn Iyās (d. ca. 930/1524) and Abū al-Mahāsin,⁵⁰ to whom the anonymous author refers in the end,⁵¹ recorded this earthquake. Most of the described details suggest that the author created an earthquake by conflating his record with the events of a disastrous earthquake which happened on 23 Dhū al-hijjah 702/7 August 1303.⁵²

Summing up the list of doubtful earthquakes due to the lack of contemporary evidence, I would like to emphasise again that contemporary authors did not record any of these earthquakes to as

Warner, The Monuments of Historic Cairo, p. 1 and in Hills and C. Petry (ed.), The Cambridge History of Egypt, p. xix.

⁴⁹ Anonymous, al-Barākīn, fols. 111–112.

⁵⁰ Ibn Taghrī Bardī (d. 874/1470) is meant here.

⁵¹ Anonymous, al-Barākīn, fols. 111–112.

⁵² See the discussion of this disastrous earthquake in *Chapter 4.4. The Disastrous Earthquake of 702/1303: A Comprehensive Account of Effects and Attitudes*, p. 323.

having happened in Egypt, which means that we need further evidence for their validity.

4.2.2. Doubtful Earthquakes due to Location Error

The following earthquake belong to the second group of “doubtful” earthquakes due to location error:

791 after 17 Dhū al-hijjah/after 6 December 1389⁵³

Before passing to the necrology of the year 791/1388–9, Ibn Iyās (d. 930/1524) recorded, without mentioning the location, that there was a “terrible earthquake” (*zalzalah ‘azīmah*) during that year. His *khabar* (news), which is very brief for such an event, reveals that it happened after 17 Dhū al-hijjah/6 December.⁵⁴ We find the reference to this record in Donald Little’s list of earthquakes drawn from Ibn Iyās’ chronicle. There, Donald Little implies from the style of Ibn Iyās’

⁵³ Ibn Iyās, *Badā'i' al-zuhūr fī waqā'i' al-duhūr*, vol. 1,2, Stuttgart: Steiner in Komm. 1974, 423.

⁵⁴ Ibn Iyās, *Badā'i'*, vol. 1,2, 423.

other records of earthquakes that it occurred in New Cairo in November 1389 A.D.⁵⁵

Interestingly, a Syrian chronicler Ibn Qādī Shuhbah (779–851/1377–1448),⁵⁶ who was twelve years old at the time of this event, also recorded a violent earthquake (*zalzalah ‘azīmah*), which happened during Ṣafar 791/January 1389. This date is somehow close to the date mentioned by Ibn Iyās (d. 930/1524). But, according to Ibn Qādī Shuhbah and al-Maqrīzī (d. 845/1442), this great disaster (*hādithah ‘azīmah*), which shook the earth for three further days, destroying many places and depopulating the whole region, happened in Chorasan.⁵⁷ This substantiates the suspicion that Ibn Iyās (d. 930/1524) might have been referring to the event in Chorasan, which

⁵⁵ Little, Data on Earthquakes, 143.

⁵⁶ Ibn Qādī Shuhbah was a judge in Damascus. See about his life and career in Massoud, The Chronicles and Annalistic Sources, 81–85.

⁵⁷ Ibn Qādī Shuhba, *Ta’rīkh Ibn Qādī Shuhbah*, ed. by ‘A. Darwīsh, vol. 3, Dimashq: al-Ma‘had al-‘ilmī al-faransī lil-dirāsāt al-‘arabiyah 1977, 265. al-Maqrīzī, *Kitāb al-sulūk li-ma‘rifat duwal al-mulūk*, ed. by S. ‘Āshūr, vol. 3,2, al-Qāhirah: Maṭba‘at dār al-kutub 1970, 682.

is recorded in ‘Abdallāh al-Ghunaym’s⁵⁸ and Muṣṭafā Ṭāhir’s⁵⁹ catalogues.

4.2.3. Doubtful Earthquakes due to Misinterpretations

The following earthquakes belong to the third group of doubtful earthquakes due to the probable misinterpretation of historical and linguistic contexts. This applies to the cases when non-contemporaries interpreted the word “earthquake” (*zalzalah*) or a semantically synonymous term as a historical earthquake without critical consideration of the context. This also refers to cases in which they included the occurrence of an earthquake symbolically to ascribe importance to the narrative. While discussing the potential problems in historical records of seismic events, Emanuela Guidoboni drew attention to this kind of problem and noticed that the figurative meaning of an earthquake posed problems of verification especially if there was just one source available. “Even experienced scholars have

⁵⁸ al-Ghunaym, *Sijill al-zalāzil*, 206.

⁵⁹ Ṭāhir, *Nuṣūṣ ‘arabiyyah*, 140.

fallen into this trap and created earthquakes that had never actually occurred in the first place.”⁶⁰

657 probably before 12 Jumādā II/5 June 1259⁶¹

The “terrible earthquake” (*zalzalah ‘azīmah/zalzalah ‘azīmah jiddan*) of 657/1258–9 in Egypt, reported by several non-contemporary chroniclers,⁶² can be classified both in the first group, as no contemporary author recorded it, and to the third group, as the later authors probably misinterpreted the historical context of the earlier sources. For example, al-Maqrīzī (d. 845/1442), whose report allows

⁶⁰ Guidoboni and Ebel, Earthquakes and Tsunamis, 232f.

⁶¹ Ambraseys, Melville et al. (ed.), The Seismicity of Egypt, 40–41. Guidoboni and Comastri, Catalogue of Earthquakes, 271–272. al-Għunaym, *Sijill al-zalāzil*, 179. Tāhir, Nuşuṣ ‘arabiyah, 115–116.

⁶² Ibn Duqmāq, *Nuzhat al-anām fī ta’rīkh al-islām* (628–659/1230–1261), ed. by S. Ṭabbārah, Bayrūt: al-Maktabah al-‘asrīyah 1420/1999, 254. al-‘Aynī, *Iqd al-jumān fī ta’rīkh ahl al-zamān* (648–664/1250–1265), vol. 1, al-Qāhirah: al-Hay’ah al-miṣrīyah al-‘āmmah lil-kitāb 1407/1987, 224. al-Maqrīzī, *Kitāb al-sulūk li-ma’rifat duwal al-mulūk*, ed. by M. Ziyādah, vol. 1,2, al-Qāhirah: Maṭba‘at lajnat al-ta’lif wa-at-tarjamah wa-al-nashr 1957, 420. al-Suyūṭī, *Kashf al-ṣalṭalah*, 199. Anonymous, al-Barākin, fols. 107.

for a dating of the event before 12 Jumādā II/5 June, briefly noticed that “earthquakes became numerous in Egypt” (*kuthirat al-zalāzil bi-ard Miṣr*).⁶³ However, these “earthquakes” might refer figuratively to the “shaky” situation in the Mamlūk realm due to the “rumours” (*arājīf* sing. *irjāf*)⁶⁴ about the advance of the Mongols to Syria.⁶⁵ This news, which spread fear both in Syria and Egypt, was omnipresent and repeatedly reported in all of the sources, the earliest being Baybars al-Mansūrī’s (ca. 644–725/1246–1325)⁶⁶ and Ibn al-Dawādārī’s (687–736/1288–1336) chronicles.⁶⁷

Nicholas Ambraseys rightly noticed that some of the sources only reported rumours (*arājīf*), meaning literally “false”⁶⁸ or “disquieting

⁶³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,2, 420.

⁶⁴ In Emanuela Guidoboni’s catalogue, the word *arājīf* (rumours) is translated as “shocks.” Guidoboni and Comastri, Catalogue of Earthquakes, 272–273.

⁶⁵ al-‘Aynī, *‘Iqd al-jumān*, vol. 1, 224.

⁶⁶ Baybars al-Mansūrī, *Kitāb al-tuhfah*, 42.

⁶⁷ Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 44.

⁶⁸ Wehr, Dictionary, 329.

rumours,” which were “flying around” at that time.⁶⁹ The cursory analysis of the context in which this term (*arājīf* “rumours”) appeared in Mamlūk texts revealed that it usually referred to rumours (*arājīf*) about political events like death or demise of the Sultan,⁷⁰ social unrest,⁷¹ spreading of the plague,⁷² and in particular, the approach of foreign troops.⁷³

⁶⁹ Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 40.

⁷⁰ This term appears numerous times in ‘Abd al-Bāsiṭ’s chronicle in the context of different troublesome events. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 74. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,6, 99, 195, 274, 275.

⁷¹ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,5, 91. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,6, 315. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 397.

⁷² ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 158, 165.

⁷³ For example, in 802/1400 rumours (*arājīf*) spread in Syria about the coming of Tamerlan (*kuthirat al-arājīf bi-al-Shām bi-uṣūl Timūrlank.*) (‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,3, 45.) See historical background in U. Vermeulen, *Timur Lang en Syrie: la correspondance entre le mamluk Farāğ et le mérinide Abū Sa‘īd*, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. U. Vermeulen and D. de Smet, Leuven: Peeters 1998, 303–311. Similarly in 820/1417, rumours spread that Frankish troops approached Alexandria (*kuthira al-irjāf bi-ḥarakat al-Faranj*). (‘Abd al-Bāsiṭ,

Another interesting aspect worth mentioning is that the word *irjāf* stems from the root *r-j-f*, whose first verbal form *rajafa*⁷⁴ bears the meaning of “to be shaken”, “tremble” or “quake.”⁷⁵ The respective noun forms—*rajfah* or *rājifah* “earthquake”—are used synonymously for *zalzalah* “earthquake”.⁷⁶ They also appear in punishment stories and apocalyptic passages of the *Qur’ān*.⁷⁷ Taking into consideration these meanings, we can conclude that the semantic field of the word *irjāf*, appearing in all of the contemporary sources in relation to the coming of the Mongols, might have unconsciously awakened the

Nayl al-amal, vol. 1,3, 322.) See the historical background Garcin, The Regime of the Circassian Mamlūks, 292f.

⁷⁴ See the verbal form used to refer to the shaking of the earth in Mufaddal Ibn Abī al-Fadā’il, al-Nahj, vol. 3, 594. al-Maqrīzī, Kitāb al-sulūk, vol. 1,3, 944.

⁷⁵ Wehr, Dictionary, 329.

⁷⁶ al-Nuwayrī, Nihāyat al-arab, vol. 14, 276. al-Nuwayrī al-Iskandarānī, Kitāb al-ilmām, vol. 4, 130, 135.

⁷⁷ See the *Qur’ān* 7:78; 7:91; 7:155; 29:37; 73:14; 79:6.

association of rumours about socio-political “quakes” with the occurrence of seismic “quakes.”

Moreover, according to the contemporary Syrian chronicler al-Yūnīnī (640–726/1242–1326),⁷⁸ the rumour (*al-irjāf*) of the advancing of the Mongols to Syria continued into 658/1259–1260.⁷⁹ In contrast to this report, we learn from the later author al-Maqrīzī (d. 845/1442) that there was an earthquake in Syria at night on 6 Rabī‘ II 658/20 March 1260. A strong wind, lightning and thunder, which “God sent on the day when the Mongols surrounded the Citadel of Damascus (Qal‘at Dimashq), accompanied the shock.” al-Maqrīzī probably included these natural phenomena to intensify the gravity of the situation, in which people, as he says, were literally caught between the “fear of heaven and earth” (*bayna khawf arḍī wa-khawf samā’ī*).⁸⁰

⁷⁸ See about this author footnote 26, p. 265.

⁷⁹ al-Yūnīnī, *Dhayl mir’āt al-zamān*, vol. 1, Haydar Ābād: Maṭba‘ majlis dā’irat al-ma‘ārif al-‘uthmāniyah 1374/1954, 349.

⁸⁰ al-Maqrīzī, *Kitāb al-sulūk*, vol. 1, 2, 426.

The inclusion of natural phenomena such as earthquakes, thunder, lightning or winds in the narratives of certain significant events was common in the narratology of disasters. To recap, this narrative linkage appeared in the content of the astro-meteorological *malhamah* texts, where earthquakes along with other natural phenomena heralded wars and other disastrous events. These natural phenomena were probably included metaphorically. As Ansgar Nünning mentions, metaphors are constructive parts in the narratology of disasters⁸¹ and one of their functions is to convey tension and evoke emotional reactions to the reported event.⁸²

Relying on the *Qur'ān* commentators, al-Suyūṭī (d. 911/1505)⁸³ also drew attention to the occurrence of different natural phenomena as accompanying certain significant events.⁸⁴ For example, the first earthquake in the world is said to have occurred when Qābīl (Cain)

⁸¹ Nünning, Krise als Erzählung und Metapher, 131–135.

⁸² Nünning, Krise als Erzählung und Metapher, 138.

⁸³ See about al-Suyūṭī footnote 66, p. 45.

⁸⁴ See also *Chapter 4.4.3.1. Earthquakes from the Religious Perspective, (e) The Herald of Significant Events*, p. 377f.

killed Hābil (Abel)⁸⁵ or when Ibrāhīm (Abraham) wanted to sacrifice his son.⁸⁶ Such views were not unanimously accepted and were even criticised. For instance, discussing the function of eclipses, earthquakes, strong winds, droughts and torrential rains, Ḥanbalī theologian and jurisconsult Ibn Taymīyah (d. 728/1328),⁸⁷ who was most obviously familiar with the content of astro-meteorological *malḥamah* texts and *Qur'ān* commentaries, made reference to the prophet's words “that the wisdom of such [events] consists in frightening the servants [of God]. [...] God tormented likewise [various] communities by the wind, the roaring blast and the deluge.”⁸⁸

In both of the above mentioned cases—the earthquake of 657/1258–9 and 658/1260—the evidence shows that the available contemporary sources speak only about rumours of approaching Mongols, whereas

⁸⁵ al-Suyūṭī, *Kashf al-ṣalṭalah*, 137.

⁸⁶ Read more cases of the earthquake-linkage with specific days in al-Suyūṭī, *Kashf al-ṣalṭalah*, 157.

⁸⁷ See about this scholar footnote 65, p. 44.

⁸⁸ Michot, *Ibn Taymiyya*, 157.

the later authors add the occurrence of a seismic shock to this information, which is to be understood as a rhetorical device.

758 26 Dhū al-qadah/9 November 1357⁸⁹

We can see similar problems of misinterpretation in the case of the 758/1357 earthquake in New Cairo. This earthquake is not recorded in any of the catalogues, except for Donald Little's data on earthquakes, where he mistakenly dates it as 9 August 1357 A.D.⁹⁰ In fact, the later Mamlūk chronicler Ibn Iyās (d. 930/1524), whom Donald Little mentioned as his source, reported the occurrence of an earthquake in a long passage devoted to a story about an attack on a certain prominent emir al-Atābekī Shaykhū al-‘Umarī. On 21 Sha‘bān/8 August, which is probably the date Donald Little meant, a mamlūk named Qatlū Qujāh made an attempt on the emir's life.⁹¹ The latter died shortly afterwards on 26 Dhū al-qadah/9 November. People marvelled ('ajiba) that his death coincided with a light

⁸⁹ Ibn Iyās, *Badā'i‘ al-zuhūr fī waqā'i‘ al-duhūr*, ed. by M. Muṣṭafā, vol. 1,1, al-Qāhirah: Dār al-iḥyā’ al-kutub al-‘arabīyah 1395/1975, 563.

⁹⁰ Little, Data on Earthquakes, 141.

⁹¹ Ibn Iyās, *Badā'i‘*, vol. 1,1, 562.

earthquake (*zalzalah khafīfah*), which was followed by heavy out of season rain. As the emir enjoyed great popularity among the population, not only did people lament his death, but as some poets expressd it in verse—even the “heaven cried” for such a human loss.⁹²

As I mentioned above, the coincidental occurrence of an earthquake or other natural phenomena with some significant day, like the death of prominent people, was not foreign to the authors and readers.⁹³ This link—that we can also find in the *malhamah* astro-meteorological predictions⁹⁴—was controversially debated. Ibn Taymiyah (d. 728/1328)⁹⁵ found such a connection to be dubious.⁹⁶ Relying on a specific tradition,⁹⁷ al-Suyūtī (d. 911/1505) expressed a similar

⁹² Ibn Iyās, *Badā'i'*, vol. 1,1, 563.

⁹³ See p. 308f.

⁹⁴ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 40a, 41b, 45b, 47b, 54b, 55a etc.

⁹⁵ See about this scholar footnote 65, p. 44.

⁹⁶ Michot, Ibn Taymiyya, 156–157.

⁹⁷ Cf. al-Bukhārī, *Ṣaḥīḥ al-Bukhārī*, vol. 2, al-Qāhirah: Dār wa-al-maṭābi' al-sha'b 1960?, 42f.

attitude by citing that solar and lunar eclipses, among God's other signs⁹⁸ (like earthquakes),⁹⁹ did not happen because someone died or is born, but because God frightens his servants and shows them his existence.¹⁰⁰

It seems that Ibn Iyās (d. 930/1524) intentionally recorded the occurrence of a light earthquake and heavy rain as metaphors to intensify the significance of this person whom he praised for his “best” qualities and lamented for the evil done to him. Therefore, it is highly doubtful that a real seismic event took place in 758/1357.

Ibn Iyās' other records attest that he used metaphorical language on similar occasions. When reporting the death of a prominent person in 922/1517, he mentioned that upon announcing the news the earth

⁹⁸ al-Suyūtī, *Kashf al-ṣalṭalah*, 146. al-Bukhārī, *Ṣaḥīḥ al-Bukhārī*, vol. 2, 42f.

⁹⁹ See earthquakes as belonging to the group of God's “signs” (*al-āyāt*) in al-Bukhārī, *Ṣaḥīḥ al-Bukhārī*, vol. 2, 41. See also *Chapter 4.4.3.1. Earthquakes from the Religious Perspective, (e) The Herald of Significant Events*, p. 377f.

¹⁰⁰ al-Suyūtī, *Kashf al-ṣalṭalah*, 146. al-Bukhārī, *Ṣaḥīḥ al-Bukhārī*, vol. 2, 42f.

quaked.¹⁰¹ Furthermore, when reporting the death of Mamlūk chronicler and prominent sheikh of Islam Ibn Ḥajar al-Asqalānī (d. 852/1449), Ibn Iyās (d. 930/1524) recorded that when he died it drizzled to revive him from the dead.¹⁰² All this makes me conclude that it was typical for Ibn Iyās (d. 930/1524) to embellish occurrences of natural phenomena with metaphorical implications, an approach which also reflects the form of the narrative and specific socio-cultural perceptions.¹⁰³

4.2.4. Doubtful Earthquakes due to Subjective Implications

The following earthquake is doubtful due to subjective implications related to the destruction of a certain structure.

¹⁰¹ Ibn Iyās, *Badā'i' al-zuhūr fī waqā'i' al-duhūr*, ed. by M. Muṣṭafā, vol. 5, al-Qāhirah 1931, 67.

¹⁰² Ibn Iyās, *Badā'i'*, vol. 2, 269.

¹⁰³ See on “Vorstellungsgeschichte” (the history of perception) in H.-W. Goetz, *Vorstellungsgeschichte. Gesammelte Schriften zu Wahrnehmungen, Deutungen und Vorstellungen im Mittelalter*, Bochum: Winkler 2007, 3–19.

762/10 November 1360–29 October 1361¹⁰⁴

We find the record of the 762/1360–1 earthquake in Nicholas Ambraseys' catalogue, which draws attention to the problem of the interpretation of this earthquake, which was recorded in the Ottoman source.¹⁰⁵ In addition to the fact that no contemporary Egyptian source explicitly mentioned an earthquake during that year, the context also raised certain doubts. We learn from the chronicle of the contemporary Damascene scholar Ibn Kathīr (700–774/1300–1373)¹⁰⁶ that news was received of the collapse of the minaret of the Sultanic school in Old Cairo on 6 Rabī‘ II/12 February. In this accident, about three hundred people, mainly young students, died. Interestingly, Ibn Kathīr (d. 774/1373) added that the new minaret was of unusual design (*sifah gharībah*) as it had two minarets based on one support.¹⁰⁷ This descriptive inclusion may either suggest that the collapse happened due to some construction failure or was a criticism of the

¹⁰⁴ Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 45–46. al-Għunaym, *Sijill al-zalāzil*, 204.

¹⁰⁵ Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 46.

¹⁰⁶ See about this chronicler footnote 30, p. 266.

¹⁰⁷ Ibn Kathīr, *al-Bidāyah*, vol. 2, 2233.

innovative form of the structure. According to al-Maqrīzī (d. 845/1442), it was an incident, regarded as a bad omen for the Sultan [al-Nāṣir Ḥasan], who passed away soon afterwards on 9 Jumādā I/16 March 1361.¹⁰⁸

4.2.5. Doubtful Earthquakes due to Duplication

The final fifth group of doubtful earthquakes was created due to their duplication:

918 20 Muḥarram/6 April 1512¹⁰⁹

A quick glance at the list of earthquakes in the appendix¹¹⁰ reveals a certain frequency of earthquakes in the beginning of the sixteenth century A.D. Specifically it shows the occurrence of several consecutive earthquakes between 914/1508–9 and 919/1513–4. Among them two earthquakes show similarities. The first earthquake

¹⁰⁸ al-Maqrīzī, *Kitāb al-sulūk li-ma‘rifat duwal al-mulūk*, ed. by S. ‘Āshūr, vol. 3,1, al-Qāhirah: Maṭba‘at dār al-kutub 1970, 60.

¹⁰⁹ al-Hāfiẓ, Nuṣūṣ, 261. Ambraseys, Melville et al. (ed.), The Seismicity of Egypt, 54. al-Għunaym, Sijill al-zalāzil, 235. Tāhir, Nuṣūṣ ‘arabīyah, 153.

¹¹⁰ See p. 643f.

happened on Monday, 20 Muḥarram 918/6 April 1512, as recorded in al-Dā'udī's (d. 945/1539) catalogue of earthquakes (the continuation of al-Suyūṭī's *Kashf al-ṣalṣalah*).¹¹¹ The second earthquake also occurred on Monday, 20 Muḥarram but in 919/27 March 1513, as recorded in Ibn Iyās' chronicle.¹¹²

It is most likely that one of these records was mistakenly duplicated. al-Dā'udī's report raises especial doubts as his record mentions the occurrence of a light earthquake on Monday,¹¹³ which was actually Tuesday, according to the electronic date converter. It is probable that al-Dā'udī confused this event with the earthquake which happened on the same day a year later in 919/1513, as recorded in Ibn Iyās' chronicle¹¹⁴ and in Nicholas Ambraseys' catalogue.¹¹⁵ This means that al-Dā'udī mistakenly created an earthquake in another year.

¹¹¹ al-Ḥāfiẓ, Nuṣūṣ, 261.

¹¹² Ibn Iyās, *Badā'i'*, vol. 4, 297.

¹¹³ al-Ḥāfiẓ, Nuṣūṣ, 261.

¹¹⁴ Ibn Iyās, *Badā'i'*, vol. 4, 297.

¹¹⁵ Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 54.

4.3. Overview of “Violent” Earthquakes

According to contemporary sources, eight earthquakes were perceived as “violent.” They happened in 662/1264,¹¹⁶ 698/1298–9,¹¹⁷

¹¹⁶ The only contemporary source for this earthquake is the Syrian chronicler al-Yūnīnī (640–726/1242–1326). He recorded that during that year (662) on 20 Rabī‘ II/19 February 1264 there was a violent earthquake. From the text, it is not clear whether it was in Egypt. (al-Yūnīnī, Dhayl, vol. 1, 553.) However, in an alternative reading of the same source as well as in the records of al-Maqrīzī (d. 845/1442) and al-Suyūtī (d. 911/1505), New Cairo was precisely mentioned. See al-Yūnīnī, Dhayl *mir’āt al-zamān*, 275, <http://www.islamicbook.ws/tarekh/dil-mrat-alzman-.pdf>. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,2, 508. al-Suyūtī, *Kashf al-ṣalṭalah*, 200. Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 41. al-Għunaym, *Sijill al-zalāzil*, 181. Tāhir, *Nuṣūṣ ‘arabīyah*, 117.

¹¹⁷ Two earthquakes were recorded to have occurred during 698/1298–9. According to the Syrian chronicler al-Jazārī (658–739/1260–1338), one of them was strong. (al-Jazārī, *Ta’rīkh ḥawādith al-zamān wa-anbā’ihī wa-wafayāt al-akābir wa-al-a‘ayān min abnā’ihī: al-ma’rūf bi-ta’rīkh Ibn al-Jazārī* (689–699), ed. by ‘U. Tadmurī, vol. 1, Şaydā: al-Maktabat al-‘aṣrīyah

702/1303,¹¹⁸ 744/1344,¹¹⁹ 775/1373,¹²⁰ 828/1425,121 881/1476¹²²

and 886/1481.¹²³ Apart from these earthquakes, further earthquakes

1419/1998, 440.) The consulted contemporary Egyptian sources do not mention this earthquake.

¹¹⁸ As the chroniclers unanimously considered this earthquake disastrous, I discuss it in detail in *Chapter 4.4. The Disastrous Earthquake of 702/1303: A Comprehensive Account of Effects and Attitudes*, p. 323.

¹¹⁹ There is some confusion about the 744/1344 earthquake. According to contemporary Syrian chronicler Ibn Kathīr (700–773/1300–1373), there was an earthquake on 15 Sha‘bān 744/1 January 1344, which was slightly felt in Damascus. In Aleppo, it must have been stronger because buildings were damaged. As a result, many people died in Manbij, a town in Aleppo. (Ibn Kathīr, *al-Bidāyah*, vol. 2, 2204.) According to another contemporary Syrian historian Ibn Ḥabīb (710–779/1310–1377) as well as later Egyptian scholars, al-‘Aynī (d. 855/1451) and al-Suyūṭī (d. 911/1505), this “terrible” earthquake also affected Egypt. (Ibn Ḥabīb, *Tadhkirat al-nabīh fī ayyām al-Manṣūr wa-banīh* (741–770/1340–1368), vol. 3, al-Qāhirah: al-Hay’ah al-misriyah al-‘āmmah lil-kitāb Markaz tāḥqīq al-turāth 1986, 58. al-Suyūṭī, *Kashf al-ṣalṭalah*, 205–206.) See al-‘Aynī’s text in the unpublished manuscript of *Iqd al-jumān* in (Tāhir, Nuṣūṣ ‘arabiyah, 137. Tāhir, Les grandes zones sismiques, 95. al-Għunaym, Sijill al-zalāzil, 200f. Guidoboni

and Comastri, Catalogue of Earthquakes, 394. Ambraseys, Melville et al. (ed.), The Seismicity of Egypt, 45.

¹²⁰ Referring to al-‘Aynī’s unpublished manuscript *Ta’rīkh al-Badr*, Ms. BL Or Add. 22,360, fol. 88vo, Nicholas Ambraseys cited that there was a strong earthquake in New Cairo in 775 1 Jumādā I/18 October 1373 (19 October, according to the electronic converter). In contrast, later authors like al-‘Asqalānī (d. 852/1449), al-Suyūtī (d. 911/1505), ‘Abd al-Bāsiṭ (d. 920/1514), and the anonymous author of *al-Barākīn* reported that the shock was light. al-‘Asqalānī, *Inbā’ al-ghumr bi-anbā’ al-‘umr*, ed. by H. Ḥabashī, vol. 1, al-Qāhirah: al-Majlis al-a‘lā lil-shu‘ūn al-islāmiyah, lajnat iḥyā’ al-turāth al-Islāmī 1418/1998, 60. al-Suyūtī, Kashf al-ṣalṣalah, 206. al-Suyūtī, Ḥusn al-muḥāḍarah, vol. 2, 304. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 1,2, 64. Anonymous, *al-Barākīn*, fol. 112. Ambraseys, Melville et al. (ed.), The Seismicity of Egypt, 46. Guidoboni and Comastri, Catalogue of Earthquakes, 519–520.

¹²¹ There is a discrepancy about the date of this earthquake: al-Maqrīzī (d. 845/1442) reported that there were several shocks 6 Sha‘bān 828/22 June 1425, whereas al-‘Asqalānī (d. 852/1449) dated it to 17 Sha‘bān/3 July. Despite this difference, both of them described it as a strong earthquake lasting for two degrees (*darajatayn*) or, as al-Maqrīzī said, “a period required to read Surat *al-Ikhlas* (Sura 112). al-Maqrīzī, Kitāb al-sulūk, vol. 4,2, 690–

occurred in 825/1422,¹²⁴ 891/1486,¹²⁵ and 896/1491,¹²⁶ which I do not consider here because they were not unanimously perceived as

691. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 3, 348. al-Suyūtī, *Kashf al-ṣalṭalah*, 208. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 176. Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 46. Guidoboni and Comastri, *Catalogue of Earthquakes*, 578–579. Tāhir, *Nuṣūṣ ‘arabīya*, 144.

¹²² According to ‘Abd al-Bāsiṭ (d. 920/1514) and Ibn Iyās (d. 930/1524), during one of the nights of Rajab 881/19 October–17 November 1476, there was a terrible earthquake in New Cairo. (‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 164. Ibn Iyās, *Badā’i‘*, vol. 3, 121.) However, referring to the same earthquake in Old Cairo, al-Suyūtī (d. 911/1505), in contrast, estimated it as light. al-Suyūtī, *Kashf al-ṣalṭalah*, 209. Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 50. Guidoboni and Comastri, *Catalogue of Earthquakes*, 760. al-Għunaym, *Sijill al-zalāzil*, 225. Tāhir, *Nuṣūṣ ‘arabīyah*, 149.

¹²³ As this earthquake was unanimously perceived as violent, I will discuss it in detail in *Chapter 4.5. The Disastrous Earthquake of 886/1481: Comprehensive Account of Effects and Attitudes*, p. 383.

¹²⁴ al-‘Asqalānī (d. 852/1449), al-Suyūtī (d. 911/1505) and the anonymous author of *al-Barākin* labelled the earthquake of 825/1422 in New Cairo as minor. (al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 3, 273. al-Suyūtī, *Husn al-*

muḥāḍara, vol. 2, 309. al-Suyūṭī, Kashf al-ṣalṣalah, 208. Anonymous, al-Barākīn, fols. 112–113), whereas ‘Abd al-Bāsiṭ (d. 920/1514) and Ibn Iyās (d. 930/1524) stated that it was a destructive earthquake, which was probably an exaggeration. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 1, 4, 113. Ibn Iyās, Badā’i‘, vol. 2, 83. Ambraseys, Melville et al. (ed.), The Seismicity of Egypt, 47. Guidoboni and Comastri, Catalogue of Earthquakes, 577. al-Għunaym, Sijill al-zalāzil, 214. Tāhir, Nuṣūṣ ‘arabīyah, 144.

¹²⁵ al-Sakhawī (d. 902/1497) reported that there was a terrible earthquake in 12 Shawwāl 891/10 October 1486. In contrast, ‘Abd al-Bāsiṭ (d. 920/1514) told that the earthquake, which shook twice, was light. However, none of them mentioned precisely the place of the seismic shock. Though, quoting from al-Sakhawī’s manuscript, Nicholas Ambraseys mentioned that it happened in Cairo. al-Sakhawī, *al-Dhayl al-tām ‘alā duwal al-islām lil-Dhahabī*, ed. by H. Marwah, vol. 2, al-Kuwayt: Maktabat dār al-‘urūbah 1418/1997, 406. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2, 8, 42. Ambraseys, Melville et al. (ed.), The Seismicity of Egypt, 51.

¹²⁶ There was some confusion about the precise dating of this earthquake. ‘Abd al-Bāsiṭ (d. 920/1514) recorded two light earthquakes during Jumādā I 896/11 March–9 April 1491 (‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2, 8, 225, 227), whereas others mentioned 16 and 22 Jumādā II/25 April and 1 May. (al-Sakhawī, *al-Dhayl al-tām*, vol. 2, 612. al-Suyūṭī, Kashf al-ṣalṣalah, 210).

strong, at least in Egypt. Out of the above-mentioned eight earthquakes, commonly labelled strong or terrible, only two were perceived as disastrous because of their intensity and repercussions. I refer here to the much-discussed earthquake of 702/1303,¹²⁷ which

Ibn Ṭūlūn, *Mufākahat al-khillān fī ḥawādith al-zamān* [Ta’rīkh Miṣr wa-al-Shām], vol. 1, al-Qāhirah: Wizārat al-thaqāfah wa-al-irshād al-qawmī 1381/1962, 139. Ibn Iyās, *Badā’i‘*, vol. 3, 275.) Interestingly, most of the chroniclers labelled it as minor, except for the Egyptian chronicler al-Sakhāwī (d. 902/1497), who described the earthquake on 16 Jumādā II/25 April as violent. al-Sakhāwī, *al-Dhayl al-tām*, vol. 2, 612. Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 51–52. Guidoboni and Comastri, *Catalogue of Earthquakes*, 805. al-Ghunaym, *Sijill al-zalāzil*, 228. Tāhir, *Nuṣūṣ ‘arabīyah*, 152.

¹²⁷ Hirschler, *Erdbebenberichte*, 131–139. Little, *Data on Earthquakes*, 137f. See the discussion of this earthquake in *Chapter 4.4. The Disastrous Earthquake of 702/1303: A Comprehensive Account of Effects and Attitudes*, p. 323f.

remained in the collective memory for centuries, and the 886/1481 earthquake.¹²⁸

In order to understand why historians perceived and interpreted them as disastrous, it is necessary to analyse the forms of their narratives. Here the narration of these earthquakes' impact on the environment and people takes centre stage. The examination aims, first, to reveal people's attitudes to these earthquakes during their occurrence and their aftermath. Second, it shows how different generations of authors eternalised these events through the specific method of narration.

4.4. The Disastrous Earthquake of 702/1303: A Comprehensive Account of Effects and Attitudes

During the third period of al-Malik al-Nāṣir Muḥammad Ibn Qalāwūn's reign (709–741/1310–1341),¹²⁹ the earth shook violently

¹²⁸ See the discussion of this earthquake in *Chapter 4.5. The Disastrous Earthquake of 886/1481: Comprehensive Account of Effects and Attitudes*, p. 383f.

¹²⁹ See about al-Malik al-Nāṣir Muḥammad Ibn Qalāwūn footnote 127, p. 100.

(*zulzilat/zalzalat al-ard zilzālan*) in New and Old Cairo at dawn on 23 Dhū al-hijjah/7 August 1303. We have several contemporary reports, such as those of Baybars al-Manṣūrī (ca. 644–725/1246–1325),¹³⁰ al-Nuwayrī (677–733/1279–1333),¹³¹ Ibn al-Dawādārī (687–736/1288–1336),¹³² and Mufaddal Ibn Abī al-Faḍā'il (d. after 759/1357),¹³³ as well as a number of non-contemporary Mamlūk sources, which confirm this event.

The impact of the earthquake was massive, so large that the chroniclers described it as unprecedented and “never before experienced.”¹³⁴ This metaphorical comparison was a realistic assessment, for at least two similar earthquakes are known to have happened in Egypt several centuries before: in 365 A.D. and

¹³⁰ See about this chronicler footnote 27, p. 265.

¹³¹ See about this chronicler footnote 178, p. 207.

¹³² See about this chronicler footnote 76, p. 173.

¹³³ See about this chronicler footnote 159, p. 199.

¹³⁴ Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 173. al-Nuwayrī, *Nihāyat al-arab fī funūn al-adab*, vol. 32, al-Qāhirah: Maṭba‘at dār al-kutub al-miṣrīyah 1998, 57. Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 100f.

553 A.D.¹³⁵ In contrast to other earthquakes which occurred during the Mamlūk period, the 702/1303 earthquake, due to its intensity and destructiveness, was very well documented in the contemporary sources.

This devastating earthquake originated in region of the Hellenic Arc¹³⁶—as most of the stronger shocks experienced in the history of Egypt¹³⁷—and struck the whole of Egypt and Syria.¹³⁸ The most

¹³⁵ Degg and Doornkamp, Earthquake Hazard, 404. Guidoboni and Ebel, Earthquakes and Tsunamis, 404–413.

¹³⁶ “The Hellenic Arc is part of the larger boundary zone between the Eurasia, Africa, and Arabia plates.” A. Ganas and T. Parsons (ed.), Three-dimensional Model of Hellenic Arc Deformation and Origin of the Cretan Uplift, *Journal of Geophysical Research* 114 (2009), 1–14. See also A. El-Sayed et al., Seismicity and Seismic Hazard in Alexandria (Egypt) and its Surroundings, in *Seismic Ground Motion in Large Urban Areas*, G. Panza et al. (ed.), Basel: Birkhäuser Verlag 2004, 1003–1019.

¹³⁷ Melville, “Zalzala,” 430. More about the earthquake hazard assessment of Egypt see Degg and Doornkamp, Earthquake Hazard, 395, 406. Degg, The 1992 “Cairo Earthquake,” 227. Ambraseys, Melville et al. (ed.), The Seismicity of Egypt, xi, 19f. See A. El-Sayed et al. (eds.), The Nile Valley of

strongly effected places included the town of Abyār in Manūfiyah¹³⁹ (in the western province of Egypt), al-Jazīrah,¹⁴⁰ Damanhūr al-Wahsh (a city in the province of al-Buhayrah),¹⁴¹ Qūs¹⁴² (a town in the Upper

Egypt: A Major Active Graben that Magnifies Seismic Waves, in *Seismic Ground Motion in Large Urban Areas*, G. Panza et al. (ed.), Basel: Birkhäuser Verlag 2004, 983–1002.

¹³⁸ Ibn al-Dawādārī, Kanz al-durar, vol. 9, 102. Baybars al-Manṣūrī, Kitāb al-tuḥfah, 173. al-Nuwayrī, Nihāyat al-arab, vol. 32, 57. al-Nuwayrī al-Iskandarānī, Kitāb al-ilmām, vol. 4, 124. Abū al-Fidā', *al-Mukhtaṣar fī akhbār al-bashar. Ta'rikh Abī al-Fidā'*, vol. 4, al-Qāhirah: Maktabat al-mutanabbī 1970, 50.

¹³⁹ al-Nuwayrī, Nihāyat al-arab, vol. 32, 58.

¹⁴⁰ al-Jazīrah or Jazīrat Miṣr is the old name of the island al-Rawḍah. al-Suyūṭī, Ḥusn al-muḥādarah, vol. 2, 377. See the map in Warner, The Monuments of Historic Cairo. p. 1 and in C. Petry, (ed.), The Cambridge History of Egypt, p. xvii.

¹⁴¹ al-Nuwayrī, Nihāyat al-arab, vol. 32, 58. Ibn al-Dawādārī, Kanz al-durar, vol. 9, 102. See the map in C. Petry, (ed.), The Cambridge History of Egypt, p. xvii.

Egypt)¹⁴³ and especially Alexandria. The severity of the impact was due to the seismic sea wave triggered by a tsunami¹⁴⁴ in the Mediterranean Sea. The sea swelled into a massive and fast moving wall of seawater that crashed down on the shore, destroying crops, a lighthouse, and a great number of towers and shops along the shore. The tidal wave submerged half of Alexandria and left “numerous people” under the ruins.¹⁴⁵

Irrespective of the earthquake’s intensity, though, contemporary sources do not provide any specific details about the consequences for the population. The chroniclers do not even give an estimated number of victims. This is odd given that a significant amount of attention was paid to the enumeration of deaths, especially when it

¹⁴² Mufaddal Ibn Abī al-Fadā’il, *al-Nahj*, vol. 3, 594. J.-Cl. Garcin, “Kūs,” The Encyclopaedia of Islam, vol. 5, Leiden: Brill 1986, 514–515. See the map in C. Petry, (ed.), *The Cambridge History of Egypt*, p. xvii.

¹⁴³ See footnote 109, p. 96.

¹⁴⁴ See the definition of a tsunami in footnote 30, p. 294.

¹⁴⁵ Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 173. al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 57–58. Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 102.

came to cases of fatalities caused by the plague or other epidemics.¹⁴⁶ We learn from Abū al-Fidā' (d. 732/1331),¹⁴⁷ al-Nuwayrī (d. 733/1333)¹⁴⁸ and Ibn al-Dawādārī (d. 736/1336)¹⁴⁹ simply that a large number of people died under the ruins,¹⁵⁰ whereas Baybars al-Mansūrī (d. 725/1325) only mentioned that if the earthquake had continued longer than an hour no trace of many of the buildings and people would have remained.¹⁵¹ In contrast, the later author al-‘Aynī (d. 855/1451) played down the number of casualties in Alexandria

¹⁴⁶ Cf. Ibn Kathīr, *al-Bidāyah*, vol. 2, 2211. al-Maqrīzī, *Kitāb al-sulūk li-ma‘rifat duwal al-mulūk*, ed. by S. ‘Āshūr, vol. 4,1, al-Qāhirah: Maṭba‘at dār al-kutub 1972, 481. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 1047. ‘Abd al-Bāsit, *Nayl al-amal*, vol. 1,1, 171, 174, 347.

¹⁴⁷ Abū al-Fidā', *al-Mukhtaṣar*, vol. 4, 50. Abū al-Fidā' was Syrian prince, historian, and geographer of the family of the Ayyūbids, who had close relations to the Mamlūk authorities. H. Gibb, “Abū'l-Fidā,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill 1960, 118–119.

¹⁴⁸ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 57.

¹⁴⁹ Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 102.

¹⁵⁰ Cf. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 944. al-Suyūṭī, *Kawkab al-Rawḍah*, 96.

¹⁵¹ Baybars al-Mansūrī, *Kitāb al-tuḥfah*, 173.

and in New and Old Cairo, saying that despite the enormous damage few people died¹⁵² as God was graceful towards his servants by decreasing the extent of the catastrophe (*āfah*).¹⁵³

The earthquake was also felt in a number of other regions including Barqah,¹⁵⁴ Tunis, Sicily, Qābis, Marrakech, Antioch, Antalya and Sīs. News was reached saying that it caused damage as far away as Constantinople and on the shores of Cyprus where many churches were destroyed.¹⁵⁵ The earthquake was so strong that its aftershocks continued for twenty¹⁵⁶ to forty days.¹⁵⁷

According to Ibn al-Dawādārī (d. 736/1336), the earthquake in Egypt lasted for about a quarter of an astronomical hour (*rab‘ sā‘at*

¹⁵² al-‘Aynī, *Iqd al-jumān fī ta‘rīkh ahl al-zamān* (699–707/1299–1307), vol. 4, al-Qāhirah: al-Hay’ah al-miṣriyah al-‘āmmah lil-kitāb 1412/1992, 262.

¹⁵³ al-‘Aynī, *Iqd al-jumān*, vol. 4, 261.

¹⁵⁴ al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 395.

¹⁵⁵ Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 102.

¹⁵⁶ Mufaddal Ibn Abī al-Faḍā’il, *al-Nahj*, vol. 3, 594.

¹⁵⁷ al-Nuwayrī al-Iskandarānī, *Kitāb al-ilmām*, vol. 4, 125.

falakīyah)¹⁵⁸ and was accompanied by a rumble similar to thunder.¹⁵⁹

Although there is a lack of information about the people who suffered, the sources do provide a detailed description of the material damage. Numerous minarets of mosques were destroyed, including the minaret of al-Ḥākimī mosque, the mosque of al-Ṣāliḥī, the minaret of al-Maṇṣūriyah madrasah in New Cairo¹⁶⁰ and the mosque al-

¹⁵⁸ Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 101. The duration of the earthquake varies in the sources: al-Nuwayrī (d. 733/1333) mentioned that it lasted five *darajah* (i.e. short period of time or twenty minutes, see more, p. 396), whereas Baybars al-Manṣūrī (d. 725/1325) said if it lasted longer than an hour (*ba‘du sā‘ah*), there would be more damage. Mufaḍḍal Ibn Abī al-Faḍā’il (d. after 759/1357) estimated it as a quarter of an hour (*rub‘ sā‘ah*). Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 173. al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 57. Mufaḍḍal Ibn Abī al-Faḍā’il, *al-Nahj*, vol. 3, 592. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 944.

¹⁵⁹ Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 101. Mufaḍḍal Ibn Abī al-Faḍā’il (d. after 759/1357) mentioned that it made a noise similar to that of the blowing wind. Mufaḍḍal Ibn Abī al-Faḍā’il, *al-Nahj*, vol. 3, 592.

¹⁶⁰ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 59, 58. Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 101. Mufaḍḍal Ibn Abī al-Faḍā’il, *al-Nahj*, vol. 3, 593. See the

Fākihāniyīn¹⁶¹—which is the same as the al-Ζafirī mosque mentioned in al-Nuwayrī’s record.¹⁶² The walls of the mosque ‘Amr Ibn al-‘Āṣ in Old Cairo fell down and many buildings crumbled.¹⁶³

location of major mosques in New Cairo in Warner, N., *The Monuments of Historic Cairo*, p. 24.

¹⁶¹ Relying on Ibn al-Dawādārī’s record, this mosque was founded by al-Ζāhir, the son of al-Ḥākim al-Fāṭimī, who ruled in Egypt from 411 to 427/1021–1036. (Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 101.) However, from al-Maqrīzī’s *Khiṭāṭ* and Mufaddal Ibn al-Faḍā’il’s chronicle we learn that it was founded by the Caliph al-Ζāfir. The latter was also Fātimid Caliph in Egypt from 544 to 549/1149–1154. al-Maqrīzī (d. 845/1442) added that this mosque was once called the mosque of al-Afkhar and during his lifetime it was known as the mosque of Fākkihīn. (al-Maqrīzī, *al-Mawā’iz wa-al-i‘tibār fī dhikr al-khiṭāṭ wa-al-āthār*, ed. by A. Sayyid, vol. 4/1, Landan: Mu’assasat al-furqān lil-turāth al-islāmī 1424/2003, 164–166. Mufaddal Ibn Abī al-Faḍā’il, *al-Nahj*, vol. 3, 593. al-Suyūṭī, Ḥusn al-muḥādarah, vol. 2, 254.) Thus, it is probable that Ibn al-Dawādārī (d. 736/1288–1336) confused two names which could be easily misspelled in Arabic. Cf. al-Ζāfir (الظافر), who was really the son of al-Ḥākim al-Fāṭimī, and al-Ζāhir (الظاهر), who came to power a century later.

¹⁶² al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 59.

In addition, later authors, such as al-‘Aynī (d. 855/1451), al-Maqrīzī (d. 845/1442) and al-Suyūtī (d. 911/1505), recorded the destruction of the al-Azhar mosque in New Cairo.¹⁶⁴ They mentioned details such as the effects that the earthquake had on the environment. A strong wind, which affected the Nile¹⁶⁵ and the (Mediterranean) Sea, together called the “two seas” (*al-bahrayn*),¹⁶⁶ accompanied the earthquake. The Nile overflowed its banks inflicting a lot of damage and throwing boats on to the land. al-Maqrīzī (d. 845/1442) also reported that a dark wind blew in Upper Egypt, and immediately afterwards the ground swayed and split open, letting forth white sand in some places and red sand in others.¹⁶⁷

¹⁶³ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 58.

¹⁶⁴ al-‘Aynī, ‘Iqd al-jumān, vol. 4, 265. al-Maqrīzī, *al-Khiṭāṭ*, vol. 4/1, 90–107. al-Suyūtī, *Kawkab al-Rawdah*, 96.

¹⁶⁵ al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 942–943. al-‘Aynī, ‘Iqd al-jumān, vol. 4, 263.

¹⁶⁶ al-‘Aynī, ‘Iqd al-jumān, vol. 4, 261.

¹⁶⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 942–943.

The significance of winds, mentioned by al-Maqrīzī (d. 845/1442) as causal agents of earthquakes, was highlighted in Chapter 2.4. *Physical Explanations of Earthquakes Based on the Knowledge of Greek Philosophers and Early Muslim Savants of the Ninth–Eleventh Centuries*.¹⁶⁸ This common Aristotelian explanation might be the first reason why the incorporation of winds as a metaphorical device belonged to the general narratology of earthquakes, as was the case in the previously discussed “doubtful” earthquake of 658/1260.¹⁶⁹

Secondly, descriptions of different natural phenomena, like winds or lunar eclipses—which are also mentioned in Aristotle’s *Meteorology*¹⁷⁰ as forerunners of earthquakes—and other significant events (e.g. deaths of prominent people) accompanying earthquakes were common in the chronicles of the late Mamlūk period. For example, during a light shock felt at night on the 27 Dhū al-hijjah 905/23 July

¹⁶⁸ Aristotle, *Meteorology*, 36, 40. See also p. 189f.

¹⁶⁹ See al-Maqrīzī’s description, p. 307.

¹⁷⁰ According to Aristotle, winds, specific clouds, occasional eclipses of the moon happen before or during earthquakes. Aristotle, *Meteorology*, Book I, 38–39.

1500 in Old¹⁷¹ and New Cairo,¹⁷² people observed several stars strewed about in the sky.¹⁷³ In another case, Ibn Iyās (d. 930/1524) reported that the earthquake of 904/1498 in New Cairo was interpreted as a bad omen for the Sultan¹⁷⁴ (al-Malik al-Nāṣir Ibn al-Ashraf Qāytbāy), who died shortly afterwards on 15 Rabi‘ I/30 October of that year.¹⁷⁵

Furthermore, after a “light” earthquake in 919/1513, Ibn Iyās (d. 930/1524) mentioned that it was a sign of the increase in the plague (*wa-kāna hādhīhi kulluhu dalā'il 'alā tazāyud al-tā'ūn*).¹⁷⁶ On this occasion, he told an odd story (*nādirah*):¹⁷⁷ when *al-Khamāsin*¹⁷⁸ began

¹⁷¹ al-Suyūtī, *Kashf al-ṣalṭalah*, 210.

¹⁷² Ibn Iyās, *Badā'i'*, vol. 3, 433–434.

¹⁷³ Ibn Iyās, *Badā'i'*, vol. 3, 434.

¹⁷⁴ Ibn Iyās, *Badā'i'*, vol. 3, 389.

¹⁷⁵ Ibn Iyās, *Badā'i'*, vol. 3, 392.

¹⁷⁶ Ibn Iyās, *Badā'i'*, vol. 4, 297.

¹⁷⁷ *Nādirah* pl. *nawādir* (literally “rarity”) denotes in its original meaning a pleasing anecdote, containing a wit. Ch. Pellat, “Nādira,” *The Encyclopaedia*

the plague increased, sweeping through people. To prevent its spread some of the wise (*hukamā'*) advised the Sultan to wear ruby rings on his fingers. They thought the rings would help prevent the plague. Consequently, the Sultan took two octagonal ruby ring stones from the treasury, put them on two gold rings and wore them on all occasions.¹⁷⁹

This story carries two messages: the interconnection between one natural phenomenon with the other, i.e. earthquakes and epidemics;¹⁸⁰ second, it shows a certain attitude to epidemics. The first message is common. Indeed, earthquakes were perceived as signs of the spread of epidemics.¹⁸¹ Relying on an Arab-Jewish author of the sixteenth A.D. century, Anna Akasoy mentions in her article on attitudes to earthquakes and plagues that, according to this particular

of Islam, vol. 7, Leiden: Brill 1993, 856–858. See further discussion of this term on p. 337.

¹⁷⁸ See about *al-Khamāsin* footnote 217, p. 133.

¹⁷⁹ Ibn Iyās, *Badā'i'*, vol. 4, 297.

¹⁸⁰ Watson, Gayer et al., Epidemics after Natural Disasters, 1–5.

¹⁸¹ Watson, Gayer et al., Epidemics after Natural Disasters, 1–5.

author whose treatise was based on the medical texts of Hippocrates, Galen, Ishāq Isrā’ilī and other medical Islamic texts, earthquakes were seen as precursors of epidemics because they set miasmas free.¹⁸² This motive was also common in the astro-meteorological *malhamah*. Ibn Zunbul’s text reads:

If it [earthquake] happens in Ḥazīrān (June), epidemics will spread among the horses, and people will suffer from soar-throat Diyar Bakr and Palestine. [...] If it happens in Kānūn al-awwal (December), diseases, smallpox and fever [...] will increase among people. If it happens in Kānūn al-thānī (January), [...] epidemics (*wabā'*) will spread [...].¹⁸³

There is a simple pragmatic reason behind this interconnection. As John Watson et al. and Lutfallah Gari note, epidemics usually follow natural disasters because of the dead bodies which are not buried

¹⁸² Akasoy, Islamic Attitudes to Disasters, 405–406. See more on the causes of epidemics and plague in Ibn Khaldūn, *Muqaddimah*, vol. 2, 136–137, 244–245.

¹⁸³ Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn*, fols. 49b–50a.

immediately, the degree of crowding, the lack of safe water and sanitation facilities which disrupt the maintenance of environmental and human health.¹⁸⁴ It is most probable that the direct interrelation of a geophysical phenomenon (earthquakes) with a biological one (epidemics) in the chronicles became a constituent of earthquake narratology, as other cases in this study will attest, because people generally feared conditions after an earthquake due to the common outbreak of epidemics, especially in a hot region like Egypt.

The second message of this *nādirah*, an amusing witty anecdote, has ambivalent meanings. By telling a *nādirah*,¹⁸⁵ authors of the early period of Islam usually intended to distract the reader and awaken attention and so *nādirah* was an element used to enliven the narration.¹⁸⁶ On the one hand, Ibn Iyās' insertion of *nādirah*, which appears often in his chronicle, may have aimed to show in this context the ridiculousness and the absurdity of the Sultan's belief in

¹⁸⁴ Watson, Gayer et al., Epidemics after Natural Disasters, 1. Gari, Knowledge versus Natural Disasters.

¹⁸⁵ See the definition of *nādirah* in footnote 177, p. 334.

¹⁸⁶ Pellat, "Nādirah," 856–858.

the advice of the wise (*hukamā'*). On the other hand, Ibn Iyās might have intended to reveal the second motive of a *nādirah*, i.e. “that misfortune (*al-shidda*) is not necessarily lasting and that relief (*al-faradj*) can always be expected,”¹⁸⁷ if one believes or does something to achieve it.

In particular, for the *hukamā'*—to whom the wise, philosophers, physicians, and astrologers belong—*nādirah* was never a witty anecdote, but a “curiosity, a rarity.”¹⁸⁸ In this sense, *nādirah* is synonymous with the term *gharīb*, under which al-Qazwīnī (d. 682/1283) classifies not only earthquakes, droughts, floods, pestilence, and other rare natural phenomena, but also the predictions of the soothsayers.¹⁸⁹ Furthermore, we should not

¹⁸⁷ Pellat, “Nādira,” 857.

¹⁸⁸ Pellat, “Nādira,” 858. *Nādirah* in the sense of “oddity” is especially omnipresent in the stories about the irregularities of the Nile’s flooding, which will be presented in *Chapter 5.4. “Oddities of the Nile” as Constituent Parts of the Narration in the Khabar*, p. 456f.

¹⁸⁹ See p. 155.

underestimate the belief in the power of magic¹⁹⁰ against epidemics. It played a significant role in Arab¹⁹¹ and other cultures of Europe¹⁹² especially after the coming of the Black Death in 749/1348,¹⁹³ which

¹⁹⁰ See footnote 238, p. 142.

¹⁹¹ During times of epidemics, along with prayers, fasting and recitations from the *Qur'ān*, which were commonly recommended, people resorted to other methods of protection against the plague, like the use of charms, amulets, talismans, incantations, magical squares and symbols, and magical-medical bowls with engravings of *Qur'ānic* verses. (N. Varlik, "Islamic Disease Theory and Medicine," *Encyclopedia of Pestilence, Pandemics, and Plagues*, vol. 1, The United States of America: Greenwood Press 2008, 332. Dols, The Black Death, 121–142.) See more about the origins, effects of and reactions to the plague in footnote 250, p. 354 and footnote 315, p. 504.

¹⁹² N. Varlik, "Plague in the Islamic World, 1500–1850," *Encyclopedia of Pestilence, Pandemics, and Plagues*, vol. 1, The United States of America: Greenwood Press 2008, 522.

¹⁹³ See about "the great crisis" of 1348–1412 A.D. in A. Raymond, *Cairo*, tr. by W. Wood, Cambridge: Harvard University Press 2000, 138–149. Dols, The Black Death.

broke out periodically up until Ibn Iyās' lifetime.¹⁹⁴ This background intensifies the supposition that Ibn Iyās' *nādirah* aimed to show the common belief in this kind of practice, rather than to present the Sultan in a ridiculous light.

4.4.1. Reaction of Authorities

Concerning the events of the 702/1303 earthquake, we learn from the sources that all of the above mentioned structures were so severely damaged that they had to be demolished and rebuilt.¹⁹⁵ However, only the damage wrought to buildings such as mosques, religious schools, shops and fortifications were recorded. Faced with this disaster, the authorities' main concern was to rebuild the religious centres first, which was probably important for the stability and legitimisation of the Mamlūk rulers as a whole. The sources describe in detail who exactly undertook the reconstruction work and how much money was allocated from the funds of pious foundations

¹⁹⁴ See about the occurrences of plague during the Mamlūk period in footnote 317, p. 505.

¹⁹⁵ Mufaddal Ibn Abī al-Faḍā'il, al-Nahj, vol. 3, 593.

(*waqf*),¹⁹⁶ public treasury,¹⁹⁷ and private resources.¹⁹⁸ For example, Sayf al-Dīn Sallār, the Sultan's deputy (*nā'ib*), was responsible for the restoration of the 'Amr Ibn al-Āṣ mosque in Old Cairo, while Rukn al-Dīn Baybars al-Jāshankīr, the "master of the household" attendant (Ustādh al-Dār),¹⁹⁹ renovated al-Hākim mosque in New Cairo,

¹⁹⁶ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 58. *Waqf* is a religious endowment, whose property (building or plot of land) is unalienable. It is a pious deed to found a *waqf*, designating persons or public utilities as beneficiaries of its yields. See about *waqf* (R. Peters, D. Behrens-Abouseif et al., "Wakf," *The Encyclopaedia of Islam*, Leiden: Brill 2002, 59–99), and its role in cases of earthquake (St. Knost, *Living with Disaster: Aleppo and the Earthquake of 1822*, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. G. Schenk, Heidelberg: Springer forthcoming), and famines (A. Sabra, *Poverty and Charity in Medieval Islam. Mamluk Egypt, 1250–1517*, Cambridge: Cambridge University Press 2000, 94–95).

¹⁹⁷ al-Āynī, *Iqd al-jumān*, vol. 4, 265.

¹⁹⁸ Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 101.

¹⁹⁹ During the Mamlūk reign, the Ustādhār (the title given to the head of Dīwān al-ustādāriyah) took over the management of the Sultanate's treasury. He was responsible for managing expenditure on the Sultan's household supplies and various other needs. A. Levanoni, "Ustādhār," *The*

founding a *waqf* and ascribing numerous functions to it. The minaret of the Mansūriyah madrasah was restored under the guidance of the emir Sayf al-Din Kahradāsh al-Nāṣirī with the funds from the *waqf* bequeathed to the *madrasah*.²⁰⁰ al-Nuwayrī (d. 733/1333) reported that the reconstruction of the damaged half of the minaret cost about 90,000 dirham. Damage to the mosque, to which the *madrasah* was attached, on the other hand, was repaired under the direction of the emir Shams al-Dīn Sunqūr al-Aṣṣar. The Sāliḥī mosque, outside Bāb Zuwaylah (Gate of Zuwaylah),²⁰¹ and al-Zāfirī mosque, outside the Sultan's gates, were also restored.²⁰²

Encyclopaedia of Islam, vol. 10, Leiden: Brill, Online 2000, 925. C. Petry (ed.), *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, vol. 1, Cambridge: Cambridge University Press 1998, 538.

²⁰⁰ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 58–59, 83. al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 253.

²⁰¹ See the sketch map of key sites in pre-modern Cairo in Warner, *The Monuments of Historic Cairo*, p. 24 and in Kennedy, *An Historical Atlas of Islam*, p. 31.

²⁰² al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 58–59.

We can treat these politically and religiously motivated acts both as obligations imposed by the Sultan in order to restore stability in the capital of the Mamlūk Sultantate and as an act of piety, through which these emirs acquired respect in the population's eyes.

We learn from the later chronicler al-‘Aynī (d. 855/1451) that the emir Sayf al-Dīn Sallār and Shams al-Dīn Sunqūr undertook the rebuilding and restoration of al-Azhar mosque,²⁰³ which was not listed among the damaged buildings in the contemporary sources. He also added that the emir ‘Alam al-Dīn Sinjar rebuilt the mosque of Ḡalīḥ at public expense financed from the public treasury (*bayt al-māl*).²⁰⁴ al-‘Aynī's last inclusion must be an inadvertent mistake. According to the contemporary chronicler al-Nuwayrī (d. 733/1333), the emir ‘Alam al-Dīn Sinjar Arjawāsh al-Mansūrī, the Sultan's deputy (*nā’ib*) in the Citadel of Damascus (Qal‘at Dimashq), was not alive during the 702/1303 earthquake, as he died on the night of 22 Dhū al-hijjah 701/17 August 1302.²⁰⁵

²⁰³ al-‘Aynī, ‘Iqd al-jumān, vol. 4, 265.

²⁰⁴ al-‘Aynī, ‘Iqd al-jumān, vol. 4, 265.

²⁰⁵ al-Nuwayrī, Nihāyat al-arab, vol. 32, 17.

If buildings of religious importance such as mosques and *madrasas*, which were usually better constructed than any other structures, suffered complete damage, we can suppose that other buildings, not necessarily of religious value, were destroyed and restored. Baybars al-Mansūrī's (d. 725/1325) report in the annals of 711/1311–2 presents one such case which reveals that al-Malik al-Nāṣir [Muhammad Ibn Qalāwūn]²⁰⁶ ordered the demolition and reconstruction of the Great Īwān²⁰⁷ of Cairo (Īwān al-Kabīr)²⁰⁸—where the latter usually held public judicial hearings of people's appeals every Monday, at least until 725/1325.²⁰⁹ Baybars al-Mansūrī (d.

²⁰⁶ See footnote 127, p. 100.

²⁰⁷ See the definitions of the term *īwān* in N. Rabbat, *The Citadel of Cairo: A New Interpretation of Royal Mamluk Architecture*, Leiden: Brill 1995, 115, 128.

²⁰⁸ During the Mamlūk period, Īwān al-Kabīr was also known as Dār al-‘Adl (House of Justice), Īwān al-Qal‘ah (Īwān of the Citadel), Īwān al-Kabīr al-Kāmilī, Īwān al-Manṣūrī, Īwān al-Ashrafi and Īwān al-Nāṣirī. Rabbat, *The Citadel of Cairo*, 127–129, 145.

²⁰⁹ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 175.

725/1325) continues that the Sultan disliked the darkness of the old hall (*iwān*) and the additional pillars (*arkān*), which were erected after the 702/1303 earthquake.²¹⁰

For the restorations in Alexandria, Baybars al-Manṣūrī (d. 725/1325) mentions that the Sultan sent officials to supervise the reconstruction of walls and ditches on-site. People approved of his order yet they thought that two years' work and much cash would not suffice to reconstruct it all. But "God made it easy, and they finished the work with the Sultan's support in a short time and with low expenditure."²¹¹ Baybars al-Manṣūrī's narrative shows here both his belief in God's power of destruction and reconstruction and his strong bias towards al-Malik al-Nāṣir Muḥammad, who supported the project.²¹²

²¹⁰ Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 232. See more about the possible further motives for the reconstruction of Īwān al-Kābir in Rabbat, The Citadel of Cairo, 191f.

²¹¹ Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 173.

²¹² Ashtor, "Baybars al-Manṣūrī," 1127–1128.

It should be mentioned here that the chroniclers often praised Sultan al-Malik al-Nāṣir for his deeds, especially for his public achievements.²¹³ In particular, Baybars al-Manṣūrī’s “Sultan-friendly” comments stem from his personal ambitions and his gratefulness to the Sultan and the latter’s father, who helped him to rise in his career from military slave to an emir of high position.²¹⁴ Baybars al-Manṣūrī vividly expressed his biased attitude to the Sultan in a long poem which followed the *khabar* about the reconstruction of the Great Īwān of Cairo.²¹⁵

From al-‘Aynī’s (d. 855/1451) non-contemporary record we learn other narrative particulars not mentioned in the contemporary sources. He says that the Sultan received a letter from his deputy (*nā’ib*) in Alexandria describing the extent of the damage. Thereafter, he ordered Rukn al-Dīn Baybars to go to Alexandria to assess the

²¹³ See footnote 127, p. 100 and al-Nuwayrī al-Iskandarānī, *Kitāb al-ilmām*, vol. 4, 144f.

²¹⁴ Ashtor, “Baybars al-Manṣūrī,” 1127–1128. See about Baybars al-Manṣūrī footnote 27, p. 265.

²¹⁵ Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 233–235.

damage himself and restore all of the collapsed buildings at the Sultan's expense.²¹⁶ This may imply that the Sultan did not fully trust the assessment of the damage suggested by his representative in Alexandria. Under the supervision of Rukn al-Dīn Baybars, all the structures in Old and New Cairo and Alexandria were restored soon afterwards.²¹⁷ In all cases, the chroniclers reported that the mosques looked even better than before.²¹⁸

4.4.2. Reaction of People

Although contemporary authors paid only slight attention to the population's attitude to the catastrophe, they all remarked on the population's fear of the earthquake and the havoc it entailed. Baybars al-Manṣūrī (d. 725/1325) reported that people in [Alexandria], scared of the destruction, immediately went out of the Bāb Sidrah (the Gate of the “Lotus tree”), one of the main city gates on the south

²¹⁶ al-‘Aynī, ‘Iqd al-jumān, vol. 4, 265.

²¹⁷ al-Nuwayrī, Nihāyat al-arab, vol. 32, 58. Mufaḍḍal Ibn Abī al-Faḍā’il, al-Nahj, vol. 3, 594.

²¹⁸ Baybars al-Manṣūrī, Kitāb al-tuhfah, 173. al-Nuwayrī, Nihāyat al-arab, vol. 32, 57–59. Ibn al-Dawādārī, Kanz al-durar, vol. 9, 101.

side.²¹⁹ According to al-Nuwayrī al-Iskandarānī (d. after 759/1357), great fear overcame the lands because of the earthquake until most of the people left New and Old Cairo for al-Qarāfah²²⁰ (“City of the Dead,” a cemetery lying east and south Cairo, below the Muqatṭam Hills).²²¹ Some of them put up tents outside and dwelled there, fearing the recurrence of the earthquake.²²² The flight, which belongs to the narratology of earthquakes, is a typical pragmatic reaction in emergencies such as these.²²³

Authors in later centuries, however, were inclined to include in their narration information not found in the contemporary sources. For example, al-‘Aynī (d. 855/1451) and al-Maqrīzī (d. 845/1442)

²¹⁹ Baybars al-Mansūrī, *Kitāb al-tuḥfah*, 173. S. Labib, “al-Iskandariyya,” *The Encyclopaedia of Islam*, vol. 4, Leiden: Brill 1978, 133.

²²⁰ See the map of Medieval Cairo environs, depicting the Citadel, al-Qarāfah, and the Muqatṭam Hills in Petry (ed.), *The Cambridge History of Egypt*, p. xix.

²²¹ Petry (ed.), *The Cambridge History of Egypt*, 535.

²²² al-Nuwayrī al-Iskandarānī, *Kitāb al-ilmām*, vol. 4, 125.

²²³ Akasoy, *Islamic Attitudes to Disasters*, 404.

recorded that when the earth violently shook, young women came out with their heads uncovered. The same was true of young girls and children. Beggars rushed out of the mosques and *zawāyā* (sing. *zāwiyah*),²²⁴ and many women gave birth prematurely.²²⁵ These metaphoric elements in the narration of earthquakes, with particular focus on the “weak” members of society, were used to describe the intensity of the fear.

al-‘Aynī (d. 855/1451) went further by specifying that many emirs erected tents in open spaces, bringing the women of the families out with them, which is also a pragmatic reaction in the aftermath of an earthquake. This narrative aspect specifically highlighted the women’s dependence on the male members of their family. Many

²²⁴ A small room for prayers or housing for travellers and members of Sūfi brotherhood. Sh. Blair, “Zāwiya,” *The Encyclopaedia of Islam*, vol. 11, Leiden: Brill 2002, 466–467. Rogers and Jomier, “al-Kāhirah,” 433.

²²⁵ al-‘Aynī, ‘Iqd al-jumān, vol. 4, 263. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 942.

people went to Būlāq, the island of Rawdah, and other islands,²²⁶ probably because of the vicinity of these locations to the river Nile, which opened the possibility of gathering on ships to escape the effects of the aftershocks.

al-Maqrīzī (d. 845/1442) also reported that people lost a great deal of property. While fleeing in panic, they left everything in their homes except what they remembered to take. The “immoral people” (*ahl al-di‘ārah*) took advantage of this and looted the empty houses.²²⁷ This shows that some people used the chaotic situation to profit from the disaster. However, there were also those who, fearing the aftershocks, devoted themselves to prayers in the local mosques, staying in them throughout the Friday night and pleading God for mercy.²²⁸ This was

²²⁶ al-‘Aynī, ‘Iqd al-jumān, vol. 4, 263. al-Maqrīzī, Kitāb al-sulūk, vol. 1,3, 943.

²²⁷ al-Maqrīzī, Kitāb al-sulūk, vol. 1,3, 943.

²²⁸ al-Maqrīzī, Kitāb al-sulūk, vol. 1,3, 943.

also a typical human reaction in response to fear²²⁹ as people usually believed that earthquakes were a punishment for their misdeeds.²³⁰

While prayer (*salāh*) at any time²³¹ was commonly believed to be necessary during times of disaster (*al-awqāt al-makrūhah*),²³² there were other religious prescriptions evoked in case of an earthquake. al-Suyūṭī (d. 911/1505), arduous opponent of physical explanations of earthquakes,²³³ in his treatise put together religious opinions about the “recommended” (*mustahabb*)²³⁴ acts during and after earthquakes, which he collated from *hadīth* and *tafsīr*. We can summarise that

²²⁹ Tucker, Natural Disasters, 222.

²³⁰ Akasoy, Islamic Attitudes to Disasters, 392. More about religious attitudes to earthquakes see *Chapter 4.4.3.1. Earthquakes from the Religious Perspective*, 363f.

²³¹ al-Suyūṭī, *Kashf al-ṣalsalah*, 148, 153.

²³² al-Suyūṭī, *Kashf al-ṣalsalah*, 153.

²³³ See p. 197.

²³⁴ The “recommended” (*mustahabb*) act is one of the following five juridical qualifications (*al-ahkām khamsah*) of human acts: obligatory, recommended, indifferent, reprehensible and forbidden. J. Schacht, “Ahkām,” The Encyclopaedia of Islam, vol. 1, Leiden: Brill 1960, 257.

echoing the prayer of the eclipse (*ṣalāt al-kusūf*)²³⁵ and prayer for the rain (*ṣalāt al-istisqā'*),²³⁶ canonised in the tradition (*hadīth*),²³⁷ people were also advised to seek refuge in God,²³⁸ go to the mosque,²³⁹ say the prayer of the eclipse (*ṣalāt al-kusūf*),²⁴⁰ call God's name (*dhikr allāh*),²⁴¹ invoke *tasbīh*²⁴² and *takbīr*,²⁴³ and pray *dū'a'* and *tadarru'* (appeals addressed to God) in repentance.²⁴⁴ It was also recommended to set free a slave, give voluntary alms (*taṣadduq*)²⁴⁵ and give *zakāh*

²³⁵ See exemplary al-Bukhārī, *Ṣaḥīḥ al-Bukhārī*, vol. 2, 42f.

²³⁶ See footnote 589, p. 580.

²³⁷ See exemplary al-Bukhārī, *Ṣaḥīḥ al-Bukhārī*, vol. 2, 32f.

²³⁸ al-Suyūṭī, *Kashf al-ṣalṣalah*, 148.

²³⁹ al-Suyūṭī, *Kashf al-ṣalṣalah*, 150.

²⁴⁰ al-Suyūṭī, *Kashf al-ṣalṣalah*, 148.

²⁴¹ al-Suyūṭī, *Kashf al-ṣalṣalah*, 151.

²⁴² *Tasbīh* is the glorification of God by exclaiming *Subḥān allāh*. al-Suyūṭī, *Kashf al-ṣalṣalah*, 154.

²⁴³ *Takbīr* is the pronunciation of *Allāhu akbar*. al-Suyūṭī, *Kashf al-ṣalṣalah*, 154.

²⁴⁴ al-Suyūṭī, *Kashf al-ṣalṣalah*, 154.

²⁴⁵ al-Suyūṭī, *Kashf al-ṣalṣalah*, 153.

(obligatory alms tax).²⁴⁶ Furthermore, al-Suyūṭī (d. 911/1505) discussed the amount of bending (*rak‘āt*) and prostrations (*sajadāt*) one should carry out during the prayer²⁴⁷ in a group or alone.²⁴⁸ All of these acts were intended to remind believers about God’s existence and power, and people’s responsibility to remember the principal religious acts, which could soothe him and restore the normal life.

Citing the legal opinions (*fatāwā*) of a Ḥanafī judge, al-Suyūṭī (d. 911/1505) addressed the question of whether it was recommended to flee or accept the events as personal fate.²⁴⁹ According to the judge, running out into the open, contrary to what some people said, was not reprehensible. On the contrary, he recommended fleeing as it

²⁴⁶ al-Suyūṭī, *Kashf al-ṣalṣalah*, 151. The *zakāh* is “the obligatory payment by Muslims of a determinate portion of specified categories of their lawful property for the benefit of the poor and other enumerated classes or, as generally in Qur’ānic usage, the portion of property so paid.” A. Zysow, “Zakāt,” *The Encyclopaedia of Islam*, vol. 11, Leiden: Brill 2002, 406–407.

²⁴⁷ al-Suyūṭī, *Kashf al-ṣalṣalah*, 148–149.

²⁴⁸ al-Suyūṭī, *Kashf al-ṣalṣalah*, 152.

²⁴⁹ al-Suyūṭī, *Kashf al-ṣalṣalah*, 154–155.

accorded to tradition. Moreover, he remarked that the prophet had experienced an earthquake and fled: “[...] the prophet hurried up while passing by the wall when someone asked him: ‘Are you fleeing from God’s decision?’ His answer was: ‘The flight is also God’s decision’.”²⁵⁰

To sum up the list of prescriptions, fasting on Monday and Thursday²⁵¹ was recommended to calm the earth, especially if there

²⁵⁰ al-Suyūṭī, *Kashf al-ṣalṭalah*, 154–155. Cf. the attitude of flight during epidemics. In contrast to the recommendation of flight during earthquakes, there is a certain fatalism in the case of epidemics. The flight from the epidemic was not recommended as it was a moral obligation of a Muslim to face with patience what has been sent by God. However it was not recommended to travel to the afflicted regions either. A. Kremer, Ueber die grossen Seuchen des Orients nach arabischen Quellen, in *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften*, 1880, 93f. Akasoy, *Islamic Attitudes to Disasters*, 404. Varlik, “*Islamic Disease Theory*,” 332. Dols, *The Black Death*, 109–121.

²⁵¹ Apart from the obligatory fasting during Ramadān, there are specific dates according to the tradition when fasting is recommended. These are, (1) three days fasting during Dhū al-Hijjah (the twelfth month of the

were several shocks.²⁵² Finally, referring explicitly to the earthquake of 702/1303, al-Suyūṭī (d. 911/1505) said that praising God and reciting the *shahādah* (creed)²⁵³ may rescue people from the perils.²⁵⁴

4.4.3. Narration of Causes of Earthquake as a Commemoration of the Disaster

Muslim calendar), (2) seven days afterwards as a substitution for going to Ḥajj, (3) fasting before and after ‘Ashūrā’ day, (4) fasting on the Yawm al-mi‘rāj (27 Rajab) (5) and fasting on the specific days: Monday and Thursday, “when actions are offered to God.” C. Berg, “Ṣawm,” *The Encyclopaedia of Islam*, vol. 9, Leiden: Brill, Online 1997, 94–95.

²⁵² al-Suyūṭī, *Kashf al-ṣalṭalah*, 148. For example, on the day after the strong earthquake of 828/1425, which had several aftershocks described as God’s signs, the Sultan called for a three-day fasting. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 690–691. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 3, 348. al-Suyūṭī, *Kashf al-ṣalṭalah*, 208. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 176.

²⁵³ *Shahādah* refers to the act of declaring the religious formula: “There is no god but God, and Muhammad is the Messenger of God” as an affirmation of the Islamic faith. D. Gimaret, “*Shahāda*,” *The Encyclopaedia of Islam*, vol. 9, Leiden: Brill 2002, 201.

²⁵⁴ al-Suyūṭī, *Kashf al-ṣalṭalah*, 202.

Besides the immediate pragmatic reaction to the disaster and religious attitudes, in the long term the 702/1303 earthquake inspired some contemporary poets to compose verses in memory of its disastrous effects. Baybars al-Mansūrī (d. 725/1325) and Mufaddal Ibn al-Fadā'il (d. after 759/1357) included such a verse in their chronicle. Recalling this earthquake, they wrote:

“Why is it that your stretching land shook with an earthquake
at daylight, what is the matter with it?

All of its lofty constructions collapsed, and anyone who saw its
terrors (*ahwālahā*) is frightened²⁵⁵

We came out escaping the destruction, and it was said about it
[the land] that it brings forth its burdens²⁵⁶

It is nothing else but our Lord who ordered the *zawājir*²⁵⁷ to
inspire it among the humankind

²⁵⁵ Baybars al-Mansūrī, *Kitāb al-tuhfah*, 173. Mufaddal Ibn Abī al-Fadā'il included only the first two verses. Mufaddal Ibn Abī al-Fadā'il, *al-Nahj*, vol. 3, 595.

²⁵⁶ See the *Qur'ān* 99:2.

The mosques (*al-masājid*) were submissive to his power prostrating (*sujjadan*), and just like the minarets kneeled down sloping,

The earth split for the power of his order, and the trembling (*al-rajīf*) overcame the mountains and sands

If not the advocacy of the most praiseworthy, best of the mankind [the prophet], God would cut our ties in it.”²⁵⁸

The treatment of historical events expressed through poetic forms full of metaphorical language was common in the chronicles as it was a literary device that enlivened the monotonous historical reports of the

²⁵⁷ According to William Lane, *al-zājirāt* must be angels, “the drivers of clouds” in the *Qur’ān* 37:2. (W. Lane, *An Arabic-English Lexicon*, vol. 3, Beirut: Librairie du Liban 1968, 1217. Muḥammad, the *Qur’ān*.) Although Muhammed Asad, whose translation of the *Qur’ān* I use in this thesis, mentions that most of the classical commentators assume that verses 37:1–3 refer to angels, he translates it in the given context as “restraining [from evil] by a call to restraint.” See other views about this term in Muhammed, *the Qur’ān*, 866–867.

²⁵⁸ Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 173.

earthquake and its aftermath, making the description of the situation dynamic and appealing to a wider audience. It brought factual news to the human level, to a discourse of emotion that was at the heart of the population's experience with the devastations wrought by the earthquake.

In these verses, some authors like Baybars al-Manṣūrī (d. 725/1325) and Mufaddal Ibn Abī al-Faḍā'il (d. after 759/1357) inquired rhetorically about the causes of the earthquakes, others responded with answers to these questions. For example, Ibn al-Dawādārī (d. 736/1336) is one of the chroniclers who not only gave the most detailed account of this disaster, but also included general views about why earthquakes occur. After describing the effects of the 702/1303 earthquake, he deviated from the usual way of reporting them and devoted a separate chapter to the physical interpretation of earthquakes. As I mentioned,²⁵⁹ he cited the Aristotelian theory of

²⁵⁹ See *Chapter 2.4. Physical Explanations of Earthquakes Based on the Knowledge of Greek Philosophers and Early Muslim Savants of the Ninth-Eleventh Centuries A.D.*, p. 173f.

vapour²⁶⁰ as well as the transformation theory²⁶¹ probably drawn from al-Qazwīnī's *'Ajā'ib al-makhlūqāt*.

Furthermore, Ibn al-Dawādārī (d. 736/1336) expanded the Aristotelian-Qazwīnīan explanation in another chapter entitled “*Min kitāb 'ajā'ib al-makhlūqāt wa-badā'i' al-mawjūdāt*,”²⁶² where he emphasised the role of mountains on earth. Referring to the *qur'ānic sūrah*, he listed the benefits of mountains as “stabilizers of the earth,” lest it shakes (*Qur'ān* 16:15), and as regulators of the water flow, which avert the flooding of the earth.²⁶³

The inclusion of the physical and other explanations of earthquakes in the chronicles was an innovative mode of writing, but it was not

²⁶⁰ See p. 199f.

²⁶¹ Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 104–106.

²⁶² Interestingly, Ibn al-Dawādārī (d. 736/1336) substituted in his title the word *gharā'ib* with *badā'i'*, also denoting “marvels” in compliance to the title of al-Qazwīnī’s *Cosmography*. Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 107–109.

²⁶³ Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 107–108.

unique. In his report on this earthquake, Mufaḍḍal Ibn Abī al-Faḍā’il (d. after 759/1357), for instance, also included the Aristotelian physical explanation of earthquake causes.²⁶⁴ While inquiring about the cause of earthquakes, another chronicler, al-Nuwayrī al-Iskandarānī (d. after 775/1372) related it, in contrast, to the fictional story of Mount *Qāf*.²⁶⁵ This shows that different chroniclers treated and included earthquake interpretations selectively. Furthermore, we can conclude that prominent elements of earthquake interpretations stemming from ‘ajā’ib wa-gharā’ib works found their way into the historiographic genre. However, the chroniclers did not restrict themselves to these interpretations. For example, Ibn al-Dawādārī (d. 736/1336) went as far as to present a *khutbah* (sermon)²⁶⁶ just after

²⁶⁴ Mufaḍḍal Ibn Abī al-Faḍā’il, *al-Nahj*, vol. 3, 595–596. See p. 199f.

²⁶⁵ al-Nuwayrī al-Iskandarānī, *Kitāb al-ilmām*, vol. 4, 125–126. See p. 229 and *Chapter 2.5.2. Nature as a Book of Marvellous Symbols (b) Mount Qāf*, p. 220.

²⁶⁶ In the Islamic tradition *khutbah* is held at particular occasions: (1) during the Friday prayer, (2) during the celebration of the two canonical festivals—the ‘īd al-adḥā (sacrificial festival) and the ‘īd al-fitr (festival of breaking the fast)—as well as (3) during an eclipse and (4) an excessive drought. (A.

the *khabar*,²⁶⁷ in which he called on people to repent. On the one hand, he described the earthquake as a test, a calamity, sent by God for people's sins (*al-ma'āṣī*); on the other hand, he also considered it as a reminder of the Day of Resurrection (*yawm hashrihah*). He reinforced this combination of religious and moral causes with the *qur'ānic sūrabs*,²⁶⁸ in particular *Sūrah* 99, called *al-Zalzalah* “The Earthquake,” which emphasised these two aspects. *Sūrah* 99

Wensinck, “*Khuṭba*,” *The Encyclopaedia of Islam*, vol. 5, Leiden: Brill 1986, 74–75. E. Mittwoch, “*Īd*,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1971, 1007.) Whereas we see from Ibn al-Dawādārī’s text that a *khutbah* was performed, probably in analogy to the occurrence of the eclipse and drought, al-Suyūṭī’s list of recommendations shows that it was not necessary to hold a *khutbah* in case of an earthquake. al-Suyūṭī, *Kashf al-ṣalṣalah*, 153.

²⁶⁷ See general information on this term in H. Kilpatrick, The “Genuine” *Ash‘ab*. The Relativity of Fact and Fiction in Early Adab Texts, in *Story-telling in the Framework of Non-fictional Arabic Literature*, ed. S. Leder, Wiesbaden: Harrassowitz Verlag 1998, 94–118 and the details on the narrative structure of the *khabar* about an earthquake, p. 394f.

²⁶⁸ See references to other *qur'ānic* verses in Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 102–103.

traditionally refers to the Day of Judgment,²⁶⁹ also known as “the Day of the Earthquake” (*al-yawm al-zalzalah* or *al-yawm al-rājifah*).²⁷⁰

The whole Sūrah 99 (*al-Zalzalah*) reads as follows:

“In the name of God, the Most Gracious, the Dispenser of Grace:

- (1) When the earth quakes with her [last] mighty quaking,
- (2) and [when] the earth yields up her burdens,
- (3) and man cries out, “What has happened to her?”—
- (4) on that Day will she recount all her tidings,
- (5) as thy Sustainer will have inspired her to do!
- (6) On that Day will all men come forward, cut off from one another, to be shown their [past] deeds.

²⁶⁹ See more about the eschatological events in L. Gardet, “*Qiyāma*,” *The Encyclopaedia of Islam*, vol. 5, Leiden: Brill 1986, 235–238. J. Smith, “Eschatology,” *Encyclopaedia of Qur’ān*, vol. 1, Leiden: Brill 2005, 44-54. Leemhuis, “Apocalypse,” 111–114.

²⁷⁰ See about the Day of Resurrection (*yawm al-qīyāmah*) and its other names in al-Nuwayrī, *Nihāyat al-arab*, vol. 14, 288.

(7) And so, he who shall have done an atom's weight of good,
shall behold it;

(8) and he who shall have done an atom's weight of evil, shall
behold it.”²⁷¹

The view of an earthquake as an eschatological event and as a reflection of people's behaviour is present in other sources. Referring to the 702/1303 earthquake, al-Suyūṭī (d. 911/1505), who gave the most dramatic account of the event, mentioned that it was a warning and a test of God's servants²⁷² and a sign of the Resurrection Day.²⁷³ al-Suyūṭī's record, Ibn al-Dawādārī's religious *khutbah* and similar views expressed in other Mamlūk sources necessitate an introduction to the prevailing religious interpretations of earthquakes circulating in the relevant texts of the time.

4.4.3.1. Earthquakes from the Religious Perspective

²⁷¹ Muḥammad, *the Qur'ān*, 1231.

²⁷² al-Suyūṭī, *Kashf al-ṣalṣalah*, 202–203.

²⁷³ al-Suyūṭī, *Kashf al-ṣalṣalah*, 204.

al-Suyūṭī (d. 911/1505) gives the most systematic presentation of earthquake causes from a religious perspective in his *Kashf al-ṣalṣalah* ‘an ḫaṣf al-zalzalah. Apart from giving the chronology of historical earthquakes in different regions of the world, he also presented general interpretations of earthquakes. Except for one tradition, in which Iblīs (the Devil) played a central role,²⁷⁴ he emphasised that God was the only agent of the earthquake. He wrote: “It is He alone who has the power to let loose upon you suffering from above you”—like a cry, stones and the wind “or from beneath your feet”—like trembling (*al-rajfah*) and sinking (*al-khasf*) which are both punishments for people who deny God (*ahl al-takdhib*).²⁷⁵ Thus, the following words of the prophet Muḥammad, mentioned in al-Suyūṭī’s *Kashf al-ṣalṣalah* ‘an ḫaṣf al-zalzalah, summarise the causes of earthquakes from the religious perspective:

“There was an earthquake (*rajfah*) in my community, ten thousands of them or more died. With that God warned the

²⁷⁴ al-Suyūṭī, *Kashf al-ṣalṣalah*, 134. See *Chapter 2.5.2. Nature as a Book of Marvellous Symbols*, p. 217f.

²⁷⁵ al-Suyūṭī, *Kashf al-ṣalṣalah*, 138. See also the *Qur’ān* 6:65.

pious (*lil-muttaqiyyīn*), showed mercy to the believers (*lil-mu'minīn*) and punished the infidels (*lil-kāfirīn*).²⁷⁶

With this view the prophet classifies those people to whom God sends an earthquake in three categories: the pious, the believers and the unbelievers. That God makes even the pious and the believers suffer through earthquakes, at first sight brings the theodicy debate (Greek: *-theos-* God, and *-dike-* justice) to the fore in the minds of European readers, which is defined, particularly within Christianity and Judaism, “as any attempt to reconcile notions of a loving and just God with the reality of human suffering.”²⁷⁷ Although Gottfried Wilhelm Leibniz first introduced this term into philosophical

²⁷⁶ al-Suyūtī, *Kashf al-ṣalṭalah*, 142.

²⁷⁷ D. Chester and A. Duncan, Responding to Disasters within the Christian Tradition, with Reference to Volcanic Eruptions and Earthquakes, *Religion* 40/2 (2010), 85. See more on this theme in the Christian theology and the theology of the Mu'tazilah in A. Middelbeck-Varwick, *Die Grenze zwischen Gott und Mensch*, Kapitel II Die Theodizee als Thema christlicher Theologie und Kapitel III Die Gerechtigkeit Gottes und das menschliche Leid im Islam, Münster: Aschendorff 2009.

discourse in 1710 A.D., attempts to enquire into and give reasons why the innocent suffer are “notable features not only of the major monotheistic religions of Judaism, Christianity and Islam, but also of polytheistic faiths which include Animism, Buddhism, Hinduism, Jainism, Manichaeism and Zoroastrianism.”²⁷⁸

On second sight, the “prophetic” words show that despite the suffering of the pious, the believers and the infidels from the effects of an earthquake, God does not treat them equally. We can further expand this notion according to the existing religious interpretations. The following distinction specifies the above-mentioned categories of people—to whom God sends a message with earthquakes—and discerns earthquake causes from the religious perspective.

Accordingly, earthquakes are:

- (a) a divine punishment of unbelieving communities in the generations before Muḥammad
- (b) a blessing and a severe reprimand to the believers

²⁷⁸ Chester and Duncan, Responding to Disasters, 85.

- (c) a warning to the believers and punishment for non-believers
 - (d) portents foreshadowing the Day of Judgment
 - (e) the herald of significant events
- (a) Divine Punishment of Unbelieving Communities in the Generations before Muḥammad**
- Divine punishment is a widely accepted interpretation of earthquakes and natural disasters in general in the major monotheistic religions.²⁷⁹ This religious motive in al-Suyūtī's *Kashf al-ṣalsalah 'an waṣf al-zalzalah* refers to the people who denied God. It shares a cultural background in particular with Jewish-Christian tradition.²⁸⁰ "The unbelieving communities" in the *Qur'ān* were—in an allusion to the

²⁷⁹ D. Marshall, "Punishment Stories," *Encyclopaedia of the Qur'ān*, vol. 4, Leiden: Brill 2003, 318. Akasoy, Interpreting Earthquakes, 185. See the references to the Bible in E. Arieh, "Earthquake," *Encyclopaedia Judaica*, vol. 6, Detroit: Thomson Gale 2007, 83.

²⁸⁰ See, for example, D. Grandjean, A. Rendu et al., The Wrath of the Gods: Appraising the Meaning of Disaster, *Social Science Information* 47/2 (2008), 187–204. Chester and Duncan, Responding to Disasters, 85–95.

biblical punishment stories of Lot’s community²⁸¹ and the people in Noah’s deluge-story²⁸²—the Arab peoples of ‘Ād, who rejected the prophet Hūd,²⁸³ the people of Thamūd, who rejected the prophet Ṣāliḥ,²⁸⁴ the people who rejected the prophet Shu‘ayb,²⁸⁵ and those who did not heed Mūsā’s (Moses’) warnings.²⁸⁶ These punishment stories may generally be referred to as analogies to those who disbelieve Muhammad’s revelation.²⁸⁷

(b) Blessing and a Severe Reprimand to the Believers

²⁸¹ See the *Qur’ān* 11:77–82, 22:42. Cf. the Bible, Genesis 19:1–19:30.

²⁸² See the *Qur’ān* 11:89–91 and Sūrah 7. Cf. the Bible, Genesis 7. See the *Qur’ān* 14:19, 11:25–28.

²⁸³ See the *Qur’ān* 29:37–38, 11:89, 14:19 and al-Tha‘labī, *Lives of the Prophets*, 105–113.

²⁸⁴ See the *Qur’ān* 29:37–38, 11:89, 14:19 and al-Tha‘labī, *Lives of the Prophets*, 114–123.

²⁸⁵ See the *Qur’ān* 7:91 and al-Tha‘labī, *Lives of the Prophets*, 274–277. al-Suyūṭī, *Kashf al-ṣalṭalah*, 158. Marshall, “Punishment Stories,” 318.

²⁸⁶ See the *Qur’ān* 7:155 and al-Suyūṭī, *Kashf al-ṣalṭalah*, 160.

²⁸⁷ Akasoy, *Islamic Attitudes to Disasters*, 393.

There are controversial opinions about the interpretation of an earthquake as a blessing (*barakah*). In one of the traditions, ‘Ā’ishah (the prophet’s third and favourite wife) gives a list of prohibited actions which are punished with an earthquake. She explains that an earthquake, on the one hand, is sent to the believers as a sign of mercy (*rahmah*), blessing (*barakah*) and severe reprimand (*maw’izah*), on the other hand, it is a punishment (*nakāl*), wrath (*sukhtah*)²⁸⁸ and torture (*‘adhāb*) for unbelievers.²⁸⁹ However, al-Suyūtī (d. 911/1505) devoted a special chapter to the refutation of the view that an earthquake was a blessing. He did it by relying on the tradition of the prophet’s famous companion Ibn Mas’ūd (d. after 30/650–1).²⁹⁰ According to him, the context in which an earthquake happened and the signs that people saw as blessings were misinterpreted. However, his arguments against the interpretation of earthquakes as a

²⁸⁸ The interpretation of earthquakes as a punishment and a sign of God’s wrath is also common for the Jewish-Christian tradition. See the references to the Bible in Arieħ, “Earthquake,” 83.

²⁸⁹ al-Suyūtī, *Kashf al-ṣalṭalah*, 138.

²⁹⁰ J.-C. Vadet, “Ibn Mas’ūd,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1971, 873–875.

“blessing”²⁹¹ were contradictory and confusing rather than enlightening.

Finding no satisfactory answer in al-Suyūṭī’s attempt to refute this interpretation, we can imply that the association of an earthquake with a blessing developed probably as an analogy to the well-known perception of the plague as a “mercy”²⁹² and a “blessing,”²⁹³ which saw the status of martyr (*shahīd*) ascribed to its victims.²⁹⁴ Some

²⁹¹ al-Suyūṭī, *Kashf al-ṣalṭalah*, 144.

²⁹² Hirschler, *Erdbebenberichte*, 127–128. Shoshan and Panzac, “Wabā’,” 2–4.

²⁹³ Akasoy, *Islamic Attitudes to Disasters*, 398f.

²⁹⁴ *Shahīd* pl. *shuhadā'* (literary: “witness”) is a word often used in the sense of “martyr.” The following types of martyrs can be distinguished: (1) the “battlefield martyrs,” who undergo the special burial rites in this and in the next world and (2) the “martyrs in the next world only,” who are not accorded distinctive burial rites. To the latter are classified: (a) warriors who died due to other reasons than that of the first group; (b) ordinary persons who died violently or prematurely: murdered in service of God, killed for their beliefs, died through disease (plague, diarrhea or colic) or accident (drowning, fire, falling house or wall, women who die in

authors might have extended this view to the interpretation of earthquakes as a “blessing” and the perception of their victims as martyrs. This implication finds ground in Anna Akasoy’s article, which points out that originally martyrs were not only those killed on the battlefield, but also people who died in other incidents, like the plague, fire, and the collapse of a house or a wall,²⁹⁵ irrespective of the cause of the collapse.

(c) Warning to the Believers and Punishment for the Non-Believers

Earthquakes were interpreted as warnings to believers and punishment for non-believers for deeds that did not conform to the rules conveyed in the divine revelation and in tradition. al-Suyūṭī (d.

childbirth, the “martyrs of love”); (c) persons who died a natural death: while engaged in a meritorious act such as a pilgrimage, a journey in search of knowledge, or after leading a virtuous life. For further details see E. Kohlberg, “*Shahīd*,” *The Encyclopaedia of Islam*, vol. 9, Leiden: Brill, Online 1997, 205–207.

²⁹⁵ Akasoy, Islamic Attitudes to Disasters, 398f. Kohlberg, “*Shahīd*,” 205–208. A practical example of such case is given on p. 390.

911/1505) provided a detailed description of these deeds which people were warned against or punished for. They included fornication, alcohol consumption, playing on musical instruments, not wearing the *hijāb* (head, face or body covering), women perfuming themselves to please men other than their husbands, and usury.²⁹⁶ He supplemented the list of evil deeds by quoting al-Tirmidhī (d. 279/892)²⁹⁷ who narrated from Abū Hurayrah (d. ca. 58/678)²⁹⁸ and the prophet:

²⁹⁶ al-Suyūṭī, *Kashf al-ṣalṭalah*, 138–139.

²⁹⁷ al-Tirmidhī, al-Bukhārī’s student, was *ḥadīth* collector, famous in the first place for his *al-Jāmi‘ al-ṣahīḥ*. G. Juynboll, “al-Tirmidhī,” *The Encyclopaedia of Islam*, vol. 10, Leiden: Brill, Online 2000, 546.

²⁹⁸ Abū Hurayrah, one of the most prolific narrators of traditions from the prophet, was Muhammad’s companion. J. Robson, “Abū Hurayra,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill, Online 1960, 129.

“If the booty (*al-fay'*)²⁹⁹ becomes the thing taken by turns (*dawlan*),³⁰⁰ imamate is a matter of profit (*maghnaman*), the *zakāh* (obligatory alms tax) is a burden, one learns not for the sake of religion, a man obeys his wife and disobeys his mother, he approaches his friend and sends his father far away, it is spoken loudly in the mosques, a sinful person rules over his tribe, the vilest of them is the leader of the people, a man is respected for fear of his evil deeds, female singers and music instruments appear, and the last of this community curses the first, THEY must await red wind (*rīhan hamrā'*), earthquake (*zalzalah*), engulfment (*khasf*),³⁰¹ metamorphosis (*maskh*),³⁰²

²⁹⁹ See the detailed explanation of the term *fay'* and cf. *ghanīmah* in W. Lane, *An Arabic-English Lexicon*, vol. 6, Beirut: Librairie du Liban 1968, 2468, 2301.

³⁰⁰ This expression here means the transition of something (probably wealth) from one to another. Lane, An Arabic-English Lexicon, vol. 3, 934–935.

³⁰¹ See, for example, the use of this term when describing the engulfment (*khashf*) of Sodom and Gomorrah. Ch. Pellat, “Maskh,” *The Encyclopaedia of Islam*, vol. 6, Leiden: Brill 1991, 736–738.

and defamation (*qadhf*). These signs will follow up like a broken chain of pearls. And if it is cut, they will follow each other.”³⁰³

Another tradition, stemming from Abū Nu‘aym (d. 430/1038–9)³⁰⁴ extends al-Suyūtī’s list of immoral deeds that were punishable by disastrous events. What has rarely been noted is that its linguistic style shows similarities with that of the *malhamah* structure:

³⁰² *Maskh* (metamorphosis) is “transformation of an exterior form (*ṣūra*) into a more ugly form” as a result of “supernatural intervention—divine punishment in the majority of cases.” According to this belief, the humans have been transformed into statutes, stars or animals, like monkeys and pigs. Pellat, “*Maskh*,” 736–738.

³⁰³ al-Suyūtī, *Kashf al-ṣalṭalah*, 138–139. See al-Tirmidhī’s this tradition in chapter 38 Trials (*Abwāb al-fitan*) in al-Tirmidhī, *al-Jāmi‘ al-kabīr*, vol. 4, Bayrūt: Dār al-gharb al-islāmī 1996, 70–71.

³⁰⁴ Abū Nu‘aym was an early Muslim authority on *fiqh* (Islamic jurisprudence) and *taṣawwuf* (the Islamic science of spirituality, i.e. Ṣūfīsm) J. Pedersen, “Abū Nu‘aym al-Isfahānī,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill, Online 1954, 142–143.

“If the five [things] happen, then the five [are expected]:

If one enriches on usurious interests, there will be an engulfment and earthquake.

If the governors oppress, there will be dearth (*qaht al-matar*).

If fornication appears, deaths will increase.

If the *zakāh* (obligatory alms tax) is refused, cattle will perish.

If aggression is committed against non-Muslim wards (*ahl al-dhimmah*), the state will become theirs.³⁰⁵

According to al-Suyūtī (d. 911/1505), a similar tradition of the prophet narrated by his companion Ibn ‘Adī (d. ca 660 A.D.) continues: “If vile deeds flourish, there will be an earthquake (*al-rajfah*) [...]. If non-Muslim wards are betrayed, enemy will appear.”³⁰⁶

(d) Portents Foreshadowing the Day of Judgment

³⁰⁵ al-Suyūtī, *Kashf al-ṣalṭalah*, 139. Abu Nu‘aym, *Hilyat al-awliyā’ wa-tabaqāt al-asfiyā’*, vol. 5, al-Qāhirah: Maktabat al-khānjī 1416/1996, 199–200.

³⁰⁶ al-Suyūtī, *Kashf al-ṣalṭalah*, 139.

When the prophet was asked about Resurrection Day, he said: “the hour [of Resurrection] will not come, until the knowledge is taken away, earthquakes become numerous, the time approaches, civil strifes arise, and chaos (*harj*) prevails.”³⁰⁷ Thus the conditions of the final hour (*ashrāt al-sā‘ah*) are cataclysmic events,³⁰⁸ which are similar to those described in the bible.³⁰⁹ On that day, when the trumpet signals the approaching resurrection, “the earth and the mountains shall be lifted up and crushed with a single stroke”³¹⁰ and everything will perish. On that day God will also judge the deeds of every

³⁰⁷ al-Suyūtī, *Kashf al-ṣalṭalah*, 139. al-Tha‘labī, *Lives of the Prophets*, 17.

³⁰⁸ See more details in al-Nuwayrī, *Nihāyat al-arab*, vol. 14, 271–272.

Marshall, “Punishment Stories,” 46.

³⁰⁹ This interpretation shows similarities with the apocalyptic events depicted in the Bible, Old Testament, Ezekiel, Chapter 38:19–20 and in the final Book of the New Testament, the Revelation, Chapters 6:12–17; 8, 9, 11:19, 12, and Chapter 22, which ends with the vision of the reassurance and coming of Jesus Christ.

³¹⁰ See the *Qur’ān* 69:14.

individual³¹¹ and the non-believers and the evildoers will receive their punishments in hell.³¹²

(e) The Herald of Significant Events

It is evident that earthquakes had numerous connotations, especially in religiously minded circles. They were associated with the occurrence of certain events which carried a symbolic meaning related to significant days. For example, al-Suyūṭī (d. 911/1505) opened his chronological report of historical earthquakes with the description of earthquakes of a legendary character. These legends told about earthquakes which occurred when Qābīl (Cain) killed Hābīl (Abel),³¹³ when Ibrāhīm (Abraham) wanted to sacrifice his son,³¹⁴ and when Īsā (Jesus) was born.³¹⁵ Similarly, an earthquake that lasted for three days allegedly heralded the birth of the prophet

³¹¹ Smith, “Eschatology,” 47–48, 51.

³¹² Leemhuis, “Apocalypse,” 112–113.

³¹³ al-Suyūṭī, Kashf al-ṣalṣalah, 137.

³¹⁴ al-Suyūṭī, Kashf al-ṣalṣalah, 157.

³¹⁵ al-Suyūṭī, Kashf al-ṣalṣalah 161. al-Nuwayrī, Nihāyat al-arab, vol. 14, 276.

Muhammad.³¹⁶ As mentioned previously, these interpretations of earthquakes were subject to controversial debates.³¹⁷

4.4.3.2. Evolution of the Narrative by the Later Chroniclers

Returning to the events of the 702/1303 earthquake: in contrast to the contemporary sources, the authors of later centuries who provided additional details not found in the contemporary sources explained the cause of the earthquake from a religious perspective. The general *Qur'ānic* warning that was mentioned in *khutbah* by the contemporary chronicler Ibn al-Dawādārī (d. 736/1336) as a reminder of Resurrection Day turned into reality in a later source, like in al-Suyūtī's treatise. There he described the 702/1303 earthquake as a catastrophe (*dāhiyah*) preceding Resurrection Day. According to him for a moment people thought that Isrāfīl, the archangel, had announced the coming of the earthquake by blowing his trumpet.³¹⁸

³¹⁶ This list is not complete. See more about earthquakes heralding other significant days in al-Suyūtī, *Kashf al-ṣalṭalah*, 162f, 213. Hirschler, *Erdbebenberichte*, 122.

³¹⁷ See p. 309, 311.

³¹⁸ al-Suyūtī, *Kashf al-ṣalṭalah*, 204.

al-‘Aynī (d. 855/1451) also mentioned that people thought that living beings were going to die and that the dead were going to be resurrected.³¹⁹

al-Maqrīzī (d. 845/1442), al-‘Aynī (d. 855/1451) and al-Suyūtī (d. 911/1505) furthermore associated the cause of the earthquake with the moral corruption of social life in Mamlūk Egypt. They viewed it as a punishment for the poor moral state of the society and the lack of fear of God, which prevailed among people during the months preceding the “terrible” earthquake. Relying on the author of *al-Nuzhah*,³²⁰ al-‘Aynī (d. 855/1451) criticised the care and pride with

³¹⁹ al-‘Aynī, ‘Iqd al-jumān, vol. 4, 261.

³²⁰ Here, *Nuzhat al-nāżir fī sīrat al-Malik al-Nāṣir*, compiled by Mūsā Ibn Muḥammad Ibn Yaḥyā al-Yūsufī al-Miṣrī (676–759/1277–1358), is meant. However, the published version of his chronicle does not give these details as it only treats the years 733–738/1332–1337. See more about the author in al-Yūsufī, *Nuzhat al-nāżir fī sīrat al-Malik al-Nāṣir*, ed. by Ḥuṭayṭ, Bayrūt: ‘Ālam al-kutub 1406/1986, 42 and footnote 33, p. 267f.

which a number of fortresses were built.³²¹ Their construction and excessive decoration were accompanied by on-going festivities, during which people consumed wine.³²² Therefore, in their view, God sent the earthquake to punish them for their deeds that consisted of a luxurious way of life, women's lax behaviour, and the emirs' and other well-to-do-people's immoral conduct.³²³ al-Suyūṭī (d. 911/1505) expresses a similar attitude when reporting the earthquake, saying:

“We spent time with multiplying [things], and then a catastrophe (*qāri‘ah*) befell us making the forelock grey. The misdeeds were the basis for it, therefore it shook everyone.”³²⁴

Both al-Maqrīzī (d. 845/1442) and al-‘Aynī (d. 855/1451) expanded their narration by presenting two strange stories. In the first one, the

³²¹ al-‘Aynī, ‘Iqd al-jumān, vol. 4, 262–263. More details about the historical background related with the building of these fortresses see Hirschler, Erdbebenberichte, 135 and Little, Data on Earthquakes, 138.

³²² al-Maqrīzī, Kitāb al-sulūk, vol. 1,3, 942.

³²³ al-‘Aynī, ‘Iqd al-jumān, vol. 4, 262–263.

³²⁴ al-Suyūṭī, Kashf al-ṣalṭalah, 204.

emir Baybars Jāshankīr (d. 709/1310), a Mamlūk officer who later became Sultan,³²⁵ found the palm of a human hand with its forearm wrapped in cotton in the corner of the minaret during repairs to al-Ḥākimī mosque. It was “astonishing” (*al-amr al-‘ajīb*) to find this because the palm was “soft” and had an inscription which nobody could read and understand.³²⁶ It is difficult to understand and interpret the meaning of this story. But as it follows and, in al-Maqrīzī’s version, complements his dissatisfaction with the political and moral condition of society,³²⁷ we may see it as a criticism, as al-Maqrīzī’s story about the Mamlūk officer’s inability to understand the inscription alluded metaphorically to the latter’s inability to see his own immoral deeds and the behaviour of the Mamlūk officials in general.

³²⁵ Ch. Pellat, “Baybars II,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill 1960, 1126.

³²⁶ al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 945. al-‘Aynī, ‘Iqd al-jumān, vol. 4, 265.

³²⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 945.

In contrast, in al-‘Aynī’s version, those who found the palm are not identified. From the biographical data about these chroniclers,³²⁸ we know that al-Maqrīzī (d. 845/1442) did not have close contact with governmental circles, especially after al-‘Aynī (d. 855/1451)—who, in contrast, had close relations to a number of Sultans—replaced al-Maqrīzī as muhtasib of Cairo. This replacement even created a permanent animosity between the two chroniclers, which shows why al-Maqrīzī disliked many of the rulers, although he tried to win their favour.³²⁹ It also explains why al-Maqrīzī mentions the emir Baybars Jāshankīr in his report and al-‘Aynī does not.

Both of these chroniclers finished their story with another one in which an ordinary milk seller is trapped in his shop after it collapsed during the earthquake. Generally, the sources do not mention anything about rescuing survivors. But in this anecdote, we learn that the milk seller was rescued from under the ruins several days after the earthquake. He survived thanks to the wooden structure that

³²⁸ See also D. Little, A Comparison of al-Maqrīzī and al-‘Aynī as Historians of Contemporary Events, *Mamlūk Studies Review* 7/2 (2002), 205–215.

³²⁹ Bacharach, Circassian Mamluk Historians, 77–78.

formed a lattice above him. In the days that followed he subsisted on milk from his shop.³³⁰ In contrast to the first story, the second one highlighted, as part of earthquake narratology, the wondrous survival of an ordinary person.³³¹ By including it, al-Maqrīzī (d. 845/1442) and al-‘Aynī (d. 855/1451) probably wanted to show their optimism, emphasising that eventually God is merciful towards ordinary people.

4.5. The Disastrous Earthquake of 886/1481: Comprehensive Account of Effects and Attitudes

Another earthquake struck Old and New Cairo in 886/1481 Muḥarram/18 March 1481.³³² It was probably the most terrifying earthquake (*zalzalah hā’ilah/zalzalah muhawwilah*) to have struck

³³⁰ al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 945. al-‘Aynī, ‘Iqd al-jumān, vol. 4, 262.

³³¹ Hirschler, Erdbebenberichte, 136–137.

³³² al-Sakhāwī, *al-Dhayl al-tām*, vol. 2, 341. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 281–282. al-Suyūṭī, *Kashf al-ṣalṣalah*, 209. Ibn Iyās, *Badā’i‘*, vol. 3, 173. Ibn Ṭūlūn, *Ta’rīkh Miṣr wa-al-Shām*, vol. 1, 34. Anonymous, *al-Barākīn*, fol. 113.

these and nearby regions³³³ since the earthquake of 702/1303. Among the contemporaries who chronicled the event were al-Sakhāwī (831–902/1428–1497), ‘Abd al-Bāsiṭ (844–920/1440–1514), al-Suyūṭī (849–911/1445–1505) and Ibn Iyās (852–930/1448–1524).

This shock, similar to the 702/1303 earthquake, was accompanied by other natural phenomena, which shows that it was not only part of the narratology, but it attests a probable physical interconnection between one phenomena and another. As the chroniclers mentioned, the earthquake was accompanied by a strong wind, which blew from afternoon until midnight.³³⁴ Lasting from two³³⁵ to three *degrees* (*darajah*),³³⁶ this earthquake moved structures so strongly that the minarets and high buildings were seen to sway and undulate, producing droning sounds like that of the wind.³³⁷ al-Sakhāwī—using

³³³ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 281.

³³⁴ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 280. Ibn Iyās, *Badā’i‘*, vol. 3, 173.

³³⁵ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 281.

³³⁶ Ibn Iyās, *Badā’i‘*, vol. 3, 173. See the discussion of this term in *Chapter 4.6.1.2. Duration*, p. 396.

³³⁷ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 281. Ibn Iyās, *Badā’i‘*, vol. 3, 173.

metaphorical language, typical of the narratology of disastrous events³³⁸—noted that the earthquake was so strong that “buildings shook like trees under the wind” (*sārat al-amākin tahtazzu ka-al-shajar*).³³⁹ The chroniclers report that the shock also hit Alexandria, Byzantium (al-Rūm)³⁴⁰ and Rhodes.³⁴¹ This earthquake must have been part of the strong aftershocks of the earthquake which were also recorded as having affected the Mediterranean area in February 1481 A.D.³⁴²

Apart from this earthquake, which is the focus of this chapter, we also learn that during Ramaḍān/October–November of the same year,

³³⁸ Nünning, Krise als Erzählung und Metapher, 117–145.

³³⁹ al-Sakhāwī, al-Dhayl al-tām, vol. 2, 341.

³⁴⁰ ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2, 7, 281. According to Syrian traditionalist and jurist Ibn Ṭūlūn (880–953/1473–1546), the earth shook in al-Rūm on 18 Muḥarram/19 March. Ibn Ṭūlūn, *Ta’rīkh Miṣr wa-al-Shām*, vol. 1, 43.

³⁴¹ al-Sakhāwī, al-Dhayl al-tām, vol. 2, 342.

³⁴² See more about the seismic activities in other regions in Guidoboni and Comastri, Catalogue of Earthquakes, 766f. Ambraseys, Melville et al. (ed.), The Seismicity of Egypt, 50–51.

strong wind, thunder and lightning followed by a heavy rain destroyed several places, uprooting numerous trees in Damietta.³⁴³ The effects of the wind were much stronger there as it destroyed houses and sank numerous ships belonging to the Franks. Soon news came that a number of regions (*al-aqālīm*) and lands (*al-bilād*) were also afflicted.³⁴⁴ In fact, Emanuela Guidoboni's catalogue attests to a strong tsunami recorded on 3 May, 3 October and 17–19 December at Rhodes³⁴⁵ and an earthquake in “November 1481 or 1482” at Erznka (Eastern Turkey).³⁴⁶

Furthermore, ‘Abd al-Bāṣīṭ (d. 920/1514) also reported extreme hot weather out of season,³⁴⁷ and an extreme rise of prices (*ghalā’*)³⁴⁸ which caused dissatisfaction among the population.³⁴⁹

³⁴³ ‘Abd al-Bāṣīṭ, *Nayl al-amal*, vol. 2,7, 296–297. Ibn Iyās, *Badā’i‘*, vol. 3, 182.

³⁴⁴ ‘Abd al-Bāṣīṭ, *Nayl al-amal*, vol. 2,7, 296–297. Ibn Iyās, *Badā’i‘*, vol. 3, 182.

³⁴⁵ Guidoboni and Comastri, Catalogue of Earthquakes, 777f.

³⁴⁶ Guidoboni and Comastri, Catalogue of Earthquakes, 788f.

³⁴⁷ ‘Abd al-Bāṣīṭ, *Nayl al-amal*, vol. 2,7, 296.

4.5.1. Human Response to the Earthquake

Similar to the 702/1303 earthquake, the effects of this earthquake were thought to be “unprecedented” (*lam yu^had bi-Miṣr mithlahā min qablu*),³⁵⁰ which was a common metaphoric expression, used to show the seriousness of the event. And, like the previous earthquake, we have details of the material damage it caused.

We know that the earthquake destroyed houses and buildings,³⁵¹ but beyond that we have only implicit references to several restorations undertaken by the authorities. For example, the reports state that in the same year Sultan al-Malik al-Ashraf Abū al-Naṣr Qāytbāy al-

³⁴⁸ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 296. See the discussion of the term *ghalāḍ* in *Chapter 5.8. Case Studies of Disastrous Droughts: Causes, Effects, and Cultural Responses*, p. 557f.

³⁴⁹ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 298.

³⁵⁰ Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 100.

³⁵¹ al-Sakhāwī, *al-Dhayl al-tām*, vol. 2, 341. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 281–282.

Jarkasī (r. 872–901/1468–1496)³⁵² ordered the restoration of buildings, most likely of those damaged by the earthquake. One of the structures mentioned is the Mosque of al-Maqṣī in al-Rawḍah, known in earlier times as the Mosque of al-Fakhr,³⁵³ and as the Mosque of the Sultan after its restoration.³⁵⁴ Sultan Qāytbāy controlled the restoration work of the mosque until it was rebuilt in 888/1483–4.³⁵⁵ The restoration and the improvement of the Nilometer's basement and certain parts of it³⁵⁶ are other indirect references to damage caused by the earthquake.

³⁵² See about Sultan Qāytbāy, who, like Sultan al-Nāṣir Muḥammad, was widely acknowledged as the greatest patron of art and architecture. Behrens-Abouseif, *an-Nāṣir Muḥammad and al-Ašraf Qāytbāy*, 267, 274–279 and footnote 65, p. 83.

³⁵³ al-Fakhr must have been an army controller (*nāzir al-jaysh*) during the reign of al-Nāṣir Muḥammad Ibn Qalāwūn. Ibn Iyās, *Badā'i'*, vol. 3, 177.

³⁵⁴ Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 7, 289.

³⁵⁵ Ibn Iyās, *Badā'i'*, vol. 3, 177.

³⁵⁶ Ibn Iyās, *Badā'i'*, vol. 3, 176. Popper, *The Cairo Nilometer*, 27.

Concerning people's reaction we have general information that the earthquake terrified men and women, causing them to run out of buildings in panic: women rushed out with their faces uncovered, and some people ran out naked from bathhouses. Some even thought that the Resurrection Day (*qīyām al-sā'ah*) had come.³⁵⁷ These observations and metaphorical descriptions show the earthquake's intense effects on people and their psychological condition when facing a disaster.³⁵⁸

There is relatively little information about casualties, except for the death of the prominent supreme Ḥanafī judge, an expert of jurisprudence, Shar(a)f al-Dīn Mūsā Ibn ‘Ayyd al-Dimashqī al-Ḥanafī, born in 830/1426–7. A segment of rock that plunged down on him from the top of al-Ṣalihīyah madrasah during the earthquake killed him.³⁵⁹ Four other people were recorded to have died as well.³⁶⁰ The

³⁵⁷ al-Sakhāwī, al-Dhayl al-tām, vol. 2, 341.

³⁵⁸ See more on the psychological impact of natural disasters on people in Tucker, Natural Disasters, 215–224.

³⁵⁹ Ibn Iyās, Badā'i‘, vol. 3, 173. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2, 7, 281–282. al-Suyūtī, Kashf al-ṣalṣalah, 209.

³⁶⁰ Ibn Ṭūlūn, Ta’rīkh Miṣr wa-al-Shām, vol. 1, 34.

chroniclers mentioned that the Sultan was present at the judge's funeral, which included many attendees. The judge was then carried to the Sultan's graveyard (*turbah*) and buried there.

The chroniclers all lamented the short duration of his appointment as judge, which had lasted only fifty-eight days.³⁶¹ An “odd story” about him (*min nawādirih*) told that on the day of his death he wore new clothes which he had put on before the earthquake. While dressing, he appealed to God with a prayer: “O God, just as you have dressed me in new clothes, let me die as a martyr” (*allāhum kamā albasatnī jadīdan fa-amitni shahīdan*).³⁶² In this specific incident, the judge was ranked as a martyr (*ustushhida*)³⁶³ who died due to the collapse of the building.³⁶⁴

³⁶¹ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 281–282. Ibn Iyās, *Badā’i‘*, vol. 3, 173.

³⁶² ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 281.

³⁶³ al-Sakhāwī, *al-Dhayl al-tām*, vol. 2, 341.

³⁶⁴ See the categorisation of martyrs in footnote 294, p. 370 and the interpretation of earthquakes as blessing for the people who died in incidents, for example, due to the collapse of a structure in *Chapter 4.4.3.1*.

On this occasion, al-Sakhāwī (d. 902/1497) and al-Suyūṭī (d. 911/1505) quoted al-Shihāb al-Mansūrī's (d. 887/1482–3) verse written in *al-munsarīh* (a metric form in Arabic poetry):³⁶⁵

“On the day when the earthquake shook Old Cairo, the supreme judge of the Hanafī school died.

His life passed in honour (*sharaf*/شرف) until it was taken away by the merlons (*shuraf*/شرف).”³⁶⁶

Here the poet creates a wordplay involving the judge's name Shar(a)f al-Dīn, his personal quality of being honourable (*sharaf*)—which additionally justified the acquired status of martyr—and the portions of the building (*shuraf*) which killed him. Reporting on the 886/1481 earthquake, al-Sakhāwī (d. 902/1497) tried to show that nothing was

Earthquakes from the Religious Perspective, (b) Blessing and a Severe Reprimand to the Believers, p. 371.

³⁶⁵ W. Wright, *A Grammar of the Arabic Language*, Cambridge: Cambridge University Press 2004, 366.

³⁶⁶ al-Sakhāwī, al-Dhayl al-tām, vol. 2, 341. al-Suyūṭī, *Kashf al-ṣalsalah*, 209.

safe in the face of a disaster, and that it was better to live a modest life, and so included another verse written in *al-mutaqārib* (a metric form in Arabic poetry)³⁶⁷ on the occasion of the 702/1303 earthquake:

“The way is its reality, pass and set no great store by it, take it easy and it will be easy,

The beauty of the decorated house is worth nothing: should the earthquake shake it, nothing will remain of it.”³⁶⁸

Ibn Iyās (d. 930/1524) also reported that another prominent person, a generous and intelligent army official called al-Zaynī Abū Bakr Ibn al-Qādī ‘Abd al-Bāṣīṭ died of shock when his house shook.³⁶⁹ In conclusion, all of the chroniclers focused on the death of these prominent personalities, whom they wished to eternalise in a positive light. Their deaths inspired poets to compose verses in commemoration of them as through them they wanted to show the

³⁶⁷ Wright, A Grammar of the Arabic Language, 363.

³⁶⁸ al-Sakhāwī, al-Dhayl al-tām, vol. 2, 342. al-Suyūṭī, Kashf al-ṣalṣalah, 201.

³⁶⁹ Ibn Iyās, Badā’i‘, vol. 3, 174.

vulnerability of a human being in the face of disaster. Through this narration, the chronicles also tried to overcome the fear of death. Presenting their deaths as those of martyrs compensated for the pain, made sense of the loss and helped people cope with the effects of the disaster.

4.6. Summary: The Narrative of an Earthquake and its Constituent Elements

The reports of minor earthquakes and their effects were laconic. Only the unanimously perceived disastrous earthquakes of 702/1303 and 886/1481 were treated in more detail, as previously mentioned. These and other minor records of earthquakes had a highly standardised form of narration. Events of each year (*hawādīth*) appeared chronologically in the records of the respective year, usually continuing the report with the expression *wa-fīha* (and during it [the year]).

Some of the authors, for example, Ibn Iyās (d. 930/1524) additionally gave the evaluation of the year at the end of the report. If disastrous events had prevailed during that year, it was generally described as

being difficult or full of extreme events (*al-hawadīth wa-al-waqā'i^c ṣa'bah shadīdah*).³⁷⁰ The narrative, in this case, was of a general character noting, for example, that people had experienced a lot of misery such as decay (*fanā'*), rising of prices (*ghalā'*), corruption (*fasād*), *kharāb* (destruction), rebels (*fitan*) and wars (*hurūb/malāhim*), calamities (*shurūr/makārih*), mishaps (*khutūb*), and other terrible events (*hawādīth muz'ijah*).³⁷¹

4.6.1. *Khabar*

Concerning the content, the entry of the earthquake consisted, in the first place, of the *khabar* (news) as the main part of the information. It included, if known, the earthquake's date, time, duration, location, and intensity.

4.6.1.1. Date and Time

³⁷⁰ Ibn Iyās, *Badā'i^c*, vol. 4, 30. 'Abd al-Bāsit, *Nayl al-amal*, vol. 2,5, 376.

³⁷¹ Ibn Iyās, *Badā'i^c*, vol. 4, 79. Ibn Iyās, *Badā'i^c*, vol. 3, 69. 'Abd al-Bāsit, *Nayl al-amal*, vol. 2,6, 27, 222, 337. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 836.

The events in the chronicles were generally arranged according to the Muslim year,³⁷² month and day, which is a helpful device for us to date the earthquakes.³⁷³ However, sometimes the sources mention different days, which makes the precise dating difficult, as was the case of the 828/1425 earthquake.³⁷⁴ Additionally, the time of the day³⁷⁵ was usually recorded, for example, early in the morning, at dawn, at night or during one of the canonical prayer times.³⁷⁶ This information can be a useful tool for deducing whether people were at home or outside during the earthquake, suggesting roughly the extent of the effects on the people.

³⁷² About the term “year,” its connotations in the Arabic sources and Islamic chronological computation see Popper, *The Cairo Nilometer*, 123. Guidoboni and Ebel, *Earthquakes and Tsunamis*, 277–278.

³⁷³ Guidoboni and Ebel, *Earthquakes and Tsunamis*, 263f.

³⁷⁴ See footnote 121, p. 319.

³⁷⁵ See Arabic names of the hours in Guidoboni and Ebel, *Earthquakes and Tsunamis*, 292.

³⁷⁶ See, for example, the earthquake of 841/1438 in al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 1029.

4.6.1.2. Duration

The duration of the earthquake and the number of aftershocks also belonged to the narrative part of the *khabar*. The former was usually given in degrees (*darajāt* sing. *darajah*), which was both a time unit and a geographic unit. Its origin goes back to the astronomical measurements of the Babylonian era (the eighth century B.C.). Arab scholars subsequently evolved it further into a system of its own in which the twenty-four hours—consisting of 14,440 minutes in today's measurement of time—were equivalent to 360 degrees, arranged in the arc of a circle. Accordingly, one degree was equivalent to four minutes of our time measurement, or simply meant a short period, lasting from a minute to five minutes.³⁷⁷

In some cases, authors estimated the duration of the earthquake by mentioning the time needed to recite certain *qur'ānic sūrahs* or

³⁷⁷ Guidoboni and Ebel, Earthquakes and Tsunamis, 296. Ambraseys, Melville et al. (ed.), The Seismicity of Egypt, xvii. Lane, An Arabic-English Lexicon, vol. 3, 869.

verses.³⁷⁸ For example, Syrian chronicler al-Jazārī (d. 739/1338)³⁷⁹ reported that there was an earthquake in Egypt on 24 Ṣafar 698/30 November 1298,³⁸⁰ lasting as long as it would take to recite five verses of the *Qur’ān*.³⁸¹ In the report of the 828/1425 earthquake, al-Maqrīzī (d. 845/1442) also mentioned that the earthquake lasted a period required to read the *qur’ānic sūrah al-Ikhlāṣ* (Sūrah 112),³⁸² considered to be the third shortest in the *Qur’ān*.³⁸³

³⁷⁸ Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, xvii. Cf. with the Christian tradition Guidoboni and Ebel, *Earthquakes and Tsunamis*, 295–296. G. Schenk, *Ein Unstern bedroht Europa. Das Erdbeben von Neapel im Dezember 1456*, in *Katastrophen. Vom Untergang Pompejis bis zum Klimawandel*, ed. G. Schenk, Ostfildern: Thorbecke 2009, 70.

³⁷⁹ See about this author footnote 43, p. 271.

³⁸⁰ According to Nicholas Ambraseys, the author mistakenly wrote that this day corresponded to 5 December (Kānūn al-awwal) which was actually 1 December. Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 42. al-Jazārī, *Ta’rīkh ḥawādith al-zamān*, vol. 1, 440. Guidoboni and Comastri, *Catalogue of Earthquakes*, 331–332.

³⁸¹ al-Jazārī, *Ta’rīkh ḥawādith al-zamān*, vol. 1, 440.

³⁸² al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 690–691.

³⁸³ Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 47.

4.6.1.3. Location

Location was one of the most important constituents in the narrative of the *khabar*. Seismic activities in Egypt were generally reported happening in urban areas, as they were centres of public life where the damage was greater due to the density of buildings. It is also probable that the chroniclers had more information about the damage in the cities than rural areas because of their own place of residence. The chroniclers usually mentioned big cities like Old and New Cairo and Alexandria. However, if the earthquake was generated from a larger shock, as was the case with the 702/1303 earthquake, the authors received information about its effects on villages and cities beyond the borders of the Mamlūk realm.

4.6.1.4. Intensity

Another important constituent in the narrative of the *khabar* was the description of the earthquake's strength. As there were no technical scientific tools to measure the magnitude³⁸⁴ of the seismic wave in

³⁸⁴ The magnitude is a parameter used to describe the strength of earthquakes. It refers to the amount of energy released by an earthquake

pre-modern times,³⁸⁵ the description of the shock was an important tool to estimate and approximately reconstruct its intensity.³⁸⁶ This is achieved through (a) the terms used to describe the intensity of the earthquake, (b) words or situations portraying people's emotional

and determined by instrumental scientific observations. For instance, the Richter scale, devised in 1935 by Charles Richter, shows the magnitude of the earthquake. See details in Guidoboni and Ebel, *Earthquakes and Tsunamis*, 16. A. Robinson, *Earth Shock. Climate, Complexity and the Forces of Nature*, London: Thames and Hudson 1989, 52–53, 56. Degg and Doornkamp, *Earthquake Hazard*, 394–395.

³⁸⁵ Before the twentieth century A.D., the records on seismicity were based on descriptive reports about the intensity. Robinson, *Earth Shock*, 52-53.

³⁸⁶ The intensity is also a parameter used to describe the strength of earthquakes. In contrast to magnitude, estimation of intensity is based on people's perception of the earthquake strength and its effects on human beings and structures. Different scales of intensity exist, like for example, the Modified Mercalli scale of 1956 or the European Macroseismic Scale (EMS) 1998. Guidoboni and Ebel, *Earthquakes and Tsunamis*, 480f. Robinson, *Earth Shock*, 52–53, 56. Degg and Doornkamp, *Earthquake Hazard*, 394–395. G. Grünthal (ed.), *European Macroseismic Scale 1998*, vol. 15, Luxemburg: Européen de Géodynamique et de Séismologie 1998.

condition, and (c) depiction of material damage. All of these parameters, although subjective, help us define the earthquake's intensity.³⁸⁷

(a) Terms Describing Earthquake Intensity

The knowledge of terms used to describe earthquakes can be helpful when estimating an earthquake's intensity. These are mainly words picturing the "size of an event."³⁸⁸ Mamlūk chroniclers described light earthquakes with no damage as *khafīfah jiddan* (very light), *mahsūsah* (tangible), *khafīfah* (light), *latīfah* (light), *qalīlah* (small) (e.g. *ḥadathat bi-al-Qāhira zalzalah [...] kānat khafīfah jiddan*;³⁸⁹ *zulzilat al-Qāhirah zalzalatan mahsūsan*;³⁹⁰ *zalzalat al-ard [...] wa-kānat khafīfah*;³⁹¹ *haṣalat*

³⁸⁷ See different types of earthquake and tsunami intensity scales in Guidoboni and Ebel, *Earthquakes and Tsunamis*, 480f. Grünthal (ed.), EMS 1998.

³⁸⁸ See the theoretical discussion of role of terms and expressions describing earthquakes and people's emotional condition in Guidoboni and Ebel, *Earthquakes and Tsunamis*, 338f.

³⁸⁹ 841/1438, New Cairo: al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 1029.

³⁹⁰ 888/1483, New Cairo: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 348.

zalzalah latifah;³⁹² *zulzilat al-Qāhirah zalzalatan latifatan*;³⁹³ *zulzilat al-Qāhirah zalzālan qalīlan*).³⁹⁴

Strong earthquakes, whose destructiveness was attested unanimously, were described as *ṣa'bah* (strong), *shadīdah* (strong), *'azīmah* (great), *kubrā* (large), *shadīdah ṣa'bah* (very strong), *muhawwīlah* (terrible), *hā'ilah* (terrifying) (e.g. *zulzilat Miṣr zalzalatan ṣa'batan*;³⁹⁵ *ḥadathat/kānat zalzalah 'azīmah*;³⁹⁶ *haṣalat al-zalzalah al-kubrā*,³⁹⁷ *kānat zalzalah shadīdah ṣa'bah*,³⁹⁸ *zulzilat Miṣr zalzalatan muhawwīlatan*;³⁹⁹ *zalzalat al-ard zilzālan*;⁴⁰⁰ *kanāt zalzalah hā'ilah*).⁴⁰¹

³⁹¹ 826/1423, [probably New Cairo]: al-'Asqalānī, *Inbā' al-ghumr*, vol. 3, 309.

³⁹² 888/1483, [New Cairo]: al-Suyūṭī, *Kashf al-ṣalṣalah*, 210.

³⁹³ 826/1423, New Cairo: 'Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 142.

³⁹⁴ 787/1385, Old and New Cairo: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,2, 534.

³⁹⁵ 886/1481, Old and New Cairo: al-Suyūṭī, *Kashf al-ṣalṣalah*, 209.

³⁹⁶ 702/1303, Egypt: Baybars al-Manṣūrī, *Kitāb al-tuḥfah*, 173. al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 57. Abū al-Fidā', al-Mukhtaṣar, vol. 4, 50.

³⁹⁷ 702/1303, Egypt: al-Suyūṭī, *Kawkab al-Rawdah*, 96.

³⁹⁸ 863/1458, Syria, New Cairo: Ibn Iyās, *Badā'i'*, vol. 2, 350.

³⁹⁹ 828/1425, Egypt: al-Suyūṭī, *Kashf al-ṣalṣalah*, 208.

In addition, earthquake intensity can be also deduced through the descriptions of the noise. In particular, strong earthquakes were reported to be accompanied by loud noise.⁴⁰² However, this way of measuring the intensity has a subjective character because people could perceive and define the same event differently.⁴⁰³ As was mentioned earlier in this chapter, ‘Abd al-Bāsiṭ (d. 920/1514) estimated the earthquake of 891/1486 to be light (*zalzalah latīfah*),⁴⁰⁴ whereas al-Sakhāwī (d. 902/1497) called it terrible (*zalzalah hāfiyah*).⁴⁰⁵ These accounts are not necessarily incompatible, but reflect different perceptions of the same event. Among other reasons,

⁴⁰⁰ 702/1303, Egypt: Ibn al-Dawādārī, *Kanz al-durar*, vol. 9, 100.

⁴⁰¹ 886/1481, Egypt: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 281.

⁴⁰² See, for example, earthquakes of 702/1303: Mufaddal Ibn Abī al-Faḍā’il, *al-Nahj*, vol. 3, 592 and 886/1481: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 281. Ibn Iyās, *Badā’i‘*, vol. 3, 173.

⁴⁰³ Guidoboni and Ebel, *Earthquakes and Tsunamis*, 339.

⁴⁰⁴ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,8, 42. See footnote 125, p. 321.

⁴⁰⁵ al-Sakhāwī, *al-Dhayl al-tām*, vol. 2, 406. See footnote 125, p. 321.

different perceptions may depend on whether the author was close or far away from the location of the seismic wave and its effects.

(b) Words or Situations Portraying People's Emotional Condition

Our knowledge about the people's emotional condition is very limited. Only in the case of strong earthquakes do authors describe them as disturbing (*muz'ijah*) or embarrassing (*muhrījah*)⁴⁰⁶ to express fear, shock, panic and surprise. In addition to these expressions, situations, picturing women running out uncovered, men rushing out naked from bathrooms, and people expectant of the coming of Resurrection Day, also indicate the intensity of earthquakes.⁴⁰⁷ However, such information also depends on the eloquence of the author. Mamlūk chroniclers used these rhetorical devices to depict people's attitudes, especially during disastrous earthquakes. They were rarely implied but they were not exaggerations and they showed the prevalent emotional state of great fear on facing a violent earthquake.

⁴⁰⁶ 702/1303, Egypt: al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 57. 744/1344, Syria, [Egypt]: Ibn Ḥabīb, *Tadhkirah*, vol. 3, 58.

⁴⁰⁷ Cf. similar descriptions in Schenk, *Ein Unstern bedroht Europa*, 67f.

(c) Depiction of the Material Damage

The narration about the extent of the material damage to the environment or on the surroundings because of the seismic wave or a tsunami (e.g. flooding of the coastal and river areas) took a central position in the narrative of the *khabar* of both the earlier and later chroniclers. This refers especially to the description of the damage to buildings with a religious function (e.g. mosques, minarets and schools) or other places of importance (e.g. a lighthouse, markets, city walls and citadels), which were of significance for social and religious life and political stability.

4.6.2. Narrative Complementation of the *Khabar*

Early Mamlūk scholars like Baybars al-Manṣūrī (d. 725/1325), al-Nuwayrī (d. 733/1333), Ibn al-Dawādārī (d. 736/1336) and Mufaddal Ibn Abī al-Fadā'il (d. after 759/1357) meticulously recorded occurrences of earthquakes as a reminder to future generations. Occasionally, when the earthquake left a strong impact on the people, as was the case of the unanimously perceived disastrous earthquakes, the narrative of the *khabar* was complemented by interpretative views (*anzār*) about the causes of earthquakes and people's reactions.

Particularly in connection to the 702/1303 earthquake, the above mentioned chroniclers offered their readers a spectrum of interpretations (in particular, physical and fictional) discussed in detail in Part I of this thesis, to complement the historical *khabar*. With this inclusion, the chroniclers emphasised the plurality of perceptions and interpretations, and at the same time, left space for individual reflections and re-interpretations. Moreover, this approach shows that their references to the earthquake interpretations belonged to the narratology of disastrous earthquakes in the historiographic genre.

Although they did not give any specific details about the behaviour of the people involved in the disaster—except for general descriptions of the prevailing terror among them and their attitudes—their stories and poems honed in on the effects of the earthquake on a certain fictional or historical persona who metaphorically represented the whole. They thus complemented the pure facts of the *khabar* through literary devices, which were important elements of the narration.

In particular, the retrospective reports of later chroniclers included extraordinary stories or anecdotes (*nawādir*), poetic and prose forms

(*nazm wa-nathr*),⁴⁰⁸ in which people and their environment took centre stage.⁴⁰⁹ Such treatment of earthquakes was differentiated completely from the discussion of earthquakes as outlined in Part I. The focus on nature and natural phenomena as normal “marvellous oddities” which were omnipresent in the narrative there, shifted in the historiographic context of Part II to the people involved in and facing the catastrophe.

Apart from these devices, which elucidated interpretations of earthquakes, the narrative complement of the *khabar* made it possible to discern the chroniclers’ personal views and attitudes to it. The comparative analysis of their reports and that of the contemporaries showed a further evolution of the narrative, in particular by the chroniclers, who reported these events retrospectively. The authors of the later period usually linked the cause of the earthquake to the divine source. The supporters of this perspective, such as the early

⁴⁰⁸ See the theoretical discussion of these terms in al-Qalqashandī, *Kitāb ṣubḥ al-aṣḥā*, vol. 1, al-Qāhirah: Dār al-kutub al-miṣrīyah 1340/1922, 58f.

⁴⁰⁹ See more on earthquakes as motives in the poems of Arab poets in Tāhir, *Nuṣūṣ ‘arabiyyah*, 75f.

Mamlūk chronicler al-Yūsufī (d. 759/1358) and those who shared his view during the later centuries, like al-‘Aynī (d. 855/1451) and al-Maqrīzī (d. 845/1442), saw the disaster, in the first place, as a punishment of the rulers and their followers for their misdeeds. In the second place, it was also a warning of the need to repent. In very specific contexts, as in the case of the 886/1481 earthquake, the death of the prominent judge was equated with the death of the martyr, which is equal to the blessing of God’s pious servant. Finally, the destructiveness of these earthquakes evoked associations of the coming Resurrection and Judgment Day. In the case of an earthquake, one of the general recommendations was to pray and follow other prescribed regulations which would prevent the recurrence of similar earthquakes in the future. The logical outcome of this normative attitude was to lead a life conforming to the rules of divine revelation and tradition.

Pragmatic reactions like fleeing, spending nights outside, putting up tents were also reported in the narrative complement to the *khabar*. This kind of attitude in the face of a disaster is common to people fearing for their lives, regardless of their culture. The authors also

included in the narrative complement details about the reconstruction process. They emphasised in particular the authorities' readiness to restore the structures of religious importance, which implied the concern of the ruling elites about stability and their legitimisation. For this purpose, government sent representatives to the destroyed cities to assess the situation on the spot. Their task was to evaluate how many buildings were damaged and how much money was necessary for repairs which was a simple pragmatic calculation. Except for the funding of big projects, like the restoration of mosques and schools, the available historiographic sources do not give information about how the homeless lived in the aftermath of the catastrophe and how they restored their houses, which is the main drawback of their material.

We can conclude that the experience of the disastrous earthquakes by contemporaries and non-contemporaries and their narration in the *khabar* and its complementary part reveal the cultural way of perceiving and coping with the disaster. Through the narrative, the chroniclers saved the memoria of the catastrophe—at least from the view of those who eternalised them in the history. In this way, the experience and

knowledge of the disaster from those in the distant past were narrated to the next generations, making them a part of the common cultural thought. Therefore, as Bernd Radtke has defined it:

“Der Welthistoriker schöpft seine Kenntnis über die zu beschreibende Welt und Weltgeschichte aus zwei Erkenntnisquellen: aus der literarischen Tradition und aus der persönlichen Erfahrung.”⁴¹⁰

Thus, the narrative was not only of practical use as it transported knowledge about how previous generations coped with disasters but it allowed the later authors to reflect those past events from their individual perspective and the perspective of their time.

⁴¹⁰ B. Radtke, Das Wirklichkeitsverständnis islamischer Universalhistoriker, *Islam* 62 (1985), 65.

CHAPTER 5

EXCESSIVE FLOODS AND DISASTROUS DROUGHTS

5.1. Introduction

This chapter examines excessive floods and disastrous droughts in Mamlūk Egypt caused by the extreme fluctuations in the level of the Nile. As not every irregularity in the Nile's rise with its benign effects and benefits for irrigation led to a catastrophe, it focuses only on those “water-related extremes: floods and droughts”¹ which had a disastrous impact on Mamlūk society. Due to the lack of systematic studies of these disasters²—as opposed to the earthquake research—

¹ Brázdil and Kundzewicz, Historical Hydrology, 733.

² See references to the secondary literature on the nature of the Nile in footnote 42, p. 32 and basic studies on fluctuations of the Nile, which give statistical information on historical low and high Nile floods in A. Sāmī, *Taqwīm al-Nīl*, vol. 2, al-Qāhirah: Maṭba‘at al-amīriyah 1334/1916, 151–251. ‘U. Ṭusūn, *Mémoire sur l'histoire du Nil*, vol. 1-3, Le Caire: Institut d’Egypte 1925. Popper, The Cairo Nilometer, 165f. Hassan, Extreme Nile Floods, 101–112. Rh. Fairbridge, The Nile Floods as a Global Climatic/Solar Proxy, in *Climatic Changes on a Yearly to Millennial Basis: Geological*,

this chapter also offers a long-term analysis of their frequency and severity based on the historical hydrological evidence.³

The purpose is to show the nature and impact of the Nile floods in Mamlūk Egypt, to address the consequences, both direct and indirect, and to assess their role in society. The analysis of the hydrological extremes (excessive floods and hydrological droughts)⁴ in Mamlūk history and various aspects of preparedness and responses to them will lead to a general assumption about how Mamlūk authorities and

Historical and Instrumental Records, ed. N. Mörner and W. Karlén, Dordrecht: Reidel Publishing 1984, 185. In addition, Qāsim ‘Abduh Qāsim’s two studies on the Nile and Mamlūk society provide sporadic information on Nile-related disasters. ‘A. Qāsim, *al-Nil wa-al-mujtama‘ fī ‘asr salāṭin al-mamālik*, al-Qāhirah: Dār al-ma‘ārif 1978, 129–138. Qāsim, ‘Asr salāṭin al-mamālik, 167–174.

³ See the definition and demarcation of historical hydrology, research methods and sources presented earlier in footnotes 12, p. 260, footnote 7, p. 413, *Chapter 3.2. Common Primary Sources and Methods of Research*, 261f. and *Chapter 5.2. Methods and Sources of Research*, p. 413f. Cf. footnote 6, p. 257.

⁴ Brázdil and Kundzewicz, *Historical Hydrology*, 735.

ordinary people dealt with them on a daily basis. This chapter will also provide an answer to the question of whether we can consider Mamlūk Egypt to be a culture of Nile-induced disasters⁵ that is, a culture that learned from the experience of disasters triggered by the Nile and which developed strategies to survive and adapt to these reoccurring anomalies or “oddities,” as the sources call them.⁶

Thus, to answer these questions, the analysis of excessive floods and droughts alone is not enough. In this respect, after introducing the specific methods and sources of research, I will present the traditional background knowledge about the Nile’s nature and its role and significance in Mamlūk society. This thematic correlation of different aspects of culture, tradition and history about the Nile blends insights from cosmography, astro-meteorology and history, and presents it all from a socio-cultural perspective.

⁵ I have coined this term in analogy to Greg Bankoff’s concept of “cultures of disaster.” See p. 52.

⁶ See more in *Chapter 5.4. “Oddities of the Nile” as Constituent Parts of the Narration in the Khabar*, p. 456f.

5.2. Methods and Sources of Research

5.2.1. Hydrological Documentary Evidence

Similar to the research on earthquakes, the basic sources which help to reconstruct the history of disastrous floods and droughts in Mamlūk Egypt are essentially the same. As presented in *Chapter 3.2. Common Primary Sources and Methods of Research*, this is, in the first place, the historical documentary evidence⁷ recorded in Mamlūk

⁷ In contrast to paleohydrological—that is physical, not human evidence stemming from “natural archives”—(see more on paleohydrology in V. Baker, Paleoflood Hydrology: Origin, Progress, Prospects, *Geomorphology* 101 /1 (2008). Brázdil, Kundzewicz et al., Flood Risk in Europe, 742)—historical documentary evidence includes all kinds of manmade sources which convey direct or indirect data about floods. These are narrative written sources, presented earlier in footnote 6, p. 257, like annals and chronicles, visual daily weather records, parish registers, personal correspondence, special prints, official economic records, newspapers, pictorial documentation, stall-keepers’ and market songs, scientific papers, epigraphic sources and early instrumental records. Brázdil, Kundzewicz et al., Flood Risk in Europe, 742–747.

annals and chronicles.⁸ In addition to the annals and chronicles treating disasters in general, there are also specific books about Nile-induced disasters, which were presented in *Chapter 3.2.1.2. Other Historical and Non-Historical Sources*.⁹ The principal method¹⁰ in the study of these records is also the comparative analysis of disasters reported mainly by contemporaries.

5.2.2. Instrumental Evidence

Apart from the historical narratives in the chronicles, “instrumental data,” provided by the measurements using the Nilometer (*Miqyās al-Nil*)¹¹—which are useful statistic tools for ascertaining the level of the

⁸ Similar to the research on earthquakes during the Mamlūk period, annals and chronicles are the major source for the analysis of excessive floods and disastrous droughts. See the list of chroniclers and their works in *Chapter 3.2.1.1. Annals and Local Chronicles*, p. 271f.

⁹ See p. 277f. and additional primary sources about the Nile’s nature in *Chapter 5.2.3. Other Literary Sources*, p. 422f.

¹⁰ See the details of common research methods, p. 261f.

¹¹ *Miqyās al-Nil* refers both to the gauge, which measured the Nile’s rise, and to the whole structure (*dār al-miqyās*) where it was positioned in the island

Nile in a specific year—render additional information about anomalous Nile floods. Despite some minor problems of inaccuracy,¹² the existence of this method in the history of Egypt¹³ slightly distinguishes the study of the Nile from the European methods of

of al-Rawdah. (al-Suyūṭī, *Kawkab al-Rawdah*, 146, 148. al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 176.) See additionally the history of the Nilometer in Popper, *The Cairo Nilometer*, 5f. O. Meinardus, Nilometer Readings according to a 13th Century Coptic Source, *Oriens Christianus* 62 (1978), 169–182. Mahmoud Bey, *Le système métrique actuel d’Égypte. Les nilomètres anciens et modernes et les antiques coudées d’Égypte*, in *The Cairo Nilometer: Texts and Studies*, ed. F. Sezgin, Frankfurt am Main: Institute for the History of Arabic-Islamic Science 2001, 1–45. E. Fagnan, *Observations sur les coudées du Mekyas*, in *The Cairo Nilometer*, 45–62. W. Reiss, *Der Nilometer bei Cairo*, in *The Cairo Nilomete*, 73–79. F. Richards, *Nilometer on Roda Island*, in *The Cairo Nilometer*, 80–88. W. Gaston, *Une restauration du nilomètre de l’île de Rawda sous Mutawakkil (247/861)*, in *The Cairo Nilometer*, 84–89. Ghaleb Bey and Kamel Osman, *La coudée nilométrique*, in *The Cairo Nilometer*, 89–113. See the image of the Nilometer in Oestigaard, Water, Culture and Identity, 156.

¹² Hurst, *The Nile*, 258. See the discussion of this issue, p. 421f.

¹³ See *Chapter 5.5.1. “The Good News” (al-Bishārah)*, p. 460f.

hydrological research, which generally classifies the period before the nineteenth and twentieth century A.D. as the pre-instrumental period.¹⁴

Some Mamlūk historians, Muhyī al-Dīn Ibn ‘Abd al-Zāhir (620–692/1233–1293),¹⁵ like Ibn al-Dawādārī (687–736/1288–1336),¹⁶ al-Maqrīzī (766–845/1364–1442),¹⁷ Ibn Taghrī Bardī (812–874/1410–

¹⁴ Brázdil and Kundzewicz, *Historical Hydrology*, 734.

¹⁵ See about this historian footnote 25, p. 264. Muhyī al-Dīn Ibn ‘Abd al-Zāhir integrated the instrumental data into the chronology of monthly events.

¹⁶ Ibn al-Dawādārī was one of the early Mamlūk chroniclers who collated and presented the Nile’s minimum and maximum height systematically in the beginning of each annual report. His statistical data covered the period between 649/1251 and 735/1334, with the exception of some years (622/1225, 694–720/1294–1320, 731/1330 and 733/1332), which were missing for unknown reasons.

¹⁷ al-Maqrīzī, like Muhyī al-Dīn Ibn ‘Abd al-Zāhir, included the information on instrumental data into the chronology of monthly events. This method is not practical for the readers interested in the data, as they have to read the whole report in order to find it in the text. However, al-Maqrīzī’s records are

1470),¹⁸ ʻAbd al-Bāṣīṭ (844–920/1440–1514),¹⁹ and Ibn Iyās (ca. 852–930/1448–1524)²⁰ included in the narrative of the *khabar* complete or partial evidence of the Nile’s lowest level—the so-called “old water” (*al-mā’ al-qadīm*),²¹ termed also “the bottom” (*al-qā’*)²² or “the

more precise because he also gave the Coptic and corresponding Muslim dates, on which the minimum and the maximum levels were measured.

¹⁸ Ibn Taghrī Bardi’s statistics of the Nile for the period 641–871/1243–1467 can be taken from his chronicle *al-Nujūm al-zāhirah fī mulūk Miṣr wa-al-Qāhirah*, and from his other chronicle *Hawādīth al-duhūr*, in which he gives the annual minimum and maximum levels of the river without specifying the dates in the end of the annual report.

¹⁹ ʻAbd al-Bāṣīṭ followed al-Maqrīzī’s pattern of documenting, though he did not record the measures systematically.

²⁰ Ibn Iyās also followed al-Maqrīzī’s pattern of documenting, without recording the measures systematically.

²¹ See, for example, the chronicle of Ibn al-Dawādārī who usually opens his annual reports by introducing the lowest and the maximum levels for that year as “*al-mā’ al-qadīm*” and “*mablagh al-ziyādah*.” Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 94.

basis” (*al-qā‘idah*)²³—and the highest “limit of the rise” (*mablagh al-ziyādah/nihāyat al-fayḍān/nihāyat al-Nīl/intihā’ ziyādat al-Nīl*)—hereafter called the minimum and the maximum. The gauge of the Nilometer,²⁴ which had lines indicating the height in cubits (*dhirā‘* pl.

²² al-Maqrīzī explains that “*al-qā‘*” (the bottom) is the old water (*al-qā‘ wa-huwa al-mā‘ al-qadīm*). al-Maqrīzī, *Kitāb al-sulūk li-ma‘rifat duwal al-mulūk*, ed. by S. ‘Āshūr, vol. 3,3, al-Qāhirah: Maṭba‘at dār al-kutub 1971, 1019.

²³ al-Taghrī Bardī explains that “*al-qā‘idah*” (the basis) is the old water [which remained in the well of the Nilometer] to which the new water flows” (*al-qā‘idah a‘nī al-mā‘ al-qadīm wa-mā uḍīfa ilayhi min al-mā‘ al-jadīd*).

(Ibn Taghrī Bardī, *Hawadith al-duhūr fī madā al-ayyām wa-al-shuhūr*, ed. by M. ‘Izz al-Dīn, vol. 2, Bayrūt: ‘Ālam al-kutub 1410/1990, 492. Ibn Taghrī Bardī, *Hawadith al-duhūr fī madā al-ayyām wa al-shuhūr*, ed. by M. ‘Izz al-Dīn, vol. 1, Bayrūt: ‘Ālam al-kutub 1410/1990, 60.) In modern secondary sources, the minimum is also called *al-tahāriq* (Sāmī, *Taqwīm al-Nīl*, vol. 2). See more on the discussion of these terms, which are used synonymously, in Popper, *The Cairo Nilometer*, 64.

²⁴ See the sketch of the Nilometer gauge in Popper, *The Cairo Nilometer*, p.

adhru)²⁵ and fingers *iṣbā'* pl. *aṣābi'*,²⁶ measured these levels. Other historians like the early Mamlūk chroniclers Baybars al-Manṣūrī (d.

²⁵ Cubits of varying number and size for measurement were used in different regions and periods. See their names and definitions in Popper, The Cairo Nilometer, 102. The gauge of the Nilometer during the Mamlūk period consisted of composite scales. Until the height of twelve cubits it was divided into cubits of twenty-eight fingers/digits (*iṣbā'* pl. *aṣābi'*) (al-Mas'ūdī, *Murūj al-dhahab wa-ma'ādin al-jawhar*, vol. 2, Bayrūt: al-Jami'ah al-lubnāniyah 1966, 71. al-Qazwīnī, 'Ajā'ib al-makhlūqāt, 176. al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, ed. by L. Muṣṭafā, al-Qāhirah: Dār al-kutub wa-al-wathā'iq al-qawmiyah 2006, 48. al-Suyūṭī, Kawkab al-Rawḍah, 128. al-Maqrīzī, al-Khiṭāṭ, vol. 1, 157). Here each cubit equalled 0,539m. (Popper, The Cairo Nilometer, 41, 102, 106.) The cubit above the height of twelve cubits consisted of twenty-four fingers/digits, (al-Mas'ūdī, *Murūj*, vol. 2, 71. al-Qazwīnī, 'Ajā'ib al-makhlūqāt, 176. al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, 48. al-Suyūṭī, Kawkab al-Rawḍah, 128. al-Maqrīzī, al-Khiṭāṭ, vol. 1, 157. Popper, The Cairo Nilometer, 41, 102, 106). Here each cubit equalled 0,462m. Popper, The Cairo Nilometer, 102.

²⁶ Respectively, one finger equalled in the above-described composite scale to 0,0192m. Popper, The Cairo Nilometer, 102.

725/1325) and al-Nuwayrī (d. 733/1333) either did not mention this information at all or recorded it unsystematically.

Among the listed historians, Ibn Taghrī Bardī's records give the fullest picture of the Nile's minimum and maximum phases. He collated this information systematically at the end of the annual records, i.e. after the necrology of important people, under the heading "Nile-related Affairs of this Year" (*Amr al-Nil fī hādhīhi al-sanah*).²⁷ Ibn Taghrī Bardī's data served as a basis for several studies on the Nile's annual rise²⁸ which offer reviews of the instrumental data covering the period from the advent of Islam until the twentieth century A.D.

²⁷ See an example in Ibn Taghrī Bardī, *al-Nujūm al-zāhirah fī mulūk Miṣr wa-al-Qāhirah*, vol. 14, Bayrūt: Dār al-kutub al-‘ilmīyah 1413/1992, 372; Ibn Taghrī Bardī, Ḥawadith al-duhūr, vol. 1, 60. al-Yūsufī followed the same system in *Nuzhat al-nāzir*, 159.

²⁸ See instrumental data on the Nile's annual minimum and maximum levels, drawn mainly from Ibn Taghrī Bardī's chronicle *al-Nujūm al-zāhirah* and other chroniclers: Sāmī, *Taqwīm al-Nil*, vol. 2, 366–411; Ṭusūn, Mémoire sur l'histoire du Nil. Popper, The Cairo Nilometer, 165f. Fairbridge, The Nile Floods, 185, and Hassan, Extreme Nile Floods, 101–112.

However, in some cases we should treat these statistic instrumental data with caution. A comparative analysis of them shows that the chroniclers did not always provide identical figures for the year's statistics. Occasional discrepancies were due to errors in dating and the misreading of certain Arabic number names,²⁹ which might have occurred in the process of copying.³⁰

In isolation the instrumental evidence reveals only qualitative information, which cannot show the impact of the floods on society. As I stated previously, disasters are social constructs, and not every environmental hazard, in this case the Nile's excessive rise or extreme shortage, had a disastrous impact. This means that instrumental data is a complementary evidence for the reconstruction of the irregularities of the Nile: the knowledge of levels alone cannot provide a full picture of the Nile's impact during a specific year.

²⁹ William Popper explains main reasons for the existing variations, like for example, the confusion and misspelling of the Arabic written forms of figures “seven” and “nine,” when carelessly written. Popper, *The Cairo Nilometer*, 154–155, 164.

³⁰ Popper, *The Cairo Nilometer*, 92.

These pure statistical figures acquire sense only alongside the records of narrative sources. Furthermore, as I will show later, the instrumental data is not absolute because the same level of the Nile had different meanings throughout the centuries due to various reasons.

5.2.3. Other Literary Sources

For a better understanding of the Nile's nature, I consulted a number of other Mamlūk literary sources such as astro-meteorological *malḥamah*,³¹ ‘ajā’ib wa-gharā’ib genre,³² and topographic works.

These literary sources are:

1. Shihāb al-Dīn Ibn al-‘Imād al-Aqfahsī’s (d. 808/1406)³³ *Kitāb akhbār Nīl Miṣr*³⁴

³¹ See the discussion of this genre in *Chapter 1 Natural Disasters in Astro-meteorological Malḥamah Handbooks*, p. 53f.

³² See the details on the major characteristics of this genre in *Chapter 2 Natural Disasters in Cosmographic Works: Arabic Literary Genre of ‘Ajā’ib wa-Gharā’ib*, p. 146f.

2. al-Maqrīzī's (d. 845/1442) *Khiṭāṭ*³⁵
 3. Jalāl al-Dīn al-Mahallī's (d. 864/1459)³⁶ unpublished manuscript
*Mabdā' al-Nīl 'alā al-tahrīr*³⁷
 4. Badr al-Dīn al-Bulqīnī's (probably after d. 868/1464)³⁸ unpublished manuscript *al-Nīl al-rā'iḍ fī al-Nīl al-zā'iḍ*³⁹ and
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³³ Ibn al-‘Imād al-Aqfahsī was a prominent Shāfi‘ī jurist of the Mamlūk period. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 15.

³⁴ al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*.

³⁵ al-Maqrīzī, *al-Khiṭāṭ*, vol. 4,1–4,2.

³⁶ Jalāl al-Dīn al-Mahallī was an Egyptian scholar, known above all as co-author of the *Qur’ān* commentary *Tafsīr al-Jalālayn*, which was completed by his pupil, the famous Jalāl al-Dīn al-Suyūṭī (849–911/1445–1505). C. Brockelmann, *Geschichte der Arabischen Literatur*. Zweiter Supplementband, Leiden: Brill 1938, 140. Ch. Pellat, “al-Mahallī,” *The Encyclopaedia of Islam*, vol. 5, Leiden: Brill 1986, 1223.

³⁷ Jalāl al-Dīn al-Mahallī, *Mabdā' al-Nīl 'alā al-tahrīr*, Egyptian National Library, Ms. J 381 (Microfilm 45847).

³⁸ We have little information about the identity of Badr al-Dīn al-Bulqīnī. We find this name in al-Suyūṭī's *Husn* among the names of judges who ruled during his lifetime. He is probably the son of the chief judge [in Damascus] Sheikh Jalāl al-Dīn al-Bulqīnī (d. 868/1464). (al-Suyūṭī, *Husn* al-

5. al-Manūfi's (d. 931/1525)⁴⁰ unpublished manuscript *al-Fayd al-madīd fī akhbār al-Nīl al-sa'īd*.⁴¹

5.3. The Nature of the Nile

Before passing to the analysis of the Nile's disastrous impact on Mamlūk society, I will present background knowledge about the Nile's nature, role and significance, as the population of Egypt has been uniquely dependent on it. The Nile—one of the “wonders of Egypt”⁴²—brought huge amounts of water enriched with silt,⁴³ which

muḥāḍarah, vol. 2, 175, 174.) Carl Brockelmann provides information only about the Sheikh. Brockelmann, Geschichte, zweiter Supplementband, 114.

³⁹ Badr al-Dīn al-Bulqīnī, *al-Nīl al-rā'i d fī al-Nīl al-zā'i d*, Egyptian National Library, Ms. J 380 (Mircorfilm 45844), copied 1342/1923, 9 fols.

⁴⁰ al-Manūfi was judge in Cairo. Brockelmann, Geschichte, vol. 2, 295.

⁴¹ al-Manūfi, *al-Fayd al-madīd fī akhbār al-Nīl al-sa'īd*, Egyptian National Library, Ms. J429 (Microfilm 45762), copied 988/1580, 30 fols. M. L'abbe Bargès published several chapters of the original text with the French translation in three volumes of *Journal Asiatique*: al-Manūfi, “*Extrait d'un manuscrit arabe intitulé Kitāb al-fayd al-madīd fī akhbār al-Nīl al-sa'īd. Les sources du Nil*,” vol. 3, 97–164, vol. 7. 485–521, vol. 9, 101–131.

⁴² al-Qazwīnī, ‘Ajā'ib al-makhlūqāt, 175.

was necessary, firstly, for crop cultivation and people's survival, and secondly, for Egypt's prosperity (*tharwah*) and welfare (*maṣlahah*).⁴⁴ This fact completely justifies the attribute of "the Blessed" (*al-Nīl al-mubārak*),⁴⁵ so often given to the river. The Nile was also called⁴⁶ in

⁴³ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 164. R. Pankhurst, Ethiopia's Alleged Control of the Nile, in *The Nile. Histories, Cultures, Myths*, ed. H. Erlich and G. Israel, Colorado: Lynne Rienner 2000, 25.

⁴⁴ al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 11. H. Erlich and G. Israel, Introduction, in *The Nile. Histories, Cultures, Myths*, ed. H. Erlich and G. Israel, Colorado: Lynne Rienner 2000, 2. Larsen, The Nature of the Nile, 20–27. S. Awulachew et al. (ed.), *The Nile River Basin*.

⁴⁵ J. Kramers, "Nīl," *The Encyclopaedia of Islam*, vol. 8, Brill: Leiden 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.

⁴⁶ See the classical background of the history of the Nile's name in Oestigaard, Water, Culture and Identity, 142–144. A. Nazmi, The Nile River in Muslim Geographical Sources, *Studia Arabistyczne i Islamistyczne* 12/2004 (2006), 34.

the Arabic sources “the Sea” (*al-Bahr*) because of its “wideness” (*istibhār*),⁴⁷ “the Flood” (*al-Fayd*),⁴⁸ and the “Believer” (*al-mu’min*).⁴⁹

⁴⁷ al-Mas‘ūdī, *Murūj*, vol. 2, 67. al-Suyūtī, *Kawkab al-Rawdah*, 114. Jalāl al-Dīn al-Mahallī, *Mabdā’ al-Nil*, fol. 11. Ibn Iyās, *Nashq al-azhār*, fol. 220b. al-Manūfī, *al-Fayd*, fol. 20. al-Manūfī, Extrait d’un manuscrit arabe intitulé *Kitāb al-fayd al-madīd fī akhbār al-Nil al-sa‘īd*. Le Livre du Don Abondant, *Journal Asiatique* 7 (Juin 1846), 512. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 133. Nazmi, The Nile River, 28–54.

⁴⁸ The Nile was called *al-Fayd* (“the Flood”) as an allusion to the annual inundation. Kramers, “Nil,” 37–43.

⁴⁹ The term *al-mu’min* refers both to the “believer(s)” and to one of the names of God in the *Qur’ān* 59:23, which implies “someone who protects, gives safety.” (J. Jansen, “Mu’min,” *The Encyclopaedia of Islam*, vol. 7, Leiden: Brill 1993, 554–555.) In association with the positive role of “believers” as grateful members of the Islamic society and God’s function as all protecting, Ibn al-Qutaybah (d. 276/889), Arab theologian, judge and writer of *adab* during the ‘Abbāsid period, mentioned that the Nile and the Euphrates were associated with the “believers” (*al-mu’minūn*) for their usefulness. In contrast, the Tigris and the river of Balkh were associated metaphorically with the negative connotation of useless “infidel” (*al-kāfirūn*) because these rivers, according to him, could not irrigate the lands as well

Because Egypt depended on the Nile, it has been a source of interest since prerecorded times. Its history has a long tradition beginning in ancient Egypt and reflected later in Greek, Hellenistic, Roman⁵⁰ and Arab cultures. Mamlūk authors were well acquainted with ancient knowledge about the Nile, which they copied almost verbatim from the works of their predecessors.

The spectrum of topics which occupied the Mamlūk authors' attention involved, as briefly summarised in al-Maqrīzī's *Khiṭāṭ*, the exaggerated "glorification" (*madh*) of the remoteness of its source (*bu'*^d *manba'ihi*) and the all-engulfing power of its floods (*ghumūratihī*).⁵¹ These are, indeed, the main topics with which Mamlūk writers aimed to

as the Nile and the Euphrates. al-Suyūṭī, *Kawkab al-Rawdah*, 116. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 133.

⁵⁰ B. Arbel, Renaissance Geographical Literature and the Nile, in *The Nile. Histories, Cultures, Myths*, ed. H. Erlich and G. Israel, Colorado: Lynne Rienner 2000, 105. R. French, The Natural History of the Nile, in *Ancient Natural History. Histories of Nature*, London: Routledge 1994, 111f.

⁵¹ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 164f.

emphasise in numerous accounts the uniqueness of the Nile.⁵² In particular, mythical speculations about its source and the cause of its periodic rise and decline ascribed an almost enigmatic character to it through the centuries.

5.3.1. Speculations about the Source of the Nile

Similar to the explanations of earthquakes' causes, the ideas about the source of the Nile and the reasons for its periodical flooding have transcultural roots. Following early Arab geographers, like al-Mas‘ūdī

⁵² Arab authors repeated in their works the assertion that the Nile is the longest river coming from behind the equator, passing a month through the land of Islam, two months in Nubia, and four in the desert (*al-kharāb*). They also claimed that it is the only river which runs from south to north (*min al-janūb ilā al-shamāl*) and rises every summer when all other rivers on earth dry up. (al-Mas‘ūdī, *Murūj*, vol. 2, 66–67. al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 175. al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, 45, 46. al-Maqrīzī, *al-Khitāṭ*, vol. 1, 142, 159. al-Suyūṭī, *Kawkab al-Rawḍah*, 127, 151.) Furthermore, some of the authors tried to explain the reason for its rise in summer. (Nazmi, *The Nile River*, 34f.) See also poetic verses about the nature of the Nile in al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 358–363. al-Suyūṭī, *Kawkab al-Rawḍah*, 152–158, 164–165.

(d. ca. 345/956),⁵³ Ibn Ḥawqal (d. ca. 378/988),⁵⁴ al-Idrīsī (d. ca. 561/1165),⁵⁵ Mamlūk authors⁵⁶ recorded that the source of the Nile was in the legendary “Mount of the Moon” (*Jabal al-Qamar*) as reflected in al-Khwārizmī’s (d. ca. 233/847)⁵⁷ *Ṣūrat al-ard*.⁵⁸ Adding

⁵³ al-Mas‘ūdī, *Murūj*, vol. 2, 67. See about al-Mas‘ūdī footnote 37, p. 160.

⁵⁴ Ibn Ḥawqal, *Kitāb ṣūrat al-ard*, Bayrūt: Manshūrāt dār maktabat al-ḥayāt 1979, 139–140. Ibn Ḥawqal was Arab geographer of the second half of the tenth century A.D., whose geographic information was based on numerous journeys and direct observations. A. Miquel, “Ibn Ḥawqal,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1965, 786–788.

⁵⁵ al-Idrīsī, *Opus Geographicum. Kitāb nuzhat al-mushtaq fī ikhtirāq al-āfāq*, ed. by Instituto Universitario Orientale di Napoli, vol. 11970, 32. al-Idrīsī was a twelfth century Arab geographer, an adviser to Roger II, the Norman king of Sicily. F. Gies, al-Idrisi and Roger’s Book, *Saudi Aramco World* 28/4 (July/August 1977), 14–19. G. Oman, “al-Idrīsī,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1965, 1032–1035.

⁵⁶ All of the Mamlūk sources record this information about the Nile. See, for example, al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, 57. al-‘Umarī, *Masālik*, vol. 1, 99.

⁵⁷ al-Khwārizmī was a Persian mathematician, astronomer and geographer of the ‘Abbāsid period, who was scholar in the “House of Wisdom” in

some new descriptive information,⁵⁹ the latter adopted this image from Ptolemy's *Geography*,⁶⁰ who in his turn compiled knowledge of early Greek philosophers and information from travellers.

As the real source of the Nile⁶¹ remained unknown up until the nineteenth century A.D.,⁶² the Mamlūk authors contended this

Baghdad. B. Adnan, Al Khwarizmi's Contributions to the Science of Mathematics: al Kitab al Jabr wa'l Muqabalah, *Journal of Islamic Academy of Sciences* 5/3 (1992), 225–228. A. Sayili, al-Khwarizmi, Abdu'l-Hamid Ibn Turk and the Place of Central Asia in the History of Science and Culture, *Foundation for Science, Technology and Civilisation* (December 2006), 1–68.

⁵⁸ al-Khwārizmī, *Kitāb ṣūrat al-ard*, ed. by H. Mžik, Leipzig: Otto Harrassowitz 1345/1926, 106f.

⁵⁹ Khwārizmī added geographical names not mentioned in Ptolemy's Geography. N. Levzion, Arab Geographers, the Nile, and the History of Bilad al-Sudan, in *The Nile. Histories, Cultures, Myths*, ed. H. Erlich and G. Israel, Colorado: Lynne Rienner 2000, 71–72. B. Shoshan, “Nile,” *Medieval Islamic Civilization: an Encyclopedia*, vol. 1, Routledge 2006, 561.

⁶⁰ See the geographical image of the river Nile in C. Ptolemy, *The Geography*, tr. by E. Stevenson, New York: Dover Publications 1991. See also geographical description of the Nile in Nazmi, The Nile River, 38f.

⁶¹ The Nile originates in the highlands of al-Habshah (Abyssinia/today's Ethiopia)—land of the Blue Nile—and in the vast areas of great lakes and huge swamps of central Africa and southern Sudan where the White Nile flows. The Nile of Egypt emerges from these two main river systems (the Blue and the White Nile) which join near Khartoum and flow into the narrow valley of Egypt. Hurst, The Nile, 1–185. Erlich and Israel, Introduction, 1. Hassan, Extreme Nile Floods, 101. Hassan, Historical Nile Floods, 1143. Hassan, A River Runs Through Egypt, 22. Popper, The Cairo Nilometer, 248. Sutcliffe and Parks, The Hydrology of the Nile. R. Hill, The Research for the White Nile's Source: Two Explorers who Failed, *Geographical Journal* 122 (1956), 237–250. See more references related to different geographical and hydrological aspects of the Nile in footnote 42, p. 32 and in S. Rushdi, *The River Nile: Geology, Hydrology, and Utilization*, Oxford: Pergamon Press 1993.

⁶² The European travellers were the first to discover the large Nile lakes in the heart of Africa and identified the Ruwenzori mountain range with Ptolemy's "Mountains of the Moon" (*Lunae montes*), associated by the explorer Speke with Unyamwezi country, the "country of the moon." Kramers, "Nil," 37–43. J. Feeney, The Last Nile Flood, *Saudi Aramco World* 57/3 (May/June 2006), 24–33. Arbel, Renaissance Geographical Literature, 106–107. D. Young (ed.), *The Search for the Source of the Nile*:

imaginary picture of the Nile's origin, which they mixed with the observed geographical descriptions of the river.⁶³ According to one of the versions in the Mamlūk tradition, ten⁶⁴ rivers emerge from this legendary “Mount of the Moon” (*Jabal al-Qamar*). The first five rivers and the second five respectively pour into two lakes called *batīḥah* in “the first climate” (*al-iqlīm al-ūlā*).⁶⁵ The latter is a transcultural

Correspondence between Captain Richard Burton, Captain John Speke and others, from Burton's unpublished East African Letter Book, London: Roxburghe Club 1999.

⁶³ See the purely geographical information about the Nile based on al-Mas'ūdī's *Murūj*, vol. 1, 114. al-Qazwīnī, ‘Ajā'ib al-makhlūqāt, 187. al-Aqfahsī, Kitāb akhbār Nil Miṣr, 57–58. al-Suyūṭī, Ḥusn al-muḥādarah, vol. 2, 348, 351. al-Suyūṭī, Kawkab al-Rawḍah, 120, 122. Jalāl al-Dīn al-Maḥallī, *Mabdā' al-Nīl*, fol. 11. al-Maqrīzī, al-Khiṭāṭ, vol. 1, 149–150.

⁶⁴ In some of the sources the number of rivers is ten (al-Idrīsī, Kitāb nuzhat al-mushtāq, vol. 1, 32. al-Maqrīzī, al-Khiṭāṭ, vol. 1, 139, 165. al-Suyūṭī, Kawkab al-Rawḍah, 122, 120), in others, their number is twelve. al-Mas'ūdī, *Murūj*, vol. 1, 112. Jalāl al-Dīn al-Maḥallī, *Mabdā' al-Nīl*, fol. 14.

⁶⁵ al-Khwārizmī, Kitāb šūrat al-ard, 106f. al-Idrīsī, Kitāb nuzhat al-mushtāq, vol. 1, 32–33. al-Mas'ūdī, *Murūj*, vol. 1, 112. al-Maqrīzī, al-Khiṭāṭ, vol. 1,

concept adopted from Ptolemy, who making use of earlier Greek ideas, divided the earth into seven zones, *klimata*, i.e. the space between the lines of latitude.⁶⁶ From each of these two lakes, four rivers, that is, eight overall, are reported to flow into the third small lake (*al-baṭīḥah al-ṣaghīrah*)⁶⁷ to the north, where the Nile's flow begins.⁶⁸ There are different map-like pictorials⁶⁹ schematically

139, 165. al-Suyūṭī, Kawkab al-Rawḍah, 122, 120. Jalāl al-Dīn al-Mahallī, Mabdā' al-Nil, fol. 14.

⁶⁶ J. Oliver, “Climate Zones,” *The Encyclopedia of World Climatology*, Cornwall: Springer 2005, 270. Ptolemy, *The Geography*.

⁶⁷ al-Khwārizmī, *Kitāb ṣūrat al-ard*, 107.

⁶⁸ al-Maqrīzī, al-Khiṭāṭ, vol. 1, 139, 165. al-Suyūṭī, Kawkab al-Rawḍah, 120. al-‘Umarī, *Masālik*, vol. 1, 99.

⁶⁹ See map of the Nile in al-Khwārizmī, *Kitāb ṣūrat al-ard*, ed. by H. Mžik, Leipzig: Otto Harrassowitz 1345/1926, table III. I Ibn Ḥawqal, *Kitāb ṣūrat al-ard*, p. 140. al-Idrīsī, *The Book of Roger*, Ms. Pococke 375, dated 1553 A.D., Bodleian Library, University of Oxford. al-Suyūṭī, Ḥusn al-muḥāḍarah, vol. 2, p. 353. al-Mahallī, *Mabdā' al-Nil ‘alā al-tahrīr*, Egyptian National Library, Ms. J 381 (Microfilm 45847), fol. 14v.

illustrating this description, which do not fully correspond to Ptolemy's image of the Nile's source.⁷⁰

Another widely spread association of the Nile with one of the four⁷¹ rivers of Paradise on earth⁷²—the Sayḥān,⁷³ Jayḥān⁷⁴ and Euphrates—

⁷⁰ Ptolemy's map shows only two lakes. (See Ptolemy's map of Africa, depicting the source of the Nile in Cl. Ptolemy, *Geographia*. Nicolo Todescho/Tedescho (ed.), ca. 1480–82, Florence. The James Ford Bell Library, University of Minnesota, <https://www.lib.umn.edu/apps/bell/map/PTO/TOUR/indexptt.html> and the table of maps in Ptolemy, *The Geography* and in E. Edson et al. (eds), *Medieval Views of the Cosmos. Karten der christlichen und islamischen Welt*. Darmstadt: Wiss. Buchges. 2005.) The third lake seems to be an innovation. Kramers, “Nil,” 37–43.

⁷¹ The traditions mention either four rivers: the Nile, Euphrates, Sayḥān and Jayḥān (al-Suyūṭī, *Kawkab al-Rawḍah*, 115. Jalāl al-Dīn al-Mahallī, *Mabdā’ al-Nil*, fol. 10v) or five rivers: the Nile, Euphrates, Sayḥān, Jayḥān and Tigris. (al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 341. al-Suyūṭī, *Kawkab al-Rawḍah*, 115. Jalāl al-Dīn al-Mahallī, *Mabdā’ al-Nil*, fol. 9r.) See more about these rivers in Nazmi, *The Nile River*, 28–54.

also has transcultural roots. Derived from Jewish and Christian traditions which traced the Nile from Paradise,⁷⁵ this notion further evolved in the Arab tradition. The basis for its development is the

⁷² Cf. the Book of Genesis, Chapter 2:11–14 in which the Gihon (associated with the river Nile), like the Pison, the Hiddekel, and the Euphrates were believed to be the four rivers of Paradise which ran underground before emerging at a different place. See also Arbel, Renaissance Geographical Literature, 106–107.

⁷³ According to the Arab geographer al-Yāqūt (d. 626/1229), the river Sayḥān (the Oxus River, see Nazmi, The Nile River, 29), also spelled as Sayḥūn, is the river Sārus, in the port near al-Maṣīḥah. It flows between Anṭākiyah and al-Rūm. (Yāqūt al-Ḥamawī, *Mu‘jam al-buldān*, vol. 3, Bayrūt: Dār Ṣādir 1984, 293.) In another version, Sayḥūn is a river of the Hindus. al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, 75. Jalāl al-Dīn al-Maḥallī, *Mabdā’ al-Nil*, fol. 4r.

⁷⁴ Jayḥān (the Jaxartes River, see Nazmi, The Nile River, 29), also spelled as Jayḥūn, is a river in Balkh, a famous city in Chorasan. Jalāl al-Dīn al-Maḥallī, *Mabdā’ al-Nil*, fol. 4r. al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, 74.

⁷⁵ Kramers, “Nil,” 37–43. Heinen, Islamic Cosmology, 119.

Qur'ān sūrah 47:15,⁷⁶ which speaks of rivers of water, milk, wine, and honey in Paradise. Although it does not name the rivers directly, the traditions and *Qur'ān* commentators in the Mamlūk sources mention under the rubric of the Nile that the Nile is one of the rivers which God located on earth. Different traditions, mainly going back to the Jewish convert Ka'b al-Aḥbār (d. seventh century A.D.),⁷⁷ who also transmitted the fictional explanation of earthquake causes,⁷⁸ associated the Nile either with the river of honey⁷⁹ or wine⁸⁰ in

⁷⁶ “[And can] the parable of the paradise which the God-conscious are promised—[a paradise] wherein there are rivers of water which time does not corrupt, and rivers of milk the taste whereof never alters, and rivers of wine delightful to those who drink it, and rivers of honey if all impurity cleansed [...].” Muḥammad, *the Qur'ān*, 995. See more *Qur'ānic* references to the rivers and their role on earth in Nazmi, *The Nile River*, 29.

⁷⁷ See about Ka'b al-Aḥbār footnote 201, p. 217.

⁷⁸ See 231f.

⁷⁹ al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 37. al-Suyūṭī, *Kawkab al-Rawḍah*, 117. al-Suyūṭī, *Husn al-muḥādarah*, vol. 2, 340. al-Bulqīnī, *al-Nīl al-rā'i*, fol. 5v. Ibn Iyās, *Nashq al-azhār*, fols. 378–379.

⁸⁰ al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 37.

Paradise. This again confirms the Jewish input in the making of “marvellous stories” about the creation of the world.

5.3.2. Explanations about the Causes of Periodical Flooding

Apart from the accounts around the origin of the Nile, Mamlūk authors discussed in length different views about the causes of the Nile’s periodical rise and fall. Among the explanations offered, the authors presented widely accepted transcultural views that fluctuations in the flow of the Nile were due to meteorological phenomena. Accordingly, the flow of the Nile depended on the melting snow in the legendary Mount *Qāf*⁸¹—which as we have seen played a significant role in fictional explanations of the causes of earthquakes—rains,⁸² springs on the banks of the Nile,⁸³ and different

⁸¹ al-Suyūṭī, *Kawkab al-Rawdah*, 120–121. Jalāl al-Dīn al-Mahallī, *Mabdā’ al-Nīl*, fol. 11r. Cf. According to Aristotle, “headwaters of rivers are found to flow from mountains, and from the greatest mountains there flow the most numerous and greatest rivers.” Aristotle, *Meteorology*, Book I, 17.

⁸² The Mamlūk authors ascribed the opinion about the rise and decline of the Nile due to rains to the Hindus. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 157, 166.

types of winds.⁸⁴ Mamlūk authors ascribed these opinions explicitly to Copts, Byzantines and Hindus.⁸⁵

al-Maqrīzī (d. 845/1442) further specified that in particular the so-called “*mullathin*” winds moving the clouds of rain in Sudan, Abyssinia (al-Habshah) and Nubia, caused the river’s levels to rise and fall.⁸⁶ This view best reflects the modern explanation of the Nile’s periodic rise,⁸⁷ which, according to the Mamlūk authors, occurred due

⁸³ The Mamlūk authors ascribed to the Byzantines and Copts the view that the springs on the banks of the Nile cause the periodic rise of the Nile. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 157. al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 350. al-Suyūṭī, *Kawkab al-Rawḍah*, 123. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 69.

⁸⁴ According to the Copts, northern winds were responsible for the rise. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 157, 180. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 69. al-Suyūṭī, *Kawkab al-Rawḍah*, 120–121, 123. al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 175. Jalāl al-Dīn al-Mahallī, *Mabdā’ al-Nīl*, fol. 14r. See general information on types of winds in al-Tifāshī, *Surūr al-nafs*, 307–308.

⁸⁵ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 157.

⁸⁶ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 157.

⁸⁷ The modern exploration of the Nile assumed that the direct cause for the rise of the Nile from June to September was the summer monsoon rainfall

to rains in Abyssinia,⁸⁸ Sudan, Nubia,⁸⁹ and Zanzibar.⁹⁰ We can also find some reflections of these meteorological explanations in the ancient works of Aristotle (d. 322 B.C.)⁹¹ and Caius Plinius Secundus

over the basin of the Blue Nile, with its main tributary, the Atbara, in the highlands of Ethiopia. (B. Bell, *The Oldest Records of the Nile Floods*, *The Geographical Journal* 136/4 (1970), 569. Popper, *The Cairo Nilometer*, 252. Hassan, *Historical Nile Floods*, 1143. Hassan, *A River Runs through Egypt*, 22. Hurst, *The Nile*, 255–258.) See more about the complex mechanism influencing the Nile's discharge in the context of the global climatic change, p. 560.

⁸⁸ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 166. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 69. al-Suyūṭī, *Kawkab al-Rawḍah*, 120.

⁸⁹ al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 350–351. al-Suyūṭī, *Kawkab al-Rawḍah*, 122.

⁹⁰ al-Qazwīnī, *‘Ajā’ib al-makhlūqāt*, 187.

⁹¹ See Aristotle's general explanation of the nature of rivers in Aristotle, *Meteorology*, Book I, 16–18. Lettinck, Aritstotle's Meteorology, 120.

(d. ca. 79 A.D.),⁹² to which the Mamlūk authors do not refer explicitly.

The meteorological explanation of the Nile's periodical rise was also reflected in the methods of predictions derived from the observation of clouds, *al-anwā'*,⁹³ and the amount of rain.⁹⁴ For example, according to a habit ('ādah), heavy rains during the inundation period⁹⁵ were believed to cause a shortage of water in the Nile. We even have a reference to the predictions related to the amount of rain in the historiographic genre: due to heavy rains in 837/1437, the Gnostics (*ahl al-ma'rifah*) feared that the Nile would not rise

⁹² Caius Plinius Secundus (see footnote 3, p. 147) presents similar speculations about the reasons for the periodic flooding of the Nile in his book. Caius Plinius Secundus, Die Naturgeschichte des Plinius, 316–317.

⁹³ See about *anwā'* footnote 1, p. 53.

⁹⁴ al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 69. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 157.

See also scientific methods for forecasting the river's rise in Hurst, *The Nile*, 269–275.

⁹⁵ See the details about the inundation period in *Chapter 5.5. “The Rule of the Nile”* (*Qānūn al-Nīl*), p. 460f.

sufficiently because it rained heavily during the inundation period. As these rumours spread, the Nile began to decline. Consequently, the lands of Egypt dried and the dykes (*jusūr*) and small canals (*tura'*) decayed due to negligence. As a result, famine spread.⁹⁶

Other explanations attribute the Nile's periodical rise and fall to the influence of different celestial bodies, like for example, the moon⁹⁷—which generates tide and ebb (*madd wa-jazr*) in the sea—the sun,⁹⁸ and the stars.⁹⁹ In these explanations, the Nile's rise and decline are described as being caused by the motion of these celestial bodies in

⁹⁶ al-Maqrizī, *Kitāb al-sulūk*, vol. 4,2, 903. ‘Abd al-Bāsit, *Nayl al-amal*, vol. 1,4, 339. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 3, 512.

⁹⁷ al-Mas‘ūdī, *Murūj*, vol. 2, 67. al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, 58.

⁹⁸ Here the gravitation of the moon and the sun is meant. See the detailed explanation of this process in al-Maqrizī, *al-Khiṭāṭ*, vol. 1, 142–143. al-Suyūṭī, *Kawkab al-Rawḍah*, 121. Jalāl al-Dīn al-Mahallī, *Mabdā’ al-Nil*, fol. 12v. Cf. *Galileo’s Theory of Tides* in P. Palmieri, Re-examining Galileo’s Theory of Tides, *Archive for History of Exact Sciences* 53 (1998), 223–375.

⁹⁹ al-Maqrizī, *al-Khiṭāṭ*, vol. 1, 145.

the zodiac,¹⁰⁰ the intensity of their rays,¹⁰¹ the pace of their movement and distance from different zodiacal signs.¹⁰² This connection to the astral phenomena had its basis in the astro-meteorological *malḥamah* predictions, which foretold, along with other events, the height of the Nile during the year. I presented examples of this genre with the relevance of predictions about the Nile's rise in *Chapter 1 Natural Disasters in Astro-meteorological Malḥamah Handbooks*.¹⁰³

¹⁰⁰ al-Maqrīzī, al-Khiṭāṭ, vol. 1, 142–143.

¹⁰¹ See the detailed description of this process in al-Maqrīzī, al-Khiṭāṭ, vol. 1, 147, 145. According to a Coptic tradition, one could predict the height of the Nile each year from the measure indicated by the sun's rays as they fell on a gauge in Upper Egypt on 26 Ba'ūnah/ca. 3 July. Popper, The Cairo Nilometer, 66.

¹⁰² al-Maqrīzī, al-Khiṭāṭ, vol. 1, 181.

¹⁰³ See p. 127f. and manuscript copies: Anonymous, Risālah tataḍammana al-Nīl. Anonymous, Risālah fi ma'rufat zīyādat al-Nīl. Anonymous, Hādhā kitāb qā'ida al-Nīl. Chalyan-Daffner, Predictions of “Natural” Disasters.

In addition to the astro-meteorological methods of prediction,¹⁰⁴ other beliefs were widespread as means for foretelling the Nile's maximum level. The Egyptians (Copts and Muslims) made calculations related to the changes of weather (e.g. wind and rain) and performed practices¹⁰⁵ on particular days of the Coptic calendar, using various formulas foretelling the Nile's height during that year.¹⁰⁶ In these predictions certain Coptic feasts like “St. Michael’s Feast” (*‘Ayd Mīkā’il*),¹⁰⁷ and “the Feast of the Martyr” (*‘Ayd al-Shahīd*),¹⁰⁸ which

¹⁰⁴ Mamlūk authors drew these methods from the books of prominent Arab astrologers like Ibn Yūnus al-Munajjim (d. 399/1009), Abū Ma’shar (d. 272/886) and al-Birūnī (d. 440/1048), who made predictions using Ptolemy’s knowledge of astral phenomena. al-Maqrīzī, al-Khiṭāṭ, vol. 1, 180–181.

¹⁰⁵ al-Maqrīzī, al-Khiṭāṭ, vol. 1, 180–181.

¹⁰⁶ al-Maqrīzī, al-Khiṭāṭ, vol. 1, 155. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 293–294. Ibn Iyās, *Nashq al-azhār*, fol. 436. al-Suyūṭī, *Kawkab al-Rawdah*, 149. Popper, The Cairo Nilometer, 215. al-‘Asqalānī, *Inbā’ al-ghumr bi-anbā’ al-‘umr*, ed. by H. Ḥabashī, vol. 4, al-Qāhirah: al-Majlis al-a‘lā lil-shu’ūn al-islāmiyah, lajnat ihyā’ al-turāth al-Islāmī 1419/1998, 180. See a practical example of one kind of prediction in Ibn Iyās, *Badā’iṣ*, vol. 4, 194.

¹⁰⁷ See about this feast footnotes 207–211, p. 130f.

were of socio-cultural significance, played an important role. In particular, “the Feast of the Martyr” was of great significance.

According to the Coptic belief, the Nile would not rise without the celebration of “the Feast of the Martyr” (*Ayd al-Shahīd*) on 8 Bashans/16 May), which marked the end of the Nile’s low period. The focal point of this festival¹⁰⁹ was the ritual connected with a finger of a martyr, kept during the year in the Shubrā (Shabrā)¹¹⁰ church in Cairo. On this day, after the immersion of the box with the finger into

¹⁰⁸ A. Atiya, “Feast of the Martyr,” *The Coptic Encyclopedia*, vol. 5, New York: Macmillan Publishing Company 1991, 1547–1548.

¹⁰⁹ al-Maqrīzī, al-Khiṭāṭ, vol. 1, 183–184, 736. Atiya, “Feast of the Martyr,” 1547–1548. Lutfi, Coptic Festivals of the Nile, 263–268. See the location of Shubrā in Hassan, *The Dynamics of a Riverine Civilization*, p. 61.

¹¹⁰ Ibn Iyās, *Nashq al-azhār*, fols. 437–438. al-Suyūṭī, *Kawkab al-Rawḍah*, 230. al-Maqrīzī, al-Khiṭāṭ, vol. 1, 183.

the river, the Copts would celebrate believing that this ritual would induce the annual flood and prevent famine in Egypt.¹¹¹

William Popper notices that this habit might be reminiscent of the ancient tradition when, on 12 Ba‘ūnah/ca. 19 June (on “St. Michael’s Feast”),¹¹² the Copts “threw a virgin into the Nile” as a sacrifice to obtain a plentiful inundation.¹¹³ Mamlūk authors report that after the invasion of Egypt by the Muslims, Muḥammad’s contemporary ‘Amr Ibn al-‘Aṣ (d. ca. 43/664),¹¹⁴ abolished this habit (*al-sunnah*). However, to pacify the Copts who feared the lowering of the levels of the Nile, the latter instead symbolically threw a piece of paper with

¹¹¹ Ibn Iyās, *Nashq al-azhār*, fols. 437–438. al-Suyūṭī, *Kawkab al-Rawḍah*, 230. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 183. Lutfi, Coptic Festivals of the Nile, 263–268.

¹¹² See footnotes 207–211, p. 130f.

¹¹³ Popper, The Cairo Nilometer, 69.

¹¹⁴ A. Wensinck, “‘Amr b. al-‘Aṣ,” *The Encyclopaedia of Islam*, vol. 1, Leiden: Brill 1960, 451.

the note of the second caliph ‘Umar Ibn al-Khaṭṭāb (r. 13–23/634–644),¹¹⁵ requiring the river to rise if God wished it.¹¹⁶

Similarly, we learn that “the Feast of the Martyr”¹¹⁷ was also abolished twice in 702/1303 and 755/1354¹¹⁸ because the Mamlūk

¹¹⁵ G. Levi Dalla Vida, “‘Umar b. al-Khaṭṭāb,” *The Encyclopaedia of Islam*, vol. 10, Leiden: Brill 2000, 818–821.

¹¹⁶ al-Maqrīzī, al-Khiṭāṭ, vol. 1, 152–154. al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 186–187. al-Qalqashandī, *Kitāb ḫubūt al-ṣubḥ*, vol. 3, 295. al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 353–354. al-Suyūṭī, *Kawkab al-Rawdah*, 185–186. al-Bulqīnī, *al-Nīl al-rā’id*, fol. 7v. Lane, *The Manners and Customs*, 500. Popper, *The Cairo Nilometer*, 69. See a historical reference to the revival of ‘Amr Ibn al-‘As’ tradition during the shortage of the Nile in 709/1309 recorded by non-contemporary chronicler al-Suyūṭī, *Kawkab al-Rawdah*, 232–233.

¹¹⁷ See footnotes 108–109, p. 444f.

¹¹⁸ al-Maqrīzī (d. 845/1442) and al-Suyūṭī (d. 911/1505) recorded that emir Rakn al-Dīn Baybars al-Jāshankīr, one of the two powers behind the Mamlūk throne, forbade the Copts their annual Nile feast in 702/1302, which was established again thirty-six years later in 738/1337 and persisted until 755/1354, when the Mamlūk regime finally abolished it. al-Maqrīzī,

officials wished to avoid the crime and disorder which accompanied the celebrations where much alcohol was consumed.¹¹⁹ They might also have wished to prove that it was God and not a martyr's finger that induced the flooding of the Nile.¹²⁰ According to unanimously agreed Muslim opinion, it is God who knows the reason for the Nile's rise and fall, just as he has absolute power over everything.¹²¹ He commands all rivers from east to west to contribute their waters to

al-Khiṭāṭ, vol. 1, 184–185. al-Suyūṭī, Kawkab al-Rawḍah, 230. al-Suyūṭī, Ḥusn al-muḥāḍarah, vol. 2, 299.

¹¹⁹ al-Maqrīzī, Kitāb al-sulūk, vol. 1,3, 941–942. D. Little, Coptic Conversion to Islam under the Bahri Mamlūks, 692–755/1293–1354, in *History and Historiography of the Mamlūks*, London: Variorum Reprints 1986, 558. Shoshan, “Nile,” 562. Atiya, “Feast of the Martyr,” 1547–1548.

¹²⁰ Little, Coptic Conversion to Islam, 558.

¹²¹ al-Qalqashandī, Kitāb ṣubḥ, vol. 3, 292–293. al-Suyūṭī, Ḥusn al-muḥāḍarah, vol. 2, 351. al-Suyūṭī, Kawkab al-Rawḍah, 122. Jalāl al-Dīn al-Mahallī, Mabdā’ al-Nil, fol. 12v.

the Nile, “the lord of the rivers;” and he orders every river to subside when God wishes it.¹²²

The series of harsh steps which the Mamlūk authorities took against the Christians during the fourteenth century A.D.¹²³ also suggest a simple reason: the discontent of the Muslims towards the increasing Coptic presence during the festivals of the Nile, which was also the source of worship for the Muslims, especially during the inundation

¹²² al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 133. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 292–293. al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 340. al-Suyūṭī, *Kawkab al-Rawdah*, 118. Heinen, *Islamic Cosmology*, 119–120.

¹²³ A contemporary Damascene chronicler Ibn Kathīr (d. 774/1373) reports that the authorities reorganised the regulations concerning the clothes of the Christians, Jews and Samaritans in 755/1354–5: the Christians had to wear blue *izār*, the Jews—yellow (Ibn Kathīr, *al-Bidāyah*, vol. 2, 2221) and the Samaritans—red. (al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 303.) This was probably done to differentiate non-Muslims from Muslims, which made the former more vulnerable to the attacks. See also T. Wilfong, *The Non-Muslim Communities*, 184, 196.

festival (*Yawm al-Wafā'*).¹²⁴ As Terje Oestigaard notes in his article *Christianity and Islam as Nile Religions in Egypt: Syncretism and Continuity*: “[t]he Coptic Nile festivals in Egypt [...] mobilised collective social and religious reaction by the Muslims, and hence it was seen as a threat to the Mamlūk leaders who had to recast it to accommodate dominant Muslim structures.”¹²⁵

Although the information about the years 702/1303 and 755/1354 stems from non-contemporary sources, it is trustworthy in the light of contemporary records of the attacks against the churches and synagogues both in Egypt and in Damascus at the begining of the fourteenth century A.D.¹²⁶ al-Nuwayrī (d. 733/1333) reports that the

¹²⁴ Lutfi, Coptic Festivals of the Nile, 270. See also *Chapter 5.5.2. The Inundation Day (Yawm al-Wafā')*, p. 474.

¹²⁵ Oestigaard, Water, Culture and Identity, 157. See more about Christian communities in Egypt in T. Wilfong, The non-Muslim Communities: Christian Communities, 175–197.

¹²⁶ al-Nuwayrī, *Nihāyat al-arab fī funūn al-adab*, vol. 33, al-Qāhirah: Maṭba‘at dār al-kutub al-miṣriyah 1997, 14–15, 31, 195. See more about other discriminating regulations in Ibn Kathīr, *al-Bidāyah*, vol. 2, 2221.

violent actions against the minorities in Egypt allegedly reflected Egypt's relations with neighbouring Abyssinia (al-Habashah). The latter's king threatened the Sultan via an envoy in 726/1325–6 to destroy all the mosques in his kingdom and to dam the Nile—which would bring drought and famine to Egypt—if the Muslims did not improve their policy towards the Christians. The Sultan reacted to this message with laughter¹²⁷ probably because he did not believe in the realisation of this venture.

The view that the Abyssinians could block the flow of the Nile was not completely new. During the Fātimid caliphate of al-Mustansir (r. 427–486/1036–1094), people believed that the Abyssinians diverted the flood of the Nile, causing the great famine in 451/1059.¹²⁸

¹²⁷ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 195–196. See also Little, *Coptic Conversion to Islam*, 562, 566. H. Ahmed, Review of Erlich, H.: *The Cross and the River. Ethiopia, Egypt and the Nile*, Boulder: Lynne 2002, 101.

¹²⁸ al-Suyūtī, *Kawkab al-Rawdah*, 213. Pankhurst, *Ethiopia's Alleged Control of the Nile*, 26. Kramers, “Nil,” 37–43. Oestigaard, *Water, Culture and Identity*, 152. See the historical background and the discussion of a series of disastrous droughts due to the shortage of the Nile in the tenth and

Numerous Christian sources also mention rumours about the Abyssinians' wish to block the Nile's flow to Egypt. Though groundless, this story even became part of the popular literature of Ethiopia, much welcomed in the fifteenth and sixteenth century A.D. in the western Christian world.¹²⁹

In particular, the last prohibition of the “the Feast of the Martyr” (*'Ayd al-Shahīd*) in 755/1354 inflamed a confessional conflict between the Copts and the Muslims. Mamlūk authorities initiated many confiscations and demolished numerous churches, among which was the church in Shubrā (Shabrā), where the martyr's finger was kept. al-Maqrīzī (d. 845/1442) reports that the box with the finger was brought to Sultan Ṣāliḥ Ibn Muḥammad Ibn Qalāwūn (r. 752–755/1351–1354) and burnt in front of him. Its ashes were thrown

eleventh A.D. century in Ellenblum, *The Collapse of the Eastern Mediterranean*, 41–59.

¹²⁹ E. van Donzel, The Legend of the Blue Nile in Europe, in *The Nile. Histories, Cultures, Myths*, ed. H. Erlich and G. Israel, Colorado: Lynne Rienner 2000, 121f. Pankhurst, Ethiopia's Alleged Control of the Nile, 26, 28–29, 32, 35.

into the Nile (*bahr*) so that the Christians could not perform the ritual any more.¹³⁰ al-Maqrīzī's narrative of the Christian–Muslim tensions marginalised the Copts as an ethnic minority. This historical episode, and other similar prohibitions of Coptic Nile-related festivals,¹³¹ as well as the general undermining of the Nilometer's original control by the Copts¹³² in the Islamic history of Egypt makes me conclude that during the Mamlūk history all parties instrumentalised the Nile in the confessional conflicts and used it as a means of political and religious manipulation.

Finally, according to another opinion which probably has Coptic roots, an angel was believed to make the Nile rise when he puts his foot into the water, and makes it fall when he takes the foot out of it.¹³³ As I have previously mentioned, the Copts believed that the Nile rises through the intercession of the archangel Michael and the

¹³⁰ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 185. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1, 1, 266–268.

¹³¹ Oestigaard, Water, Culture and Identity, 154f.

¹³² See footnote 166, p. 461.

¹³³ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 145.

saints.¹³⁴ However, the Mamlūk sources presenting this view did not mention any relation to the archangel Michael.

In the historical context, Ibn Iyās (d. 930/1524)¹³⁵ offers the illustration of this explanation in the record of the year 916/1510 when people were waiting with anxiety for the Nile's annual rise. During that time, a story began to circulate in Cairo that told how a woman dreamed¹³⁶ of two angels descending from heaven and leading her to the Nile. One of these angels put his foot into the water, thereafter it's level sank. The other angel reminded her that God was almighty and ordered the Nile to reach the level of twenty cubits.¹³⁷

¹³⁴ See footnote 209, p. 130. Kakosy, *The Nile*, 297. Oestigaard, *Water, Culture and Identity*, 144.

¹³⁵ Ibn Iyās, *Badā'i'*, vol. 4, 194.

¹³⁶ See more about the religious and cultural role of dreams in N. Green, *The Religious and Cultural Roles of Dreams and Visions in Islam*, *Journal of the Royal Asiatic Society of Great Britain & Ireland* 13/3 (November 2003), 287–313.

¹³⁷ During Ibn Iyās' lifetime the maximum of twenty cubits measured in the Nilometer was a normal level of water, whereas eighteen cubits mentioned

But when injustice prevailed in Egypt, God permitted it to recede to the level of eighteen cubits. Waking up the next morning, the woman saw that the Nile had indeed declined suddenly by the foretold measure.¹³⁸ This story shows the practical sides of this belief and people's attempt to give reasons for the low level of the Nile, which they related, in this case, to injustice in Egypt.¹³⁹

The role of angels in the process of the Nile's rise also features in a belief that the most feared levels of thirteen and fourteen cubits were associated with "*munkar wa-nakīr*,"¹⁴⁰ the two angels who examined

later in this dream, was considered little. See more about the unit of cubit used for the measurement of the Nile's rise and decline in footnote 25, p. 419 and meanings of levels during different epochs in *Chapter 5.6.2. "Excessive" and "Low" Floods from the Perspective of the Nile's Specific Hydrological History*, p. 497f.

¹³⁸ Ibn Iyās, *Badā'i'*, vol. 4, 194.

¹³⁹ Cf. the fictional story about the bull causing earthquake because of the increase of injustice on earth, p. 238.

¹⁴⁰ al-Mas'ūdī, *Murūj*, vol. 2, 69. Ibn Iyās, *Nashq al-azhār*, fol. 224a. al-Suyūṭī, *Kawkab al-Rawdah*, 124. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 48.

“the dead in their graves as to their faith”¹⁴¹ and if necessary punished them in their tombs.¹⁴² However, the levels of thirteen and fourteen were of no practical importance during the Mamlūk period, as we have no evidence that the Nile ever stopped at this height.¹⁴³

The Egyptians knew the periods when the Nile would start to rise and decline,¹⁴⁴ but they never knew how much water it would bring to irrigate their fields.¹⁴⁵ Therefore, speculations about the causes of the Nile’s annual inundation and predictions about its height were a part of a commonly accepted cultural tradition. As the level of the Nile influenced the price of grain—Egypt’s most important product—and other commodities,¹⁴⁶ people were prone to speculate and to foretell

¹⁴¹ Wehr, Dictionary, 999.

¹⁴² A. Wensinck, “Munkar wa-Nakir,” *The Encyclopaedia of Islam*, vol. 7, Leiden: Brill 1993, 576–577.

¹⁴³ See the catalogues of Sāmī, *Taqwīm al-Nīl*, vol. 2 and Ṭusūn, *Mémoire sur l’histoire du Nil*, which are based on historical evidence.

¹⁴⁴ See Chapter 5.5. “The Rule of the Nile” (*Qānūn al-Nīl*), p. 460f.

¹⁴⁵ Feeney, The Last Nile Flood, 24–33.

¹⁴⁶ See footnote 512, p. 557.

its maximum height. These predictions prepared the population psychologically for the year, which, depending on the Nile's level, promised either fertility (*khiṣb*) and profit (*rakhā'*) or drought (*qaḥṭ*) and high prices (*ghalā'*),¹⁴⁷ and which could end in calamities (*nuḥūs*).

5.4. “Oddities of the Nile” as Constituent Parts of the Narration in the *Khabar* of the Chronicles

The flooding (*ghumūrah*) of the Nile mentioned by al-Maqrīzī (d. 845/1442), especially the fluctuations in its rise—which were the subject of speculations and predictions—made up the major part of the *khabar* about the Nile in the chronicles. Mamlūk historians usually referred to reports about it as to the “oddities of the Nile” (*min al-nawādir, min al-gharā'ib, min nawādir al-ziyādāt, min al-gharā'ib al-nawādir, nādirah gharībah, al-ḥawādith al-gharībah, al-nawādir al-*

¹⁴⁷ See the discussion of these terms in footnote in 512, p. 557 and *Chapter 5.8. Case Studies of Disastrous Droughts: Causes, Effects, and Cultural Responses*, p. 555f.

*gharibah min nawādir al-Nīl).*¹⁴⁸ In this list of expressions, the words *nādirah* (“rarity”)¹⁴⁹ and *gharib* in al-Qazwīnī’s sense of “strange” and “odd,”¹⁵⁰ appear frequently. When they are used in combination they intensify the meaning of the “oddity,” which changed its rank to the status of an anomalous event. Considered from the scientific perspective, these “oddities” referred to the irregularities of the Nile’s hydrological circle, which occurred when

- (1) the Nile’s minimum measured before the inundation during Ba’ūnah/8 June–7 July¹⁵¹ was extremely high¹⁵²

¹⁴⁸ See some examples of these expressions in al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 921. ‘Abd al-Bāsit, *Nayl al-amal*, vol. 2,7, 102. Ibn Iyās, *Badā’i‘*, vol. 3, 142. Ibn Iyās, *Badā’i‘*, vol. 5, 52.

¹⁴⁹ See the discussion of this term in footnote 177, p. 334 and p. 337f.

¹⁵⁰ See *Chapter 2.2. The Arabic Literary Genre of ‘Ajā’ib wa-Gharā’ib: Disasters as “Marvellous Oddities”* p. 151, 155.

¹⁵¹ Ba’ūnah is the tenth Coptic month. See the Arabic names of the Coptic and equivalent Gregorian months in Wassef, “Coptic Calendar,” vol. 2, 438–439 and http://calendar.zoznam.sk/coptic_calendar-en.php.

¹⁵² See *Chapter 5.7.2. Extremely High Minimum of the Nile before the Inundation Day*, p. 519f.

(2) the Nile inundated out of season, i.e. in Abīb (8 July–6 August),¹⁵³

before the traditionally expected month in Misrā (7 August–5 September)¹⁵⁴

(3) the Nile rose high in series before or after reaching the “plenitude” (i.e. sixteen cubits)¹⁵⁵

(4) the Nile rose excessively and did not recede, preventing people from cultivating

(5) the Nile did not reach the level of “plenitude” at all¹⁵⁶

(6) the Nile halted or after rising receded quickly so that the lands could not be irrigated.¹⁵⁷

¹⁵³ Abīb is the eleventh month of the Coptic calendar. Wassef, “Coptic Calendar,” vol. 2, 439. See the discussion of this “oddity” in *Chapter 5.7.3. Inundation in Abīb (8 July–6 August)*, p. 533f.

¹⁵⁴ Misrā is the twelve month of the Coptic calendar. Wassef, “Coptic Calendar,” vol. 2, 439.

¹⁵⁵ See general information about the “plenitude” and its significance in *Chapter 5.5.1. “The Good News” (al-Bishārah)*, p. 466f. and the discussion of this “oddity” in *Chapter 5.7.4. High Rises in Succession*, p. 541f.

¹⁵⁶ See *Chapter 5.8.1. “Years without Plenitude”*, p. 562.

¹⁵⁷ See *Chapter 5.8.2. Review of Cultural Responses to Disastrous Droughts*, p. 607f.

People perceived these irregularities as “odd” and sometimes troublesome because they deviated from the culturally shaped knowledge about “the rule of the Nile” (*qānūn al-Nīl*),¹⁵⁸ which comprised the habitually known natural sequence of events during the Nile’s annual inundation. In certain cases these irregularities could lead to environmental damage because of the extreme rise or low levels of the water. If the situation got out of control, the spread of diseases and epidemics was almost inevitable.¹⁵⁹

Before turning to the discussion of these “odd” events, which usually ended up either in an excessive flood or a disastrous drought, I will first introduce what the people considered to be normal, i.e. in conformity with the “rule of the Nile,” and what was seen as a deviation from this rule. Then I will analyse the impact of these “oddities” on Mamlūk society and their responses to them.

¹⁵⁸ al-Suyūṭī, *Kawkab al-Rawḍah*, 151. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 159, 161.

¹⁵⁹ See references to the interrelation of water-related disasters and epidemics in footnote 47, p. 35; footnote 298, p. 499 and examples from history on p. 527, 540 and 546.

5.5. “The Rule of the Nile” (*Qānūn al-Nīl*)

5.5.1. “The Good News” (*al-Bishārah*)

“The rule of the Nile” emerged like an “unwritten law” from the Nile-related habits recorded in the chronicles, ‘ajā’ib wa-gharā’ib literature, topographic and encyclopaedic works. This rule was comprised of knowledge about the normal course of events in the Nile’s hydrological circle, whose rise and decline occurred in a certain succession (*yazid bi-tartīb wa-yanqus bī-tartīb*).¹⁶⁰ After the Nile reached its lowest level (*mā’ al-qadīm/al-qā’/al-qā’idah*)¹⁶¹ in Cairo around 5 Ba’ūnah/ca. 12 June,¹⁶² it began to rise slowly until the end of the Coptic month Abīb/6 August.¹⁶³ This knowledge was reflected

¹⁶⁰ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 175. al-Suyūṭī, Kawkab al-Rawdah, 127.

¹⁶¹ See footnotes 21–23, p. 417f.

¹⁶² al-Qalqashandī, Kitāb ḫubḥ, vol. 3, 293. al-Maqrīzī, al-Khiṭāṭ, vol. 1, 159.

¹⁶³ The normal daily rise until the end of Abīb/6 August ranged from two to ten fingers. al-Qalqashandī, Kitāb ḫubḥ, vol. 3, 294.

in the ancient saying: “in Abīb, the water crawls” (*fī Abīb yadibb al-mā' dabīb*).¹⁶⁴

As the Nile's height affected life in Egypt profoundly, “the guardian of the Nilometer” (*sāhib al-miqyās*)¹⁶⁵—which was a hereditary position held by Abū al-Raddād's¹⁶⁶ family—measured and recorded its daily

¹⁶⁴ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 616. al-Suyūtī, *Kawkab al-Rawdah*, 149.

¹⁶⁵ The “guardian of the Nilometer” was also called *sāhib, mutawallī, sheikh, amīn, qādī al-bahr, qayyās or munādī*. Popper, *The Cairo Nilometer*, 58.

¹⁶⁶ In Ancient Egypt, priests were responsible for all matters connected with the Nilometer. (Popper, *The Cairo Nilometer*, 2.) Before the reign of the ‘Abbāsid Caliph al-Mutawakkil (r. 232–247/847–861), the Copts held this position. (al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 151–152. al-Qalqashandī, *Kitāb ḫubh*, vol. 3, 299.) In 247/861 Caliph al-Muntasir (r. 247–248/861–862) deprived them from this duty, appointing Abū al-Raddād to this position. After the latter's death in 266/879–880, the office remained hereditary in Abū al-Raddād's family (al-Suyūtī, *Kawkab al-Rawdah*, 147, 148. al-Qalqashandī, *Kitāb ḫubh*, vol. 3, 299) up until the Ottoman period. See the footnote in al-Maqrīzī, *al-Khiṭāṭ*, vol. 2, 541.

rise (*ziyādat al-Nīl*) in al-Ḥāshimī Nilometer.¹⁶⁷ It was one of the Egypt’s “wonders” (*min ‘ajā’ib*),¹⁶⁸ situated in the island of al-Rawdah opposite Fustāt (Old Cairo).¹⁶⁹ This Nilometer, which exists in contemporary Egypt, consisted of a square well into which the water flowed through three conduits during the Nile’s rise. The gauge on a

¹⁶⁷ al-Suyūṭī, *Kawkab al-Rawdah*, 146. See more about types of Nilometers and their history before the advent of Islam up to the Mamlūk period in al-Mas‘ūdī, *Murūj*, vol. 2, 71. al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 176–177. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 298. al-Suyūṭī, *Husn al-muḥādarah*, vol. 2, 374. Popper, The Cairo Nilometer, 1–15.

¹⁶⁸ al-Suyūṭī, *Kawkab al-Rawdah*, 157.

¹⁶⁹ According to al-Suyūṭī (d. 911/1505), it was the last Nilometer built in Egypt. (al-Suyūṭī, *Kawkab al-Rawdah*, 146.) The first definitely known Arab Nilometer was built in 97/715–6 on the island of al-Rawdah, which was rebuilt in 247/861–2 and 259/872–3. (al-Maqrīzī, *al-Khitāṭ*, vol. 1, 151–152.) The statistics of the Nile measured during the Mamlūk period derive from this Nilometer. The scale used for measuring the levels of the Nile during the Mamlūk period did not change until 1523 A.D. Popper, The Cairo Nilometer, 91, 106f, 113f. Hurst, The Nile, 258–263. See also footnote 309, p. 502.

stone basis was a column of white marble¹⁷⁰ with lines on it, indicating the height¹⁷¹ in fingers (*iṣbā'* pl. *aṣābi'*) and cubits (*dhirā'* pl. *adhrū'*).¹⁷² As presented earlier, the gauge of the Nilometer during the Mamlūk period consisted of composite scales.¹⁷³ A cubit until the height of twelve cubits was divided into twenty-eight fingers (*iṣbā'* pl. *aṣābi'*),¹⁷⁴ which equalled 0,539m≈54cm. A cubit above the height of

¹⁷⁰ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 176. al-Maqrīzī, al-Khiṭāṭ, vol. 1, 157.

See the detailed description of the Nilometer in Popper, The Cairo Nilometer, 30–47.

¹⁷¹ The conventionally agreed zero point, which is assumed to be the bed of the Nilometer, equalled to the level of the Mediterranean Sea. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 67 and Popper, The Cairo Nilometer, 112.

¹⁷² Cubits and fingers of varying number and size for measurement were used in different regions and periods. See their names and definitions in Popper, The Cairo Nilometer, 102–103, 113.

¹⁷³ See footnote 25, p. 419.

¹⁷⁴ al-Mas‘ūdī, *Murūj*, vol. 2, 69. al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 176. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 48. al-Suyūṭī, *Kawkab al-Rawḍah*, 128. al-Maqrīzī, al-Khiṭāṭ, vol. 1, 157. Popper, The Cairo Nilometer, 41, 102, 106.

twelve cubits consisted of twenty-four fingers,¹⁷⁵ which equalled 0,462m≈46cm.¹⁷⁶

The first “good news” (*bishārat al-Nīl*),¹⁷⁷ which proclaimed the much awaited rise of the Nile, was the announcement (*munādāh*) of the river’s lowest level on 27 Ba’ūnah/ca. 4 July.¹⁷⁸ To measure it, Ibn

¹⁷⁵ al-Mas‘ūdī, *Murūj*, vol. 2, 69. al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 176. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 48. al-Suyūṭī, *Kawkab al-Rawḍah*, 128. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 157. Popper, *The Cairo Nilometer*, 41, 102, 106.

¹⁷⁶ Popper, *The Cairo Nilometer*, 102.

¹⁷⁷ See, for example, Ibn Iyās, *Badā’i‘*, vol. 4, 94, 115, 220, 265, 312, 378–379, 457.

¹⁷⁸ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 159. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 293. There are slight discrepancies about the exact day of the measurement. During the Fāṭimid and Mamlūk period, Ibn Abī al-Raddād usually measured the lowest level on 25 or 26 Ba’ūnah/ca. 2 or 3 July. (al-Maqrīzī, *al-Khiṭāṭ*, vol. 2, 551. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 3, 552. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 293.) In earlier times, it was a habit to measure it on 12 Ba’ūnah/ca. 19 June, on the day of “St. Michael’s Feast.” Popper, *The Cairo Nilometer*, 68, 66. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 3, 551.

Abī al-Raddād (“the son of Abū al-Raddād”) had to reach the bottom of the well through a staircase.¹⁷⁹ The public announcement was an innovation not performed during the Fātimid period (the ruling dynasty before the Mamlūk reign). During that time, Ibn Abī al-Raddād measured the lowest level, recorded it on a sheet of paper (*ruq‘ah*) and sent it to the Caliph, the vizier, the *dīwān* of letters and the *dīwān al-inshā’/dīwān al-mukāttabāt* (chancery). He kept this information secret from the public until the Nile reached sixteen cubits, the so-called level of “plenitude,”¹⁸⁰ as the authorities feared that people would worry ahead of time¹⁸¹ and would buy crops,

¹⁷⁹ Popper, The Cairo Nilometer, 37.

¹⁸⁰ al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 516. al-Maqrīzī, *al-Khiṭāṭ*, vol. 2, 551–552. See the discussion about the importance of sixteen cubits, p. 466f. and *Chapter 5.5.2. The Inundation Day (Yawm al-Wafā’)*, p. 474f.

¹⁸¹ al-Suyūṭī (d. 911/1505) mentioned that the public announcement was prohibited in 362/972–3. al-Suyūṭī, *Kawkab al-Rawḍah*, 152. Popper, The Cairo Nilometer, 59.

causing a rise in prices.¹⁸² This mechanism highlights the political-economic importance of the Nilometer.

The guardian of the Nilometer continued to measure the height, noting the Coptic and Muslim dates in terms of the solar and lunar monthly calendars,¹⁸³ until the water reached “plenitude”¹⁸⁴ (*awfā’ al-Nīl*), sometimes also called “the Sultan’s water” (*mā’ al-sultān*).¹⁸⁵ The “plenitude” (*awfā’ al-Nīl*) and the alternative verbal phrase *al-Nīl awfā* “the Nile reached fulfilment” or “inundated” referred to the height of sixteen cubits, which the Nile habitually reached during the twelve

¹⁸² See, for example, 837/1433: al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 903, 904. 866/1462: ‘Abd al-Bāsīt, *Nayl al-amal*, vol. 2,6, 145. Ibn Iyās, *Nashq al-azhār*, fol. 416. Popper, *The Cairo Nilometer*, 60. 871/1467: ‘Abd al-Bāsīt, *Nayl al-amal*, vol. 2,6, 265. 873/1468: ‘Abd al-Bāsīt, *Nayl al-amal*, vol. 2,6, 343. 879/1474: ‘Abd al-Bāsīt, *Nayl al-amal*, vol. 2,7, 101. 897/1491–2: al-Suyūṭī, *Kawkab al-Rawdah*, 266. See also about the interrelation between the Nile’s rise and the price of commodities in footnote 512, p. 557.

¹⁸³ al-Maqrīzī, *al-Khiṭāṭ*, vol. 2, 551–552.

¹⁸⁴ Popper, *The Cairo Nilometer*, 69f.

¹⁸⁵ al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 368.

Coptic month Misrā/7 August–5 September.¹⁸⁶ People associated this month in the ancient saying with the “wedding of the Nile” (*‘urs al-Nīl*), anticipated with its “fulfilment” (*wafā’ al-Nīl*), and they chanted: “if it did not inundate in Misrā, expect it the next year”! (*lam yūfi fi Misrā fa-intazirhu fi al-sanah al-ukhrā*).¹⁸⁷

On this day, Ibn Abī al-Raddād also sent “good news” (*bishārah*) about the inundation of the Nile (*wafā’ al-Nīl*) to all the regions of the Sultanate.¹⁸⁸ This was habitually thought to pacify “people’s hearts.”¹⁸⁹ Thereafter the town crier (*al-munādī*) made his rounds every day, announcing the Nile’s daily rise in long elaborately worded

¹⁸⁶ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 252. al-Qalqashandī, *Kitāb ḫubh*, vol. 3, 294. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 161.

¹⁸⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4, 2, 616.

¹⁸⁸ Muḥyī al-Dīn Ibn ‘Abd al-Zāhir, *Tashrīf al-ayyām*, 74. al-Qalqashandī, *Kitāb ḫubh*, vol. 3, 294, 516. The formal announcement of plenitude to the provinces was a lengthy, elaborately worded letter. See an example of a *bishārah*-letter in al-Maqrīzī’s description of this habit during the Fātimid rule. al-Maqrīzī, *al-Khiṭāṭ*, vol. 2, 560.

¹⁸⁹ al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 366.

proclamations.¹⁹⁰ Occasionally the public announcement ceased after the river had reached a very high level, possibly because it could not be measured in the well.¹⁹¹

William Lane, who described the ceremony in the nineteenth century A.D., noticed that the government wanted to make the people believe as early as possible that the Nile had attained sixteen cubits. Therefore, people were sometimes deceived about the real height, for there was “an old law” that the land tax could not be levied unless the Nile reached sixteen cubits.¹⁹² But as William Popper mentioned there was no evidence about the existence of a specific law, which abolished the land tax¹⁹³ when the Nile did not reach plenitude.¹⁹⁴ The

¹⁹⁰ See the verbal form of the town crier’s announcement performed in the nineteenth century A.D. in Lane, *The Manners and Customs*, 496–505.

¹⁹¹ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3, 1, 53–54, 195. See, for example, the discussion of the 761/1359 flood, p. 524f.

¹⁹² Lane, *The Manners and Customs*, 498–499.

¹⁹³ See about the Egyptian land-tax system in operation in Popper, *The Cairo Nilometer*, 73–81.

sources only mention that if the water did not reach sixteen cubits, the water failed to cover some of the lands because of which the complete *kharāj* (tax)¹⁹⁵ was reduced.¹⁹⁶

This explains why sixteen cubits was called the “Sultan’s water.” The period when the Nile reached sixteen cubits approximately marked the end of one and the beginning of the next tax year and originally saw the collection of full taxes for the Sultan.¹⁹⁷ However, if the water rose above sixteen cubits for a cubit, the *kharāj* of Egypt reached 100,000 dīnār because the water reached the highest lands and

¹⁹⁴ William Popper mentions that the sources distinguish between the complete and a deficient amount of the land tax collected, not of its total abolition. Popper, *The Cairo Nilometer*, 79.

¹⁹⁵ See general information about *kharāj* in Cl. Cahen, A. Lambton et al., “*Kharādj*,” *The Encyclopaedia of Islam*, vol. 4, Leiden: Brill 1973, 1030–1056.

¹⁹⁶ al-Mas‘ūdī, *Murūj*, vol. 2, 69, 71. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 300. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 47. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 731.

¹⁹⁷ al-Mas‘ūdī, *Murūj*, vol. 2, 68. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 47–48. al-Suyūṭī, *Kawkab al-Rawḍah*, 123.

ensured their irrigation.¹⁹⁸ If the water rose so much that it drowned (*istabhara*) the land, 100,000 dīnār was waived.¹⁹⁹ Despite the relevance of these figures for the Mamlūk period,²⁰⁰ this evidence shows that in case of agricultural damage the authorities habitually were not to burden the farmers with excessive taxes due to the probable losses.

When the Nile reached sixteen cubits, which were originally favourable for the irrigation of Egypt, people rejoiced (*farah ‘azīm*).²⁰¹ However, al-Mas‘ūdī (d. ca. 345/956)²⁰² mentioned that despite the positive effects of sixteen cubits—given the canals and dykes were in

¹⁹⁸ al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 47. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 159.

¹⁹⁹ al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 47.

²⁰⁰ Mamlūk authors copied this information from earlier sources, without emphasising whether these sums of money were also levied during their epoch. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 47. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 159.

²⁰¹ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 161.

²⁰² See about al-Mas‘ūdī footnote 37, p. 160.

proper condition²⁰³—the water could not irrigate a quarter of the land, which resulted in a lack of necessary pasture for cattle.²⁰⁴ Although sixteen cubits ceased to be favourable in later centuries, traditionally this level remained the eagerly awaited height, which was then the occasion for the celebrations of Inundation Day (*Yawm al-Wafā'*)²⁰⁵ and the Canal Opening (*Kasr al-Nīl*),²⁰⁶ to be described later.

After the inundation in Misrā (7 August–5 September)—and during five or six extra days of Nasī'²⁰⁷—the daily rise of the Nile increased

²⁰³ al-Mas‘ūdī, *Murūj*, vol. 2, 71.

²⁰⁴ al-Mas‘ūdī, *Murūj*, vol. 2, 68. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 47–48.

²⁰⁵ See *Chapter 5.5.2. The Inundation Day (Yawm al-Wafā')*, p. 474f.

²⁰⁶ See *Chapter 5.5.3. The Opening of the Canal (Kasr al-Nīl)*, p. 479f.

²⁰⁷ The Coptic year consists of twelve months with thirty days each. A period of five days in three successive years and six days in the fourth year is added to the twelve month Misrā. (Popper, *The Cairo Nilometer*, 124. A. Moberg, “Nasī’,” *The Encyclopaedia of Islam*, vol. 7, Leiden: Brill 1993, 977.) These additional intercalary days are also called in Arabic *ayyām al-nasī'* “delayed days” or *al-shahr al-saghīr* “little month.” Wassef, “Coptic Calendar,” vol. 2, 439.

to ten fingers,²⁰⁸ reaching the maximum level (*nihāyat al-fayḍān*) during the first Coptic month of Tūt/11 September–10 October,²⁰⁹ sometimes rising until 20 Bābih/ca. 30 October.²¹⁰ The increased flow of the Nile during these months induced the transportation connecting Upper and Lower Egypt.²¹¹ This also made the canal of Alexandria navigable and boats began sailing toward Cairo with grain and other agricultural products, which was of economic importance.²¹²

We can conclude that the “rule of the Nile” comprised of the regular sequence of the Nile’s rise²¹³ in Abīb, Misrā, Tūt and twenty days of Bābih (from July until October), after which the water remained

²⁰⁸ al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 293–294.

²⁰⁹ Wassef, “Coptic Calendar,” vol. 2, 438.

²¹⁰ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 159. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 294.

²¹¹ Shoshan, “Nile,” 561. Erlich and Israel, Introduction, 2.

²¹² al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 739. Lev, *The Regime*, 149. F. Hassan, The Dynamics of a Riverine Civilization: A Geoarchaeological Perspective on the Nile Valley, Egypt, *World Archaeology* 29/1 (1997), 62–63.

²¹³ See also Benedick, *The High Dam*, 120–121.

stationary for twelve days and began to fall steadily.²¹⁴ During these months of rise, the wise (*al-hukamā'*) metaphorically associated the lands of Egypt with “polished pearls” (*al-lu'lu'ah al-baydā'*), so called probably because “the barren land” (*al-dunīyah bayḍā'*) when covered with water²¹⁵ gleamed like polished pearls. During the subsequent months, the water from the fields drained back into the river. The officials divided the land,²¹⁶ and the farmers began to cultivate the lands with similar regularity,²¹⁷ which were associated during these

²¹⁴ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 159. al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, 47.

²¹⁵ al-Mas'ūdī, *Murūj*, vol. 2, 65. al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, 52–53. Jalāl al-Dīn al-Mahallī, *Mabdā' al-Nil*, fol. 6v. al-Suyūṭī, *Kawkab al-Rawḍah*, 207.

²¹⁶ See general information about the division and distribution of the land in Egypt in al-Maqrīzī, *al-Mawā'iẓ wa-al-i‘tibār fī dhikr al-khiṭāṭ wa-al-āthār*, ed. by A. Sayyid, vol. 4/2, Landan: Mu'assasat al-furqān lil-turāth al-islāmī 1424/2003, 261–262.

²¹⁷ al-Qazwīnī, ‘Ajā’ib al-makhlūqāt, 186–187. See more about times of sowing and reaping of different crops during each Coptic month in al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 730f. S. Tsugitaka, *State and Rural Society in Medieval Islam. Sultans, Muqta's and Fallahun*, Leiden: Brill 1997, 188f.

months with the “black musk” (*al-miskah al-sawdā*) because of its look and smell.²¹⁸

5.5.2. The Inundation Day (*Yawm al-Wafā*)

The “rule of the Nile,” which has a long history, also implied ceremonial habits accompanying the events around the annual inundation in Misrā (7 August–5 September). The Mamlūks²¹⁹ adopted this ceremony from the Fātimids²²⁰ without any essential

Wassef, C., “Calendar and Agriculture,” *Claremont Coptic Encyclopedia*, vol. 2, 440–443.

²¹⁸ al-Mas‘ūdī, *Murūj*, vol. 2, 65. al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 52–53. Jalāl al-Dīn al-Mahallī, *Mabdā’ al-Nīl*, fol. 6v. al-Suyūṭī, *Kawkab al-Rawḍah*, 207.

²¹⁹ al-Qalqashandī, *Kitāb ṣubḥ al-a‘shā*, vol. 4, al-Qāhirah: al-Maṭba‘ah al-amīriyah 1332/1914, 47–48.

²²⁰ Popper, The Cairo Nilometer, 72. See how the Fātimids celebrated this ceremony, which belonged to the six major occasions when public processions (*mawākib*) were organised, in al-Maqrīzī, *al-Khiṭāṭ*, vol. 2, 599. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 516–521. al-Suyūṭī, *Kawkab al-Rawḍah*, 158f. H. Halm, Die Zeremonien der Salbung des Nilometers und der Kanalöffnung in Fatimidischer Zeit, in *Egypt and Syria in the Fatimid, Ayyubid*

innovations. The inundation period coincided closely with the helical rise of Sirius,²²¹ which played an important role in the astro-meteorological *malhamah* predictions, as presented in *Chapter 1 Natural Disasters in Astro-meteorological Malhamah Handbooks*.²²² The inundation of the Nile was the most important event up until the nineteenth century A.D.,²²³ as it marked the beginning of the flood, which allowed intensive cultivation of the lands on its banks and brought wealth to the Egyptians.²²⁴ On this day, the people of Cairo held splendid festivals in gratitude for the rewarding of the annual plenitude.²²⁵

and Mamluk Eras, ed. U. Vermeulen and D. de Smet, Leuven: Uitgeverij Peeters 1995, 115.

²²¹ Brosch, *Sirius Matters*, 9–10.

²²² See p. 68–70, 105–110.

²²³ Feeney, *The Last Nile Flood*, 33.

²²⁴ Brosch, *Sirius Matters*, 10.

²²⁵ Feeney, *The Last Nile Flood*, 24–33. Tsugitaka, *State and Rural Society*, 118. Lutfi, *Coptic Festivals of the Nile*, 269–273.

The ceremonies themselves consisted of two parts. The first part of the celebration took place on Inundation Day (*Yawm al-Wafā'*), when the Mamlūk Sultan or his representative rode from the Citadel (al-Qal'ah)²²⁶ to the shore of the Nile in a procession.

From there a splendidly adorned “war ship” (*harraqah*)²²⁷ known in the Fātimid period as “*al-‘ushārī*,”²²⁸ brought the Sultan and the escorting emirs and mamlūks to the Nilometer in the island of al-Rawdah, where a festive meal spread on a tablet (*simāṭā*) awaited them.²²⁹ After the meal, Ibn Abī al-Raddād²³⁰ dissolved saffron and

²²⁶ See more about the Sultan’s residence in the Citadel in al-Qalqashandī, *Kitāb ḫubḥ*, vol. 3, 372–379 and the view of Cairo, the Citadel, and the Cairo Canal (al-Khalīj) in Piri Reis, *Kitāb-i Bahriye*, mid-to late-seventeenth Century. The Walters Art Museum, Baltimore, W 658, fol. 304r. N. Rabbat, *The Citadel of Cairo*, p. 213.

²²⁷ al-Qalqashandī, *Kitāb ḫubḥ*, vol. 4, 47.

²²⁸ al-Qalqashandī, *Kitāb ḫubḥ*, vol. 3, 517. al-Maqrīzī, *al-Khiṭāṭ*, vol. 2, 553.

²²⁹ al-Maqrīzī, *al-Khiṭāṭ*, vol. 2, 553. al-Qalqashandī, *Kitāb ḫubḥ*, vol. 3, 517

²³⁰ See about the “guardian of the Nilometer” in footnote 166, p. 461.

musk²³¹ in a vessel, dived with the mixture into the water, and perfumed (*khallaqa*)²³² the gauge (*'amūd*) and the walls of the well (*fasqīyah*).²³³

Apart from this, on that day Ibn Abī al-Raddād opened the window of the Nilometer looking to al-Fustāt (Old Cairo) and hung a curtain on it.²³⁴ This practice, probably adapted from the Fātimid period,²³⁵ was

²³¹ al-Maqrīzī, *al-Khiṭāṭ*, vol. 2, 553.

²³² al-Qalqashandī, *Kitāb ṣubḥ*, vol. 4, 47–48. The act of perfuming objects as a ritual has ancient transcultural roots. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 161. al-Suyūṭī, *Kawkab al-Rawḍah*, 158. Popper, *The Cairo Nilometer*, 72.

²³³ al-Qalqashandī, *Kitāb ṣubḥ*, vol. 4, 47–48. Cf. al-Maqrīzī, *al-Khiṭāṭ*, vol. 2, 553. al-Qalqashandī (d. 821/1418) described that during the Fātimid Caliphate, Ibn Abī al-Raddād received a special “robe of honour” and five purses with five hundred dirham in each for performing his duties. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 516–517.

²³⁴ al-Qalqashandī, *Kitāb ṣubḥ*, vol. 4, 47. Not every chronicler mentions the performance of this habit. See, for example, al-Maqrīzī, *Kitāb al-sulūk*, vol. 2, 1–2, 3, 171.

a visual symbol of the public announcement. Ibn Iyās (d. 930/1524) gives the most detailed description of the ceremony, mentioning this habit in his chronicle.²³⁶ It seems that this habit was completely integrated into the celebration rites with the appearance of the new pavilion (*al-qasr*),²³⁷ which Sultan Qānṣawh al-Ghawrī (r. 906–922/1501–1516) ordered to be erected on the platform of the Nilometer.²³⁸ Moreover, the whole location turned into a leisure area for the Sultan and his entourage, to which he retreated on different occasions.²³⁹

²³⁵ al-Suyūṭī (d. 911/1505) mentioned that when the Nile reached sixteen cubits, the black Caliphate curtain was hung on the Nilometer's window. al-Suyūṭī, Kawkab al-Rawḍah, 146.

²³⁶ Ibn Iyās' records show that this practice was an integral part of the ceremony from 917/1511 onwards. Ibn Iyās, *Badā'i'*, vol. 4, 232, 389.

²³⁷ Ibn Iyās, *Badā'i'*, vol. 4, 232. See different designations of *qasr* in Rabbat, The Citadel of Cairo, 217f.

²³⁸ Ibn Iyās, *Badā'i'*, vol. 4, 232. See also the record of this habit in 717/1317 in al-Maqrīzī, *Kitāb al-sulūk*, vol. 2, 1–2, 3, 171.

²³⁹ Ibn Iyās, *Badā'i'*, vol. 4, 271, 273, 275–278, 372, 384. Gatherings at the Nilometer were also common during the Fāṭimid time. al-Qalqashandī, *Kitāb ḫubh*, vol. 3, 516–517.

5.5.3. The Opening of the Canal (*Kasr al-Nīl*)

The next day²⁴⁰ after the ceremonies at the Nilometer, the Sultan's *harraqah*, usually followed by other ships, moved to the Cairo Canal (Khalij al-Qāhirah),²⁴¹ where the second part of the ceremony, the opening of the dam (*kasr al-Nīl/kasr al-khalij/fath al-sadd*) took place.

²⁴⁰ The exact day of the canal opening depended on the official decree. According to al-Qalqashandī (d. 821/1418), during the Fātimid period, people opened the canal on the third or fourth day after the ceremonies at the Nilometer, whereas during his lifetime, this happened on the same day. (al-Qalqashandī, *Kitāb ḫubḥ*, vol. 3, 518.) Yet, the records in the chronicles show that people usually broke the dam the next day after the ceremony. See, for example, Ibn Iyās, *Badā'i'*, vol. 3, 277. al-Asqalānī, *Inbā' al-ghumr*, vol. 3, 510.

²⁴¹ During different epochs, the Cairo Canal, which extended with the establishment of New Cairo, was also known as Khalij Miṣr, Khalij al-Lu'lū', Khalij of Amīr al-Mū'minīn and Khalij al-Hākimī. See the history of this canal in al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 191–192 and vol. 3, 465–479. al-Qalqashandī, *Kitāb ḫubḥ*, vol. 3, 302–303. al-Suyūṭī, *Husn al-muḥādarah*, vol. 2, 387. al-Suyūṭī, *Kawkab al-Rawḍah*, 180–185 and see the sketch of the Cairo Canal (al-Khalij) in Rabbat, *The Citadel of Cairo*, p. 213.

People cut the dam of the Cairo Canal with picks and shovels, which was annually constructed across it²⁴² to prevent the Nile's flooding before it reached the desired level of sixteen cubits.²⁴³ Afterwards the Nile flowed through the *khalīj*²⁴⁴ into artificial canals (*tura'*) leading water to the valleys of Egypt,²⁴⁵ and to places, remote from the stream of the Nile.²⁴⁶

²⁴² Tsugitaka, State and Rural Society, 118. Popper, The Cairo Nilometer, 82.

²⁴³ Popper, The Cairo Nilometer, 82.

²⁴⁴ See the types and distribution of canals in Egypt in al-Maqrīzī, al-Khiṭāṭ, vol. 1, 186–192 and vol. 3, 465–484. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 301–306.

²⁴⁵ al-Suyūṭī, *Kawkab al-Rawḍah*, 149.

²⁴⁶ al-Maqrīzī, al-Khiṭāṭ, vol. 1, 186. al-Maqrīzī notices in *al-Khiṭāṭ* that the lands of Egypt differ in their height and lowness. There are lands which are irrigated quickly, those which are irrigated after days and those which are not irrigated because of their height. This means that the water cannot reach the high lands in Upper Egypt (*Bilād al-Ṣā'īd*) except when the Nile rises much and small canals (*tura'*) are in proper condition. The low lands (*asfal al-ard*), on the contrary, can suffer damage from the flood, which necessitates constant shoring up of dykes and dams to trap the water in the basins. (al-Maqrīzī, al-Khiṭāṭ, vol. 1, 148.) See more about the division of

The water flowed through these canals, controlled by dykes (*jisr*, pl. *jusūr*),²⁴⁷ into large basins where the water stayed for some weeks, drenching the land. The remaining water flowed back into the Nile.²⁴⁸

the Delta (Lower Egypt) in A. Guest, XXV. The Delta in the Middle Ages: a Note on the Branches of the Nile and the Kurahs of Lower Egypt, with Map, *Journal of the Royal Asiatic Society* 44/04 (October 1912), 945.

²⁴⁷ Prior to the construction of the first Aswān Low Dam in 1898–1902 A.D. (see footnote 57, p. 39), there were two types of dikes, which were indispensable for Egypt's irrigation system: *al-jusūr al-baladīyah* (community dams) and *al-jusūr al-sultāniyah* (government dams). *al-Jusūr al-baladīyah* was a local network of dikes and man-made canals, which peasants and cultivators maintained locally, within the borders of villages. *al-Jusūr al-sultāniyah* was a regional network of dykes and canals, linking the system outside the boundaries of villages. As the function of the latter was of public importance, the Sultan and prominent emirs were responsible for its control. (al-Maqrīzī, al-Khiṭāṭ, vol. 1, 272. Tsugitaka, State and Rural Society, 119, 226, 235–238. S. Borsch, The Black Death and Human Impact on the Environment, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. G. Schenk, Heidelberg: Springer forthcoming.) This theoretic distinction of the complex irrigation system shows that its management was

not purely centralised, but was instead “self-governed.” (Cf. the theory of the “self-governing irrigation system,” in which a “segment of society governs itself *for itself*,” in E. Ostrom, *Crafting Institutions for Self-Governing Irrigation Systems*, California Institute for Contemporary Studies San Francisco 1992, vii.) This point contradicts Karl Wittfogel’s theory on “Oriental Despotism” of “hydraulic societies,” like China, India, Mesopotamia and Egypt, which, relying on large-scale government-managed works of irrigation, gave rise to despotic bureaucratic centralised states. (Hassan, *The Dynamics of a Riverine Civilization*, 52. K. Wittfogel, *Oriental Despotism: A Comparative Study of Total Power*, New Haven: Yale University Press 1957.) As Fekri Hassan rightly remarked “Egypt probably survived for so long because production did not depend on a centralized state” that “was more concerned with collecting taxes and attending to the monumental display of royal power and religious institutions than with irrigation.” (Hassan, *The Dynamics of a Riverine Civilization*, 52, 69.

²⁴⁸ To fill the basins in Egypt, different big canals (*khuljān*) and artificial canals (*tura*) were opened on different days. See the details on the irrigation system in al-Maqrīzī, al-Khiṭāṭ, vol. 1, 148–149. al-Qalqashandī, *Kitāb ḫubh*, vol. 3, 294.

Mamlūk chroniclers made brief reports about the celebrations on these days in their annual entries. Although the inundation of the Nile was an important public event in the life of Egyptians, their records show that only a few Sultans attended it personally, and this on an irregular basis. From the *Bahri* (Turkish)²⁴⁹ rulers, prominent Sultans Baybars (r. 658–676/1260–1277)²⁵⁰ and Qalāwūn (r. 678–689/1279–1290)²⁵¹ deemed it necessary to preside over the ceremonies. Years

²⁴⁹ See about this period footnote 39, p. 270.

²⁵⁰ This information is recorded in several non-contemporary sources like al-Maqrīzī, *al-Sulūk li-ma'rifat duwal al-mulūk*, ed. by M. 'Aṭā, vol. 5, Bayrūt: Dār al-kutub al-īlmīyah 1418/1997, 150. al-Sakhāwī, *al-Dhayl al-tām*, vol. 1, 329. al-Suyūtī, *Kawkab al-Rawdah*, 169. al-Suyūtī, *Husn al-muḥādarah*, vol. 2, 307. 'Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 203.

²⁵¹ All of the chroniclers mentioned in footnote 250, p. 483 recorded that after Sultan Baybars (r. 658–676/1260–1277) *Burjī* Sultan Barqūq (r. 784–791/1382–1389) visited the celebration for the first time in 785/1383. However, a contemporary author, Muhyī al-Dīn Ibn 'Abd al-Zāhir (d. 692/1293) mentioned that Sultan Qalāwūn (r. 678–689/1279–1290), who reigned before Barqūq, also headed the ceremony in 679/1280. Muhyī al-Dīn Ibn 'Abd al-Zāhir, *Tashrīf al-ayyām*, 74.

had to pass until the first *Burjī* (Circassian)²⁵² Sultan Barqūq (r. 784–791/1382–1389)²⁵³ would revive this habit (*‘ādah*) in 785/1383,²⁵⁴ probably wishing to mark the start of a new era with his coming to power. He may also have wanted to be compared with the *Bahrī* Sultan Baybars (r. 658–676/1260–1277), who adopted this habit after coming to power and whom the Muslim world honoured greatly for his heroic achievements.²⁵⁵ Only few *Burjī* Sultans followed Barqūq's

²⁵² See about this period footnote 39, p. 270.

²⁵³ The first Circassian Sultan Barqūq seized power twice in 784–791/1382–1389 and 792–801/1390–1399. *Sāmī*, *Taqwīm al-Nīl*, vol. 2, 199. Northrup, The *Bahrī* Mamlūk Sultanate, 288–289. Garcin, The Regime of the Circassian Mamlūks, 290f. Th. Wijntjes, Sultan al-Zāhir Barqūq as Seen by his Contemporaries Ibn Khaldūn and Bertrando de Mignanelli, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. U. Vermeulen, Leuven: Peeters 2010, 383–394.

²⁵⁴ al-Maqrīzī, *al-Sulūk*, vol. 5, 150.

²⁵⁵ The Muslim world considered Baybars (r. 658–676/1260–1277) a hero as he defeated the crusaders and fought against the Mongols. He was also considered a successful Mamlūk ruler with a number of achievements in different spheres. C. Wiet, “Baybars I,” *The Encyclopaedia of Islam*, vol. 1,

example: his son Faraj (r. 808–815/1399–1412),²⁵⁶ al-Mu'ayyad (r. 815–824/1412–1421),²⁵⁷ Barsbay (r. 825–841/1422–1438),²⁵⁸ Khushqadam (r. 865–872/1461–1467),²⁵⁹ and Qānṣawh al-Ghawrī (906–922/1501–1516).²⁶⁰

Leiden: Brill 1954, 1124–1126. R. Amitai, “Baybars I, Mamluk Sultan,” *Medieval Islamic Civilization: an Encyclopedia*, Routledge 2006, 101–102.

²⁵⁶ Sultan Faraj lost his position for three months in 808/1405, returning to the office the same year. (Sāmī, *Taqwīm al-Nīl*, vol. 2, 199f.) The records show that he participated at the ceremonies several times. al-Maqrīzī, *Kitāb al-sulūk*, vol. 3, 3, 1130. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4, 1, 68, 180.

²⁵⁷ Sultan al-Mu'ayyad followed this habit every year until his death. al-Suyūtī, *Kawkab al-Rawdah*, 169. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4, 1, 263, 318, 360, 452. 'Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1, 4, 42.

²⁵⁸ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4, 2, 834. al-Suyūtī, *Kawkab al-Rawdah*, 169.

²⁵⁹ Since 868/1464 Sultan Khushqadam attended the ceremony periodically until his death in 872/1467. 'Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 6, 194, 218, 272.

²⁶⁰ Sultan Qānṣawh al-Ghawrī attended the ceremony occasionally. Ibn Iyās, *Badā'i'*, vol. 4, 238.

Mamlūk Sultans, who performed this duty, probably hoped that with their presence God would bless the Nile with an adequate rise and secure a peaceful and productive year without price turbulences,²⁶¹ which the shortage of the Nile usually entailed.²⁶² Their presence would also strengthen the people's belief in their sovereign, especially during years of hardship. This was the case in 833/1430,²⁶³ when—after consecutive years of disastrous water shortages in 829–833/1425–1430²⁶⁴—Sultan Barsbay (r. 825–841/1422–1438) decided to lead the celebrations for the first time. The same year Barsbay's son died, which was another personal setback for the Sultan.²⁶⁵ All these

²⁶¹ This notion was typical in the history of Egypt. Ancient kings were also portrayed as mediators, who intervened with the gods to ensure order and prosperity. Hassan, *A River Runs through Egypt*, 69.

²⁶² See about the interrelation between the Nile's rise and prices for commodities in footnote 512, p. 557.

²⁶³ According to the chronicles, the decay of the dikes (*fasād al-jusūr*) led to water shortage. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 834. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 286. al-Suyūṭī, *Kawkab al-Rawḍah*, 169.

²⁶⁴ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 709–710, 748f, 764f, 805f. See also footnote 753, p. 622.

²⁶⁵ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 844.

events moved him to preside over the ceremony. In the light of dramatic events that took place that year—like the spread of the terrifying plague,²⁶⁶ which swept away the lives of thousands of people²⁶⁷ and animals²⁶⁸—through his presence Sultan Barsbay (r. 825–841/1422–1438) probably wished to show his integrity and

²⁶⁶ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 824f. The chroniclers described the year 833/1430 as full of calamities (*balāyā*), like epidemics (*wabā'*, *tā'ūn*), battles (*malāḥim*), strifes (*fitan*) in “the lands of Islam” and other regions of the world. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 289. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 836. See also Dols, *The Black Death*, 204f.

²⁶⁷ Only in the region of al-Mahalla the number of dead reached five thousand people. See numbers for other regions in al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 821f. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 276. See also chapter *The Estimated Mortality of the Plague Epidemic of 833/1429–1430* in Dols, *The Black Death*, 204f. M. Dols, *The Comparative Communal Responses to the Black Death in Muslim and Christian Societies*, in *Viator: Mediaeval and Renaissance Studies*, ed. L. White, London: University of California Press 1974, 280.

²⁶⁸ al-Maqrīzī (d. 845/1442) reports that dead fish and crocodiles were floating on the surface of the Nile between Old and New Cairo. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 825. al-Suyūṭī, *Kawkab al-Rawḍah*, 259.

ability to cope with the crisis. He may also have hoped to secure the much-awaited flow of the Nile, averting additional disasters. The event of the year offered him a chance to reaffirm and consolidate his authority in the people's eyes.

Nevertheless, the participation at the celebrations sometimes proved to be a risky venture for the rulers. Some of them wished to lead the ceremony but restrained from doing so²⁶⁹ or did it secretly, depriving the population of a public celebration.²⁷⁰ This happened when the Sultan's security was at stake, especially during periods of social unrest.

²⁶⁹ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3, 3, 1022. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 2, 108.

²⁷⁰ The unprecedented way of the canal opening happened in 904/1498, when al-Malik al-Nāṣir Muḥammad Ibn Qāytbāy (r. 901–904/1496–1498) broke the dam at night, fearing attacks. When people found the canals full of water the following morning, they wondered, as that had never happened before. (Ibn Iyās, *Badā’i‘*, vol. 3, 387.) See the historical background, describing the turbulent short reign of Ibn Qāytbāy, which was marked by rebellions of emirs, insecurity, Bedouin attacks as well as a return of plague, in Garcin, *The Regime of the Circassian Mamlūks*, 296–297.

In all other years, the Sultan usually sent a representative—his son,²⁷¹ an emir of high rank, like the Atābek (the Sultan’s commander in chief),²⁷² the senior chamberlain (*hājib al-hujjāb*)²⁷³ or the grand chancellor (*al-dawādār*)²⁷⁴—to perform this duty. The same person used to lead the ceremony for years so that people were accustomed to see him at the celebration. The repetitive character of ceremonies, which was a demonstration of “normality,” fortified the habit even more.²⁷⁵ In return, the Sultan bestowed upon him a “robe of honour”

²⁷¹ Ibn Taghrī Bardī, Ḥawadith al-duhūr, vol. 1, 106, 121, 134, 154, 213.

‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,6, 21, 43, 64, 87.

²⁷² See, for example, ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,8, 159. Ibn Iyās, Badā’iṣ, vol. 3, 315.

²⁷³ al-Maqrīzī, Kitāb al-sulūk, vol. 4,2, 859. Ibn Iyās, Nubdhah min nashq, 93.

²⁷⁴ Ibn Iyās, Badā’iṣ, vol. 3, 436.

²⁷⁵ Almost in all of the *akhbār*, the following wording appears: “(He) went down, the Nilometer was perfumed and the canal was opened at his presence as usually” (*nazala [...] fa-khallaqa al-miqyās wa-fataha al-khalij bayna yadayyhi ‘alā al-‘ādah*). See an example in ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,5, 289.

(*khil‘ah*) in the Citadel, to which the emir rode in a splendid procession,²⁷⁶ to the sound of trumpets and drums. This occasion was also a great chance for the Sultan’s representative to present himself glamorously in public,²⁷⁷ showing acts of generosity.²⁷⁸

Only occasionally, under exceptional circumstances, was the performance of these rites disturbed. This happened when the Nile did not reach plenitude. “Years without plenitude”²⁷⁹ were extremely rare and usually led to disastrous droughts. In this case, Ibn Abī al-Raddād did not perfume the gauge of the Nilometer, and the Sultan’s representative opened the dam without celebrations.

Mamlūk chroniclers, especially in later centuries, like Ibn al-Taghīrī Bardī (d. 874/1470) and Ibn Iyās (d. 930/1524), usually finalised this

²⁷⁶ Ibn Iyās, *Badā’i‘*, vol. 3, 315–316.

²⁷⁷ Ibn Iyās, *Badā’i‘*, vol. 4, 325.

²⁷⁸ Ibn Iyās, *Badā’i‘*, vol. 3, 436–437.

²⁷⁹ See *Chapter 5.8.1. “Years without Plenitude”* p. 562f.

information in the *khabar* with short verses, describing the current mood during the celebrations:²⁸⁰

“The Cairo Canal (*al-Khalīj*) was broken, and it was a blessing (*ni‘mah*).

The hearts of people (*qulūb al-‘ālāmīn*) were delighted at its announcement.

It was a “marvellous oddity” (*min ‘ajā’ib wa-gharā’ib*) that the hearts of the Muslims were fully acquainted with its breaking (*li-kasrihi*).²⁸¹

As previously mentioned, the inclusion of such elements in the chronicles was typical for the narrative of special events, such as feasts, deaths of prominent people, disastrous events like

²⁸⁰ See some examples of short poetic verses in Ibn Taghrī Bardī, *Hawadith al-duhūr*, vol. 1, 57, 71, 93, 106–107, 121, 134, 154. Ibn Iyās, *Badā’i‘*, vol. 3, 289, 437. Ibn Iyās, *Badā’i‘*, vol. 4, 36, 273, 462. al-Suyūtī, *Kawkab al-Rawdah*, 259–266.

²⁸¹ Ibn Iyās, *Badā’i‘*, vol. 4, 389.

earthquakes,²⁸² fires²⁸³ and spread of plague.²⁸⁴ All of these habits and “rules of the Nile” became “cultural” in the sense that they were part of the people’s everyday normal life and consciousness, shaping their perception of Egypt and the Nile.

5.6. Deviations from the Habitually Known “Rule of the Nile”

We can now we can turn to a discussion of excessive floods and extreme water shortages, which the Egyptians considered troublesome because they deviated from the known “rule of the Nile.” In comparison to earthquakes, which were sudden events, bringing deaths during its occurrence and hardships afterwards, the excessive rise of the Nile or its extreme shortage were usually foreseeable, as people knew the system of its gradual rise.

²⁸²

See

Chapter 4 Earthquakes, p. 285f.

²⁸³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 328. al-‘Asqalānī, *Inbā’ al-ghumr*, 170. Ibn Iyās, *Badā’i‘*, vol. 2, 347.

²⁸⁴ Ibn Iyās, *Badā’i‘*, vol. 3, 283–285. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,1, 177.

Thus in Mamlūk Egypt excessive floods happened when the sequence of natural events known as the “rule of the Nile” was disturbed. This referred to the previously mentioned cases of “extraordinary oddities,” (*min nawādir al-ziyādāt*)²⁸⁵ when

- (1) the Nile’s minimum measurement before the inundation during Ba’ūnah/8 June–7 July was extremely high²⁸⁶
- (2) the Nile inundated out of season, i.e. in Abīb (8 July–6 August), before the traditionally expected month in Misrā (7 August–5 September)²⁸⁷
- (3) rose high in succession before reaching “plenitude” (i.e. sixteen cubits)²⁸⁸ and
- (4) rose excessively and did not recede so that people could cultivate.

²⁸⁵ See p. 457.

²⁸⁶ See *Chapter 5.7.2. Extremely High Minimum of the Nile before the Inundation Day*, p. 519.

²⁸⁷ See *Chapter 5.7.3. Inundation in Abīb (8 July–6 August)*, p. 533f.

²⁸⁸ See general information about the “plenitude” and its significance in *Chapter 5.5.1. “The Good News” (al-Bishārah)*, p. 466 and the discussion of this “oddity” in *Chapter 5.7.4. High Rises in Succession*, p. 541.

In all of these cases people feared an excessive height being reached afterwards. But what the “excessive” height (*ziyādah mufriṭah/ziyādah kabīrah*) might mean necessitates clarification both from the hydrological perspective and from the specific perspective of the Nile’s hydrological history.

5.6.1. Classification of Floods from the Hydrological Perspective

As with the intensity scales of earthquakes, there are different flood intensity scales used in the field of hydrology for floods in the pre-instrumental period. Katrin Sturm and her colleagues proposed one of the intensity scales,²⁸⁹ which helps to classify historical floods of the pre-instrumental period based on human observation. Briefly summarised, the indices in this scale range from level 1 to 3:²⁹⁰

²⁸⁹ See more references to other intensity scales in K. Sturm, R. Glaser et al., Hochwasser in Mitteleuropa seit 1500 und ihre Beziehung zur atmosphärischen Zirkulation, *Petermanns Geographische Mitteilungen* 145/6 (2001), 15. Brázdil, Kundzewicz et al., Flood Risk in Europe, 749.

²⁹⁰ K. Sturm, R. Glaser et al., Hochwasser in Mitteleuropa, 15.

Index	Classification	Primary and Secondary Indicators
1	short flood	little damage
2	above average or supra-regional flood	damage of structures with loss of animals and sometimes human lives
3	above average or supra-regional flood on disastrous scale	severe material damage and extensive loss of animals and human lives

Index of Excessive Floods

However, this scale is not fully applicable to Egypt as it only classifies excessive floods, leaving aside short floods, which could also lead to environmental damage and human losses. However, we can complement the missing information, adapting it to the specifics of the Nile. To illustrate the types of insufficient low floods and their impact on the surroundings and society, we can similarly append indices from -1 to -3:

Index	Classification	Primary and Secondary Indicators
-1	delayed flood	little damage
-2	quick decline of water	drought with loss of animals and sometimes human lives
-3	extreme shortage of water	disastrous drought with extensive material damage and loss of animal and human lives

Index of Short Floods

This categorisation, while an oversimplified classification of floods, is still a useful tool for research into the pre-instrumental period. However, as I mentioned at the beginning of the chapter on the Nile,²⁹¹ in the case of the Nile's hydrological history, we have both documentary and instrumental data, which distinguishes the research on the Nile from research on other rivers.

²⁹¹ See p. 415.

5.6.2. “Excessive” and “Low” Floods from the Perspective of the Nile’s Specific Hydrological History

The instrumental data provided by the measurements in the Nilometer make it possible to retrieve information about when the Nile rose excessively or little.²⁹² However, what people considered excessive or insufficient also varied during different epochs due to different reasons.²⁹³ Moreover, not every irregularity ended up being

²⁹² “[In Ancient Egypt], Nilometers were positioned along the river, and the measurements were calibrated to predict poor, good and excessive flood heights. Although current evidence does not indicate that the Egyptians transformed the Nilometer readings into useful measures for predicting crop yields, they most certainly understood the implications of a normal, low or high flood and prepared accordingly.” (D. Brewer, *The Archaeology of Ancient Egypt: Beyond Pharaohs*, Cambridge: Cambridge University Press 2012, 132.) Discussing the irrigation system during the Ayyūbid and Mamlūk period, Sato Tsugitaka also mentioned that “the Nilometer always precisely forecast what kind of harvest might be expected.” Tsugitaka, State and Rural Society, 220.

²⁹³ F. Hassan, Environmental Perception and Human Responses in History and Prehistory, in *The Way Wind Blows: Climate, History and Human Action*, ed. R. McIntosh, J. Tainter et al., New York: Columbia University Press

a disaster, if we consider that the level necessary for the operations of irrigation varied in different regions of Egypt. These factors necessitate the presentation of levels and their meanings, which are useful tools for better understanding water-related disasters and their impact on the population and environment. Methodologically speaking, this knowledge also helps us to carry out targeted research in the chronicles.

While writing about the levels of the Nile and their meanings, most of the Mamlūk authors cited, with small amendments, the prominent Arab historian and geographer al-Mas‘ūdī (d. 346/957).²⁹⁴ According to him, the most adequate level during his time was seventeen cubits, which were sufficient for the whole land to meet its needs during the year.²⁹⁵ This explains why several *Qur’ānic* verses (50:9; 22:5; 22:62;

2000, 132f. See also the explanations for the different meanings of levels, p. 503.

²⁹⁴ See footnote 37, p. 160.

²⁹⁵ al-Mas‘ūdī, *Murūj*, vol. 2, 68. al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, 54. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 158.

42:27),²⁹⁶ emphasising the greatness of God, who sends water to earth to enliven it, adorned the walls of the Nilometer at this level.

Levels above seventeen cubits, called *al-lujjah al-kubrā* (“great fathomless sea”)²⁹⁷ because of its destructive effect, led to the flooding (*istabħara*) of a quarter of the lands. When the water surpassed eighteen cubits—considered the highest during al-Mas‘ūdī’s lifetime—epidemics (*wabā’*)²⁹⁸ ensued in Egypt, and the *kharāj* decreased, as the water flooded the lowest lands.²⁹⁹

²⁹⁶ Popper, The Cairo Nilometer, 49.

²⁹⁷ al-Maqrīzī, al-Khiṭāṭ, vol. 1, 161. al-Suyūṭī, Kawkab al-Rawḍah, 151.

²⁹⁸ al-Mas‘ūdī, Murūj, vol. 2, 68. al-Aqfahsī, Kitāb akhbār Nīl Miṣr, 47–48. al-Maqrīzī, al-Khiṭāṭ, vol. 1, 158. Similarly to the interrelation between earthquakes and spread of epidemics (see page 335), the outbreak of epidemics following excessive floods was almost a normal consequence. See also footnote 47, p. 35; footnote 159, p. 459 and practical cases on p. 527, 540, 546.

²⁹⁹ al-Maqrīzī, al-Khiṭāṭ, vol. 1, 159. al-Suyūṭī, Kawkab al-Rawḍah, 152.

Mamlūk authors like al-Maqrīzī (d. 845/1442) and al-Qalqashandī (d. 821/1418) updated al-Mas‘ūdī’s (d. 346/957) records by providing observations from their epoch, which told another story. Writing about the Mamlūk period, they emphasised that, as opposed to earlier times,³⁰⁰ levels above seventeen cubits were considered average (*mutawassītah*),³⁰¹ and they sometimes even led to an extreme famine (*ghalā’ azīm*), especially because of the decay of dykes and canals.³⁰²

In addition, al-Maqrīzī (d. 845/1442) made an important observation concerning the originally disastrous level above nineteen cubits, the impact of which was conveyed in a popular saying “God save us from

³⁰⁰ al-Qalqashandī (d. 821/1418) means the period before al-Mas‘ūdī’s (d. 345/956) lifetime, and al-Maqrīzī (d. 845/1442) refers to the times of the noted Arab historian al-Qādī al-Fāḍil (d. 596/1199), Saladin’s vizier, whose report he cites. (al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 161.) See about al-Qādī al-Fāḍil in N. Hanif, “al-Qadi al-Fadil,” *Encyclopaedic Historiography of the Muslim World*, vol. 3, Delhi: Global Vision Publishing House 2003, 783–784. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 300.

³⁰¹ al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 300.

³⁰² al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 903. al-Suyūṭī, *Kawkab al-Rawḍah*, 151. al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 159, 161.

a finger from twenty” (*na‘udh bi-allāh min iṣba‘ min ḥishrīn*),³⁰³ i.e. more than nineteen.³⁰⁴ According to him, this height failed to cover the whole land from 806/1403³⁰⁵ onwards because the dykes were in decay.³⁰⁶ As a result, the water plunged rapidly and the peasants could not fill the basins with water, necessary for the irrigation of fields. In fact, we have numerous reports about the increase of the short duration of the Nile’s flooding from the fifteenth century A.D.³⁰⁷ In the early sixteenth A.D. century, Ibn Iyās’ records show that the high level of twenty cubits, previously considered as disastrous, meant extreme profit.³⁰⁸ In an anonymous manuscript on predictions

³⁰³ al-Maqrīzī, al-Khiṭāṭ, vol. 4/2, 159.

³⁰⁴ There were two different ways of writing the levels. The chroniclers either named, first—cubits, then—fingers, like, for example, “nineteen cubits and one finger” or wrote the same measure as “one finger from twenty cubits,” which also meant nineteen cubits and one finger.

³⁰⁵ See more about the crisis of 806–807/1403–1404 in *Chapter 5.8.1.3*.

Drought of 806–807/1403–1404, p. 587f.

³⁰⁶ al-Maqrīzī, al-Khiṭāṭ, vol. 4/2, 159.

³⁰⁷ See Borsch, The Black Death, footnotes 706, p. 608 and footnote 716, p. 611.

³⁰⁸ Ibn Iyās, *Badā’i‘*, vol. 4, 281, 295. Ibn Iyās, *Nubdhah min nashq*, 119.

about the Nile's rise—probably stemming from the mid-sixteenth century A.D.—the level of twenty cubits is even described as a “blessing” for the year.³⁰⁹

In fact, during the fourteenth century A.D., the maximum levels shifted, and their meanings and effects changed. al-Qalqashandī (d. 821/1418) explained that this change was due to two main reasons:

³⁰⁹ Anonymous, *Risālah fi ma'rufat zīyādat al-Nīl*, fol. 2v. Although the perception of twenty cubits as a “blessing” by the anonymous author shows similarities with Ibn Iyās' description, we should treat this information with caution because we do not know exactly when this manuscript was compiled, and whether the measurements mentioned in it referred to the Nilometer scale of the Mamlūk time or the period after 1523 A.D. According to Willima Popper, after the Ottoman conquest of Egypt, new measurement value of the cubit was introduced. See scale differences in Popper, *The Cairo Nilometer*, 102f. Cf. Mahmoud Bey, *Le système métrique actuel d'Égypte*, 1–45. J. Ardagh, *Nilometers*, in *The Cairo Nilometer: Texts and Studies*, ed. F. Sezgin, Frankfurt am Main: Institute for the History of Arabic-Islamic Science 2001, 62–72. Reiss, *Der Nilometer bei Cairo*, 73–79. Richards, *Nilometer on Roda Island*, 80–88. See the drawing of the Nilometer gauge in Popper, *The Cairo Nilometer*, p. 48.

on the one hand, the land became high because of the silt (*tīn*), which the water stream brought year by year and deposited as sediment on the bed of the Nile; on the other hand, the dykes (*al-jusūr*) became neglected.³¹⁰ al-Maqrīzī (d. 845/1442) also emphasised that the extensive decay of the irrigation system was the cause of the water shortage.³¹¹

In his treatise *Ighāthat al-ummah bi-kashf al-ghummah*, al-Maqrīzī (d. 845/1442) wrote about the causes of the decay of the irrigation system, which he ascribed to the predominating injustice, corruption, and financial crisis in Egypt.³¹² Furthermore, he named the miserable demographic situation as another reason for the bad conditions of the irrigation system. Summarising the existing segments of the Mamlūk

³¹⁰ al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 300. See the analysis of the average increase in the rise of the the Nile's bed between 1260–1517 A.D. in Popper, The Cairo Nilometer, 243. Hassan, Extreme Nile Floods, 102. Borsch, Nile Floods, 132–133.

³¹¹ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 161. al-Suyūṭī, *Kawkab al-Rawḍah*, 151.

³¹² al-Maqrīzī, *Ighātha al-umma*, 59–97. Allouche, al-Maqrīzī's *Ighāthah*, 50–72.

society, he mentioned that most of the land cultivators, intellectuals (legists, students of theology, legal witnesses, the Sultan's cavalrymen), and craftsmen perished or were afflicted by poverty due to the calamities of the recent years (*shiddat al-sinīn*) and the successive ordeals caused by the lack of cultivated land.³¹³

The massive depopulation occurred in the first place, as discussed in Stuart Borsch' article,³¹⁴ because of the plague³¹⁵ of 749/1348,³¹⁶ which reoccurred on regular cycles until the early sixteenth

³¹³ al-Maqrīzī, *Ighāthat al-ummah*, 101f. Allouche, al-Maqrīzī's *Ighāthah*, 75.

³¹⁴ Borsch, Environment and Population, 451–468.

³¹⁵ See about the origins, effects and reactions to the plague during some of the years in Ibn Kathīr, *al-Bidāyah*, vol. 2, 2211. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 1034f. al-‘Asqalānī, *Inbā’ al-ghumr*, 370. ‘Abd al-Bāsit, *Nayl al-amal*, vol. 2,5, 123. Ibn Iyās, *Badā’i‘*, vol. 4, 303–304. Irwin, *The Middle East in the Middle Ages*, 134. A. Allouche, “Epidemics,” *Medieval Islamic Civilization: an Encyclopedia*, vol. 1, London: Routledge 2006. Dols, Communal Response to the Black Death, 269–287. Northrup, The Bahri Mamlūk Sultanate, 287–289.

³¹⁶ See references in footnote 193, p. 339.

century A.D.³¹⁷ In 749/1348 alone the plague took the lives of numerous people,³¹⁸ forcing many to flee from the infected areas.³¹⁹

³¹⁷ Apart from the epidemic of 749/1348, all of the chroniclers I used for my research on disasters in the Mamlūk Egypt report about major and minor outbreaks of the plague and other diseases during the following years 760/1358–9, 764–765/1362–1364, 769/1367–8, 779/1377–8, 790–791/1388–9, 796/1393–4, 808/1405–6, 809–810/1406–1408, 813/1410–11, 816/1413–4, 818–823/1415–1421, 841–842/1437–1439, 847–849/1443–1446, 852/1448–9, 858–859/1453–1455, 864/1459–60, 873/1468–9, 881/1476–8, 897–898/1491–3, 903–904/1497–1499, 909–910/1504–5 and 919/1513–4. For further details on major and minor outbreaks see also D. Neustadt, *The Plague and its Effects upon the Mamlūk Army*, *Journal of the Royal Asiatic Society of Great Britain and Ireland* 1 (April 1946), 72–73. Garcin, *The Regime of the Circassian Mamlūks*, 308f.

³¹⁸ According to al-Maqrīzī (d. 845/1442), about 15,000 people died daily because of the plague. (al-Maqrīzī, *Kitāb al-sulūk*, vol. 2,1–2,3, 772.) ‘Abd al-Bāsiṭ recorded that the number of dead reached 900,000 people in Ramaḍān 749/1348. (‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,1, 174.) Stuart Borsch argues that the Black Death eliminated half of the urban population by the mid-fifteenth century. Borsch, *Environment and Population*, 461. See

The aftermath of the arrival of the plague brought massive social and economic changes in Mamlūk society, leading to the rapid transmission of *iqtā'āt* (granted lands),³²⁰ from one tenant to another,³²¹ which additionally influenced the proper maintenance of the irrigation system. According to Stuart Borsch, Egypt's agrarian output fell by some 70 percent.³²²

also A. Raymond, Cairo's Area and Population in the Early Fifteenth Century, *Muqarnas* 2 (1984), 21–31.

³¹⁹ Shoshan and Panzac, “Wabā’,” 2–4.

³²⁰ *Iqtā'/iqtā'āt* “apportionment,” “a revocable allotment of revenue yield from a tract of agrarian land to provide an officer with resources to support his troop contingent and personal expenses.” (Petry (ed.), *The Cambridge History of Egypt*, 529.) See more about *iqtā'*-system in Tsugitaka, State and Rural Society.

³²¹ Irwin, *The Middle East in the Middle Ages*, 138.

³²² See the complex scenarios of this calculation and references to the surveys in Borsch, Environment and Population, 461. It is difficult to say how far this estimation is reliable, but it is evident that Egypt suffered a significant drop in population. See also the discussion of this issue related to Cairo in Raymond, Cairo's Area and Population, 21–31 and chapter *The*

Other factors such as destructive activities on the part of the Bedouins at the beginning of the fifteenth century A.D.³²³ had also a negative impact on the irrigation system. The Bedouins who “had a relative immunity” to the plague because they lived in thinly populated areas—made profit during the hard times.³²⁴ They routinely cut the dykes to turn grain fields into wasteland (*al-khars*)³²⁵ for their sheep and goats.³²⁶ Other segments of society whose skills were in great

Demographic Effects of Plague in Egypt and Syria in Dols, The Black Death,
143–235.

³²³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 2,1–2,3, 832–833, 896. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,1, 319, 320, 386. See the discussion of this issue in Borsch, *The Black Death*. Garcin, *The Regime of the Circassian Mamlūks*, 292f.

³²⁴ Borsch, *Nile Floods*, 138–139. Garcin, *The Regime of the Circassian Mamlūks*, 308.

³²⁵ See the main types of lands and divisions of agriculture in Egypt in al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 270–278.

³²⁶ Borsch, *Nile Floods*, 138. Ibn Taghīrī Bardī, *al-Nujūm al-zāhirah fī mulūk Miṣr wa-al-Qāhirah*, vol. 10, Bayrūt: Dār al-kutub al-‘ilmīyah 1413/1992, 183–184. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 329.

demand,³²⁷ for example, physicians and druggists,³²⁸ or farmers, whose lands were irrigated during the years of drought, made a profit. “From cultivating them, they gained large sums of money with which they have been able to support themselves *[during]* these times. Some of them have accumulated extensive wealth and enjoyed a life of great affluence.”³²⁹

All this explains why, despite high floods above nineteen cubits, the lands often remained dry in the fourteenth and fifteenth century A.D. The Nile failed to irrigate agricultural fields as the basins, due to the decayed dykes, could not retain the water, which flowed straight down to Cairo and Lower Egypt, living the valleys and remote lands waterless.³³⁰ The water uncontrolled by the mismanaged irrigation

³²⁷ al-Maqrīzī, *Ighāthat al-ummah*, 102. Allouche, al-Maqrīzī’s *Ighāthah*, 75–76.

³²⁸ Allouche, al-Maqrīzī’s *Ighāthah*, 45.

³²⁹ Allouche, al-Maqrīzī’s *Ighāthah*, 75.

³³⁰ Borsch, *Nile Floods*, 139.

system could also drown certain regions as happened in 750/1349,³³¹ the year following the massive depopulation due to the plague, and in 835/1432³³² in the course of heavy rains.³³³

With this knowledge about the levels of the Nile and their impact, as well as the major reasons for their shift during the fourteenth and fifteenth centuries A.D., we can turn to the discussion of the causes and effects of excessive floods and disastrous droughts.

5.7. Case Studies of Excessive Floods: Causes, Effects and Cultural Responses

5.7.1. General Overview of Major Destructive Floods

³³¹ al-Maqrīzī, *Kitāb al-sulūk*, vol. 2,1–2,3, 811. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,1, 196.

³³² al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 874, 875. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 315. See also footnote 425, p. 534.

³³³ al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 3, 475. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 309.

Although Mamlūk Egypt experienced a number of excessive floods, it is quite likely that some of the floods passed unremarked due to the adequate preventive measures that were in place. As mentioned at the beginning of this chapter, one of the strategies was the constant measuring of the Nile's level in the Nilometer and its public announcement which served as an early-warning system against the sudden flooding that informed Egyptians about the expected height of the water.

Another important preventive measure was the control of the irrigation system, consisting of a complex network of canals and dykes³³⁴ which regulated the approaching floodwaters and their distribution in the land up to the end of the nineteenth century A.D.³³⁵ When in adequate working condition—which required constant dredging of canals and shoring up of dykes and dams—these measures offered protection from the annual high water.³³⁶ Failure to

³³⁴ See footnote 247, p. 481.

³³⁵ Kramers, “Nil,” 37–43.

³³⁶ These preventive measures were regulated mainly on the local level by *muqta'* (an *iqtā'* holder) and *fallāḥūn* (farmers, cultivators, tenants), who

do so would mean that the floodwaters would rush in unimpeded, washing in and out of the basins without providing enough moisture or fertilizer.³³⁷

Despite these preventive measures, the chroniclers recorded, at a rough estimate, twenty-eight cases of excessive floods (*suyūl*) during the period of two and a half centuries.³³⁸ This could mean that the preventive measures often failed because the human and technical intervention was helpless against the power of the water.

Although the chroniclers do not explicitly blame anyone for the occurrence of these floods, the records reveal that during most of these years internal conflicts prevailed which might have contributed

were the managers of the village dykes. See general information on how those responsible on different levels maintained the irrigation system in Tsugitaka, State and Rural Society, 230–234, 226.

³³⁷ Borsch, Nile Floods, 132.

³³⁸ See *The Catalogue of Excessive Nile Floods* in the appendix, p. 661f.

to the disrepair of canals.³³⁹ As most of these floods have much in common, I will first give a general review of their causes, effects and human responses and then separately treat those excessive floods which occurred implicitly due to the “oddities” connected with the deviation from the natural course of the Nile’s rise, i.e. “rule of the Nile”³⁴⁰ or due to human intervention.³⁴¹

Most of these floods, which the chroniclers described in much detail, resulted from sudden breach of dykes built to block the flow of the river. The powerful stream of water not only caused immediate environmental damage to the flora and fauna, but also brought about

³³⁹ See *The Catalogue of Excessive Nile Floods*, p. 661f. According to the primary sources, civil conflicts persisted during the following years 724/1323–4, 732/1331–2, 744/1343–4, 750/1349–50, 755/1354, 760/1358–9, 773/1371–2, 778/1376–7, 781/1379–80, 859/1454–5, 912/1506–7, 914/1508–9, 915/1509–10 and 916/1510–11. See the historical background in Northrup, *The Bahri Mamluk Sultanate*, 253f. Garcin, *The Regime of the Circassian Mamluks*, 290f.

³⁴⁰ See *Chapters 5.7.1–5.7.4.*, p. 509f.

³⁴¹ See *Chapter 5.7.5. Man-Made Floods in 778/1376 and 912/1506*, p. 551f.

a long-term agricultural crisis, with significant material and economic losses. The water invaded cultivated farmlands,³⁴² sweeping away the seeds sown shortly before their onset, and destroying gardens, sugar cane fields, and granaries.³⁴³ In some cases, the crisis further evolved because the waters remained in the fields for a long time impeding the cultivation process³⁴⁴ or receded too quickly for the water to be trapped to irrigate the land.³⁴⁵

From the number of destroyed regions mentioned in the descriptions we can imply that the water submerged hundreds of square

³⁴² 724/1324: al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 69. 859/1455: Ibn Taghrī Bardī, *Hawādith al-duhūr*, vol. 2, 541–542.

³⁴³ 724/1324: al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 69. 755/1354: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3, 1, 12–13.

³⁴⁴ 724/1324: al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 69.

³⁴⁵ 859/1455: Ibn Taghrī Bardī, *Hawādith al-duhūr*, vol. 2, 541–542. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 5, 447–448. 755/1354: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3, 1, 12–13.

kilometres of land.³⁴⁶ This led to the destruction of the canal system, dams and dykes, holding the water back.³⁴⁷ In some of the cases, we learn that the water flooded (*gharaqa/fāda/taghā*) houses,³⁴⁸ demolishing people's properties.³⁴⁹ Flooded roads,³⁵⁰ damaged bridges

³⁴⁶ 724/1324: al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 68–69. 755/1354: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 12–13. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,1, 276. 781/1379: al-‘Asqalānī, *Inbā’ al-ghumr*, 193. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 156.

³⁴⁷ 724/1324: al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 68–69. 755/1354: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 12–13. 859/1455: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,5, 447–448. Ibn Taghrī Bardī, *Ḩawādith al-duhūr*, vol. 2, 541–542. 883/1478: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 210. Ibn Iyās, *Badā’i‘*, vol. 3, 142. 915/1509: Ibn Iyās, *Badā’i‘*, vol. 4, 159.

³⁴⁸ 755/1354: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 12–13. 914/1508: Ibn Iyās, *Badā’i‘*, vol. 4, 137.

³⁴⁹ 883/1478: Ibn Iyās, *Badā’i‘*, vol. 3, 142.

³⁵⁰ 755/1354: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 12–13. 773/1371: al-‘Asqalānī, *Inbā’ al-ghumr*, 10. 773/1371: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 195. 781/1379: al-‘Asqalānī, *Inbā’ al-ghumr*, 193.

and river harbours³⁵¹ meant a disruption of the infrastructure, which impeded the movement of travellers and the transportation of goods to market. The evidence shows that the effects of the flood (both excessive and short) often intensified other crises such as the lack of available products and a rise in prices,³⁵² as people usually rushed to buy grain.³⁵³ Although the chronicles do not give much information about the effect on the fauna, it is clear that animals were also afflicted, as flooding of the fields might have reduced grazing land important for their sustenance.

In most of these cases, the attitude of the Mamlūk authorities to the effects of the flood was of a practical-technical character, which they

³⁵¹ 724/1324: al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 68–69. 744/1343: al-Maqrīzī, *Kitāb al-sulūk*, vol. 2,1–2,3, 648–649. Ibn Iyās, *Nubdhah min nashq*, 86.

³⁵² See about the interrelation between the Nile's rise and prices for commodities in footnote 512, p. 557.

³⁵³ 755/1354: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 12–13. 859/1455: Ibn Taghrī Bardī, *Ḩawādith al-duhūr*, vol. 2, 541–542. 836/1433: al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 894.

implemented with a certain routine. We learn that the district governors, their representatives, emirs and other functionaries like the “watchers of the dykes” (*kāshif al-jusūr*) went to the afflicted areas to mitigate the effects of the floods.³⁵⁴ Sometimes they had to stay on site for days trying to repair damaged dykes under emergency conditions.³⁵⁵ To stop the water flow, they usually plugged the breaches in the dykes with wooden boards, trees, and stones.³⁵⁶

The attitude of the Mamlūk authorities to the flood was not restricted to practical-technical methods of coping. Their emergency procedures were sometimes accompanied by prayers in the mosques or at the

³⁵⁴ 724/1324: al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 69. 744/1343: al-Maqrīzī, *Kitāb al-sulūk*, vol. 2,1–2,3, 648–649. 755/1354: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 12–13. 915/1509: Ibn Iyās, *Badā’i‘*, vol. 4, 159.

³⁵⁵ 744/1343: al-Maqrīzī, *Kitāb al-sulūk*, vol. 2,1–2,3, 648–649. 859/1455: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,5, 447–448.

³⁵⁶ 755/1354: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 12–13. 914/1508: Ibn Iyās, *Badā’i‘*, vol. 4, 159.

Nilometer, held on the Sultan’s order for the reduction of the water.³⁵⁷

Some floods—including the floods of 773/1371 and 915/1509—inspired “men of letters” to compose verses in memory of these events. Although the contemporary chroniclers drew attention to their authors, they did not include them in the *khabar*.³⁵⁸ We can find some of them in Ibn Iyās’ chronicle³⁵⁹ and his manuscript of *Nashq*.³⁶⁰

Apart from these destructive local events, which the chroniclers report without naming any specific cause for the high rise of the Nile,

³⁵⁷ 760/1358: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 47. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,1, 312. al-Suyūṭī, *Kawkab al-Rawḍah*, 235. 773/1371: al-‘Asqalānī, *Inbā’ al-ghumr*, 10. al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 195. Ibn Qādī Shuhbah, *Ta’rīkh*, vol. 3, 397–398. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 31. 915/1509: Ibn Iyās, *Badā’i‘*, vol. 4, 172.

³⁵⁸ 773/1371: al-‘Asqalānī, *Inbā’ al-ghumr*, 10. al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 195. Ibn Qādī Shuhbah, *Ta’rīkh*, vol. 3, 397–398. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 31.

³⁵⁹ See an example in Ibn Iyās, *Badā’i‘*, vol. 4, 159.

³⁶⁰ Ibn Iyās, *Nashq al-azhār*, fol. 405f. See about this manuscript, p. 283.

excessive floods also resulted, first, from heavy rainfall,³⁶¹ an aspect not treated in this study; second, from other natural causes like the

³⁶¹ See the corresponding sources for the following years: 698/1299: al-Jazārī, *Ta’rīkh ḥawādith al-zamān*, vol. 1, 440. 725/1325: al-Jazārī, *Ta’rīkh ḥawādith al-zamān*, vol. 2, 66–67. 741/1340: al-Maqrīzī, *Kitāb al-sulūk*, vol. 2, 1–2, 3, 514. 756/1355: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1, 1, 285. 783/1381: al-Maqrīzī, *al-Sulūk*, vol. 5, 127. 795/1392–3: al-‘Asqalānī, *Inbā’ al-ghumr*, 452. 800/1397: al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 2, 10. 817/1414: al-Maqrīzī, *Kitāb al-sulūk*, vol. 4, 1, 280. 826/1423: al-Maqrīzī, *Kitāb al-sulūk*, vol. 4, 2, 634–635. 838/1435: al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 3, 551. 845/1442: al-Sakhāwī, *al-Dhayl al-tām ‘alā duwal al-islām lil-Dhahabī*, ed. by H. Marwah, vol. 3, al-Kuwayt: Maktabat dār al-‘urūbah 1413/1992, 69. 860/1455–6: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 5, 456. 868/1463–4: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 6, 190. 876/1472: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 7, 27. 877/1472–3: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 7, 60. 878/1473–4: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 7, 78, 92. 880/1475: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 7, 130, 145. 887/1482: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 7, 328. 894/1489: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 8, 164. 914/1508: Ibn Iyās, *Badā’iṣ*, vol. 4, 133. 915/1509: Ibn Iyās, *Badā’iṣ*, vol. 4, 150.

previously mentioned deviations from “the rule of the Nile:”³⁶² (1) the extreme out of season high minimum, (2) the early inundation in Abīb (8 July–6 August) and (3) a series of high rises. And finally, some floods were man-made, occurring as a result of human interaction which led to either the accidental or intentional breaking of dykes. The following pages are devoted to a discussion of these cases.

5.7.2. Extremely High Minimum of the Nile before the Inundation Day

Some Arab authors drew attention to the probable correlation between the Nile’s minimum (“old water”) measured on 27 Ba’ūnah/ca. 4 July³⁶³ and the maximum level (*nihāyat al-fayḍān*), which the Nile reached during the first Coptic month of Tūt/11 September–10 October.³⁶⁴ They responded by providing opinions refuting or supporting the possible correlation between these extremes.

³⁶² See p. 493f.

³⁶³ See footnote 178, p. 464.

³⁶⁴ See footnote 152, p. 109.

In discussing this issue, al-Qalqashandī (d. 821/1418) pointed out that there was no connection between the maximum and the average minimum level, which, according to the “rule of the Nile,” normally ranged from three³⁶⁵ to eight cubits.³⁶⁶ He argued that “although in 379/989–990 the minimum stopped at the level of nine cubits, the Nile failed to reach plenitude and stopped at fifteen cubits and five fingers, which was “marvellous” (*min al-‘ajīb*), in the sense of strange.³⁶⁷ Similarly, there were years when the minimum did not even reach two cubits,³⁶⁸ which was below the average minimum,³⁶⁹

³⁶⁵ al-Mas‘ūdī, *Murūj*, vol. 2, 69. al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, 48.

³⁶⁶ See the statistical data in Sāmī, *Taqwīm al-Nil*, vol. 2. Ṭusūn, *Mémoire sur l’histoire du Nil*.

³⁶⁷ al-Qalqashandī, *Kitāb ḫubḥ*, vol. 3, 296–297. This information does not correspond to the statistical evidence conveyed in Amīn Sāmī’s and ‘Umar Ṭusūn’s catalogues, whose data is based mainly on Ibn Taghrī Bardī’s and other chroniclers’ records (see footnote 28, p. 420). This means that al-Qalqashandī (d. 821/1418) either copied this information with a mistake or fabricated it to support his argument.

³⁶⁸ al-Qalqashandī, *Kitāb ḫubḥ*, vol. 3, 296–297.

but the Nile reached the level of eighteen cubits afterwards.³⁷⁰ He made these arguments in order to contradict al-Mas‘ūdī’s (d. 345/956) view—writing several centuries before—who had stated that the low minimum of less than three cubits as had been the case in the above mentioned year, could lead to a low maximum, i.e. shortage.³⁷¹

Both of these contradictory opinions stem from personal observations, each of which has certain logic. At first glance, the comparative analysis of the data for the Mamlūk period³⁷² reveals that variations from the normal average minimum (three to eight cubits) did not necessarily influence the course of events during the Nile’s rising season. In the light of this data, al-Qalqashandī’s statement sounds plausible. For example, despite the extreme low minimum of one

³⁶⁹ al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, 48.

³⁷⁰ al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 296–297.

³⁷¹ al-Mas‘ūdī, *Murūj*, vol. 2, 69. al-Aqfahsī, *Kitāb akhbār Nil Miṣr*, 48. al-Suyūṭī, *Kawkab al-Rawḍah*, 124. al-Qalqashandī, *Kitāb ṣubḥ*, vol. 3, 297.

³⁷² Sāmī, *Taqwīm al-Nil*, vol. 2. Ṭusūn, *Mémoire sur l’histoire du Nil*.

cubit and ten fingers³⁷³ measured in the end of the Hijrī year 806/1404, the water reached nineteen cubits and three fingers in 807/1404,³⁷⁴ flooding the fields in Upper Egypt (al-Ṣa‘īd).³⁷⁵

Yet, at a second look, the table of the Nile’s minimum and maximum levels shows a certain correlation. This refers in particular to cases when the minimum exceeded the level of ten cubits. This height, which deviated from the normal average minimum (three to eight cubits), was, indeed, “odd”³⁷⁶ and troublesome because people feared an excessive rise of the water out of season, as occurred in

³⁷³ The Nile’s minimum was unprecedently low so that people could wade into the water from New Cairo to the shore of al-Jīzah. al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1127. al-Suyūtī, *Kawkab al-Rawdah*, 255.

³⁷⁴ Ibn Taghrī Bardī, *al-Nujūm al-zāhirah fī mulūk Miṣr wa-al-Qāhirah*, vol. 12, Bayrūt: Dār al-kutub al-‘ilmīyah 1413/1992, 288. See more in *Chapter 5.8.1.3. Drought of 806–807/1403–1404*, p. 587f.

³⁷⁵ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1135. More of the similar examples can be extracted from statistical data conveyed in Amīn Sāmī’s and ‘Umar Ṭusūn’s catalogues.

³⁷⁶ Ibn Iyās, *Nubdhah min nashq*, 119–120.

838/1435,³⁷⁷ 845/1441³⁷⁸ and 851/1447.³⁷⁹ During these years, the minimum measured during Ba'ūnah/8 June–7 July was above ten cubits. In the first two cases, the water caused local damage as it rose before the proper time. The highest peak of twelve cubits recorded in 761/1359, and 922/1516³⁸⁰ led, in particular, to an excessive maximum.

5.7.2.1. Floods of 761/1359 and 922/1516

As 761/1359 falls inside the period for which I could not consult local contemporary sources, the discussion of events of 761/1359 is based on later records by al-Maqrīzī (766–845/1364–1442), Ibn

³⁷⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 949, 958, 947. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 3, 551–552. al-Suyūtī, *Kawkab al-Rawdah*, 259. Ibn Iyās, *Badā’i‘*, vol. 5, 52.

³⁷⁸ al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 4, 177, 181. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,5, 141. Ibn Iyās, *Badā’i‘*, vol. 1,2, 229. See also *Chapter 5.7.3. Inundation in Abīb* (8 July–6 August), p. 533f. and footnote 426, p. 535.

³⁷⁹ Ibn Taghrī Bardī, *Hawādith al-duhūr*, vol. 1, 153, 158.

³⁸⁰ See the discussion of these floods below in *Chapter 5.7.2.1. Floods of 761/1359 and 922/1516*, p. 523f.

Taghrī Bardī (812–874/1410–1470), ‘Abd al-Bāsiṭ (844–920/1440–1514), and Ibn Iyās (852–930/1448–1524). They reported that during Sultan Ḥasan Ibn Muḥammad Ibn Qalāwūn’s reign (r. 755–762/1354–1361) people “wondered” at the excessive high minimum of about twelve cubits,³⁸¹ which was also referred to as an “extraordinary oddity” (*min al-nawādir al-gharībah*).³⁸² When the Nile then reached nineteen cubits and nine fingers, the Sultan cancelled the public announcement.³⁸³ William Popper suggested that this was because it was not possible to measure this height in the Nilometer. However, he also noticed that despite the Sultan’s order, chroniclers like Ibn Furāt (735–807/1335–1405) continued to record the rise until the height of twenty cubits and some fingers.³⁸⁴ We even learn that until the middle of Bābih/ca. 25 October the Nile reached an

³⁸¹ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 53–54. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,1, 318.

³⁸² Ibn Iyās, *Badā’i‘*, vol. 1,1, 569.

³⁸³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 53–54. Ibn Taghrī Bardī, *al-Nujūm*, vol. 10, 264. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,1, 318. al-Suyūṭī, *Kawkab al-Rawḍah*, 235–236. Ibn Iyās, *Nubdhah min nashq*, 86–88.

³⁸⁴ Popper, *The Cairo Nilometer*, 62–63.

unprecedented twenty-four cubits, destroying “numerous places.”³⁸⁵ Although this unprecedented height poses problems, as the Nilometer gauge of Mamlūk period shows only the maximum of twenty cubits,³⁸⁶ we can suggest that the Sultan prohibited the announcement because he feared public unrest, which irregularities in the Nile’s level usually provoked.

Extending al-Maqrīzī’s records, whose report served as a basis for other chroniclers, Ibn Iyās (d. 930/1524) described in detail the effects of the flood, which he called “terrifying” (*amran muhawwilān*).³⁸⁷ He reported that roads were flooded so that people and travellers were impeded. The water tore apart the dyke of al-Fayyūm,³⁸⁸ flooded roads and gardens of the island al-Fil,³⁸⁹ and

³⁸⁵ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 53–54. Ibn Taghrī Bardī, *al-Nujūm*, vol. 10, 264. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,1, 318. al-Suyūṭī, *Kawkab al-Rawḍah*, 235–236. Ibn Iyās, *Nubdhah min nashq*, 86–88.

³⁸⁶ See Popper, *The Cairo Nilometer*.

³⁸⁷ Ibn Iyās, *Badā’i‘*, vol. 1,1, 570.

³⁸⁸ See the map in Petry, (ed.), *The Cambridge History of Egypt*, p. xvii.

reached the first houses of al-Ḥusayniyah,³⁹⁰ floating wells. The water sprang from the *mīda’ah* (basin for the ritual ablution) of al-Ḥākim mosque. It also flooded some places in al-Rawdah, tearing apart the road of Būlāq and destroying numerous houses.³⁹¹ Relying on these non-contemporary sources, we can suppose that infrastructure was badly damaged.

In contrast to al-Maqrīzī’s report, which simply mentioned that people prayed to God and the water receded to four fingers,³⁹² Ibn Iyās (d. 930/1524) wrote that Sheikh Siraj al-Dīn ‘Umar al-Bulqīnī personally prayed to God in al-Azhar mosque,³⁹³ after which the water “reduced by four fingers within a night.”³⁹⁴ He found it important to include

³⁸⁹ See the maps in Warner, *The Monuments of Historic Cairo*, p. 1 and in Petry (ed.), *The Cambridge History of Egypt*, p. xix. Kennedy, *An Historical Atlas of Islam*, p. 31.

³⁹⁰ See the map in Warner, *The Monuments of Historic Cairo*, p. 1.

³⁹¹ Ibn Iyās, *Badā’i‘*, vol. 1,1, 570. Ibn Iyās, *Nubdhah min nashq*, 87–88.

³⁹² al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 53–54.

³⁹³ See the map in Warner, *The Monuments of Historic Cairo*, p. 24.

³⁹⁴ Ibn Iyās, *Badā’i‘*, vol. 1,1, 570.

the name of the prominent sheikh as a mediator between God, people and the occurrences on earth. Moreover, in commemoration of an event, he concluded that Sheikh Shihāb al-Dīn Ibn Abī Ḥajalah (d. 776/ 1375)³⁹⁵ composed a “marvellous” verse (*maqāmah ‘ajībah/maqāmah latīfah*) from a poetic and prose form (*nazm wa-nathr*)³⁹⁶ in memory of this disaster.³⁹⁷ According to Ibn Iyās (d. 930/1524), the effect of the flood was dramatic because of the spread of epidemics (*wabā’*)³⁹⁸ afterwards, which “overwhelmed everything like a deluge” (*tamma wa-‘amma*).³⁹⁹

³⁹⁵ Shihāb al-Dīn Ibn Abī Ḥajalah was a “man of letters,” a poet (*al-shā‘ir al-adib*) from al-Maghrib who lived and worked in Egypt. al-‘Asqalānī, Inbā’ al-ghumr, 10. Robson, J. and Rizzitano, U., “Ibn Abī Ḥadjala,” *The Encyclopaedia of Islam*, vol. 3, Leiden: Brill 1971, 686.

³⁹⁶ Ibn Iyās, *Badā’i‘*, vol. 1,1, 570. Ibn Iyās, *Nubdhah min nashq*, 87–88.

³⁹⁷ Ibn Iyās, *Badā’i‘*, vol. 1,1, 570. In the edited version of Ibn Iyās’ chronicle, the verse is missing, but we can find it in his unpublished manuscript of *Nashq*. Ibn Iyās, *Nashq al-azhār*, fols. 404–405. See details about this manuscript, p. 283.

³⁹⁸ See the discussion of this term in Conrad, *Tā‘ūn and Wabā’*, 268–307.

³⁹⁹ Ibn Iyās, *Nashq al-azhār*, fol. 405. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,1, 320. al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 303.

The appearance of epidemics and diseases following natural disasters was almost a normal consequence.⁴⁰⁰ In this specific case, reports about the spread of diseases continued into 762/1360–1. According to the contemporary Damascene chronicler Ibn Kathīr (d. 774/1373), Egypt was in decay (*fanā'*)⁴⁰¹ due to the stagnation of the Nile. As a result, more than 2,000 people died daily.⁴⁰² Diseases spread further with the onset of cold weather in Muḥarram/November.⁴⁰³ The prices for water, sugar, fruits and other commodities rose excessively because of the lack of workers. The Sultan moved to the countryside and he was also muddled (*tashwīsh*),⁴⁰⁴ probably through fear of falling ill.

⁴⁰⁰ Cf. the interrelation of natural disasters and epidemics, p. 335, 459.

⁴⁰¹ See the discussion of the concept of *fanā'* in Büssow-Schmitz, *Fanā'* and *Fasād*.

⁴⁰² Ibn Kathīr, al-Bidāyah, vol. 2, 2233.

⁴⁰³ al-Maqrīzī, Kitāb al-sulūk, vol. 3, 1, 58. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 1, 1, 323.

⁴⁰⁴ Ibn Kathīr, al-Bidāyah, vol. 2, 2233.

The records of the destructive flood in 761/1359 show that, similar to the reports of earthquakes, later chroniclers were inclined to extend the narrative of the *khabar* about the destructiveness of disasters. They thus depicted the past events in a more dramatic way, embellishing them with poetic verses. In particular, Ibn Iyās (d. 930/1524), relying on the records of the credible chronicler al-Maqrīzī (d. 845/1442), tried to reconstruct the damage as if he had witnessed the events, making them somehow comparable to destructive floods Ibn Iyās (d. 930/1524) experienced as a contemporary.⁴⁰⁵ Personal experience might have influenced his dramatic description of 761/1359. But this might also have been intentional. He probably wished to compare the disastrous outcome of the out of season flood in 761/1359 with the similar case of the extremely high minimum of twelve cubits, recorded during his lifetime in 922/1516, which did not end in disaster.

⁴⁰⁵ See, for example, Ibn Iyās' records of the destructive flood in 882/1477, presented in *Chapter 5.7.3.1. Floods of 717/1317, 825/1422, and 882/1477* and in 912/1506, which is discussed in *Chapter 5.7.5. Man-Made Floods in 778/1376 and 912/1506*, p. 553f.

In the case of 922/1516, Ibn Iyās (d. 930/1524) reported that two “oddities” (*min al-nawādir al-gharībah*)⁴⁰⁶ happened that year. The first “oddity” referred to the extraordinary high minimum level of twelve cubits, resulting from heavy rains in Upper Egypt (al-Ṣaṣīd).⁴⁰⁷ He noted that it was the second time in Mamlūk history when the minimum had reached the highest peak, aside from a similar occurrence in 761/1359 during Sultan Ḥasan Ibn Muḥammad Ibn Qalāwūn’s reign (r. 755–762/1354–1361).⁴⁰⁸ He also mentioned that people feared the minimum level of twelve cubits because the water could rise out of season and would remain on the fields, impeding cultivation.⁴⁰⁹ However, Ibn Iyās (d. 930/1524) emphasised that the Sultan’s chancellor immediately organised intensive damming at the critical points of the flow.⁴¹⁰ A number of ships were broken up and

⁴⁰⁶ Ibn Iyās, *Badā’i‘*, vol. 5, 52.

⁴⁰⁷ Ibn Iyās, *Badā’i‘*, vol. 5, 21.

⁴⁰⁸ Ibn Iyās, *Badā’i‘*, vol. 5, 52. Ibn Iyās, *Nubdhah min nashq*, 119–120. See the discussion of this flood above, p. 523f.

⁴⁰⁹ Ibn Iyās, *Badā’i‘*, vol. 5, 52.

⁴¹⁰ Ibn Iyās, *Badā’i‘*, vol. 5, 48–49.

positioned on the basis of the al-Fayd (unidentified) and Abū al-Munajjā⁴¹¹ dykes as a barrier to prevent flooding.⁴¹²

With this quite realistic description of how governmental preventative measures averted the disaster, Ibn Iyās (d. 930/1524) highlighted the Sultan’s positive involvement, which contrasted vividly with the passivity of the authorities in the previously described excessive flood of 761/1359,⁴¹³ where the reports did not mention any coping measures.

This “extraordinarily odd” height of twelve cubits in 922/1516 led to the inundation of the Nile on 27 Abīb/End of July,⁴¹⁴ which was the

⁴¹¹ According to Stuart Borsch, “the Abū al-Munajjā Canal was developed for the purpose of extending the irrigation network in the eastern province of al-Sharqīya. This canal extended north-east from the Nile to the metropolis of Bilbays because the Sardūs Canal did not provide enough water.” Borsch, The Black Death. See also Guest, The Delta in the Middle Ages, 943f.

⁴¹² Ibn Iyās, *Badā’i‘*, vol. 5, 48–49.

⁴¹³ See p. 523f.

⁴¹⁴ Ibn Iyās, *Badā’i‘*, vol. 5, 56.

second “oddity,”⁴¹⁵ Ibn Iyās (d. 930/1524) had in mind. This was one of the other anomalies⁴¹⁶ when people wondered at an early rise, and chanted “the Nile inundated in Abīb, enter, oh the beloved”! (*al-Nīl awfā fī Abīb khushsh yā ḥabīb*).⁴¹⁷ But as nothing extraordinary happened in 922/1516, Ibn Iyās (d. 930/1524) continued this proverb: “and we remained in happiness, what a joy for us”! (*Qad baqīnā fī hanā’ jā farahnā*).⁴¹⁸ He even mentioned that despite the people’s fears the year ended well⁴¹⁹ with the maximum of twenty cubits.⁴²⁰ This is comprehensible given that the height of twenty cubits, considered dangerous during the early Mamlūk period, posed

⁴¹⁵ Ibn Iyās, *Nubdhah min nashq*, 119–120.

⁴¹⁶ See the analysis of excessive floods due to the out of season rise of water in *Chapter 5.7.3. Inundation in Abīb (8 July–6 August)*, p. 533.

⁴¹⁷ Ibn Iyās, *Badā’i‘*, vol. 5, 56. al-Suyūtī, *Kawkab al-Rawdah*, 258.

⁴¹⁸ Ibn Iyās, *Badā’i‘*, vol. 5, 56.

⁴¹⁹ Ibn Iyās, *Badā’i‘*, vol. 5, 52. Ibn Iyās, *Nubdhah min nashq*, 119–120.

⁴²⁰ Ibn Iyās, *Badā’i‘*, vol. 5, 81.

no risk in the early sixteenth century A.D.⁴²¹ We can conclude that the high flood in 922/1516 did not result in a disaster, which supports the idea that not every excessive flood had a destructive impact. Moreover, with these changes in the meaning and the effects of the Nile's maximum levels, people would not fear the minimum of twelve cubits during the subsequent centuries as this height of the Nile's lowest level would probably lose the cultural perception of it being associated with danger.

5.7.3. Inundation in Abīb (8 July–6 August)

The inundation in Abīb (8 July–6 August), i.e. before the twelfth Coptic month Misrā (7 August–5 September), also deviated from the habitually known “rule of the Nile” and was perceived as “odd” (*min al-gharā'ib*)⁴²² and troublesome. As the flood reached sixteen cubits out of season, people feared that the water would fill the fields before the proper time and would hinder the normal cultivation process.

⁴²¹ See the discussion of this issue in *Chapter 5.6.2. “Excessive” and “Low” Floods from the Perspective of the Nile’s Specific Hydrological History*, in particular p. 501f.

⁴²² al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 252.

The records in the chronicles show that during the Mamlūk period the Nile reached sixteen cubits ahead of time in a number of years:

717/1317,⁴²³ 825/1422,⁴²⁴ 834/1431,⁴²⁵ 845/1441,⁴²⁶ 882/1477,⁴²⁷

⁴²³ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 252–253. al-Maqrīzī, *Kitāb al-sulūk*, vol. 2,1–2,3, 171. See the discussion of this destructive flood in *Chapter 5.7.3.1. Floods of 717/1317, 825/1422, and 882/1477*, p. 536f.

⁴²⁴ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 616, 616. Ibn Taghrī Bardī, *al-Nujūm*, vol. 14, 85. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 114. al-Suyūtī, *Kawkab al-Rawḍah*, 258. Ibn Iyās, *Badā’i‘*, vol. 1,2, 83. See the discussion of this destructive flood in *Chapter 5.7.3.1. Floods of 717/1317, 825/1422, and 882/1477*, p. 539f.

⁴²⁵ On 12 Dhū al-qa‘dah of 834/21 July 1431, which corresponded to 29 Abīb of the Coptic calendar, the Nile, similar to the previous cases, inundated out of season. However, al-Maqrīzī (d. 845/1442) did not report any accidents after the Nile stopped at twenty cubits and twelve fingers in the beginning of 835/1431. (al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 859, 863. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 300–301.) Only when the Nile inundated in Misrā, at the end of the Muslim year 835/1431, did the water flood numerous locations due to the breackage (*taqattu‘*) of dykes. (al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 874.

884/1479,⁴²⁸ and 922/1516.⁴²⁹ In all of these cases, the Nile reached a high maximum level afterwards. With the exception of the floods in

⁴²⁶ In 845/1441, the Nile reached plenitude on 26 Abīb/ca. 29 July, but the chroniclers did not report anything extraordinary (al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 4, 180–181. Ibn Taghrī Bardī, *Hawādith al-duhūr*, vol. 1, 57. al-Sakhawī, *al-Dhayl al-tām*, vol. 3, 629), except for the breakage of the dyke in the beginning of the Muslim year due to the high minimum. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 4, 177. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,5, 141. See *Chapter 5.7.2. Extremely High Minimum of the Nile before the Inundation Day*, p. 519f. and footnote 378, p. 523.

⁴²⁷ Ibn Iyās, *Badā’i‘*, vol. 3, 129. According to ‘Abd al-Bāsiṭ (d. 920/1514), the Nile inundated on 1 Misrā/ca. 3 August. (‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 191.) See the discussion of this destructive flood in *Chapter 5.7.3.1. Floods of 717/1317, 825/1422, and 882/1477*, p. 540f.

⁴²⁸ Despite the fact that the Nile inundated out of season and reached the maximum of nineteen cubits and twenty fingers in 884/1479, the contemporary chroniclers did not mention any extraordinary outcome. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 233, 235. Ibn Iyās, *Badā’i‘*, vol. 3, 150, 152–153.

834/1431, 845/1441, 884/1479 and the previously discussed flood of 922/1516, the water flooded the lands in all other cases, causing material and environmental damage.

5.7.3.1. Floods of 717/1317, 825/1422, and 882/1477

al-Nuwayrī (d. 733/1333) provided the earliest record of a destructive flood in 717/1317, when the Nile, after inundating on 29 Abīb/ca. 31 July, reached the maximum of eighteen cubits and six fingers. As the water crossed the border of eighteen cubits, which was an excessive height during al-Nuwayrī's lifetime, it flooded the banks of Old Cairo and al-Rawdah, gardens and fields of sugar cane. In a number of places, the water cut the roads between Old and New Cairo.⁴³⁰

⁴²⁹ Ibn Iyās, *Badā'i'*, vol. 5, 56. Ibn Iyās, *Nubdhah min nashq*, 119–120. See the discussion of this “oddity” in *Chapter 5.7.2.1. Floods of 761/1359 and 922/1516*, p. 530f.

⁴³⁰ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 252–253. Ibn Iyās, *Nubdhah min nashq*, 84–85.

al-Nuwayrī (d. 733/1333) continued that the Sultan [al-Nāṣir Muḥammad Ibn Qalāwūn] immediately ordered the opening of a number of canals,⁴³¹ which were habitually opened during “the Feast of the Cross” (*Ayd al-Ṣalib*).⁴³² In other situations, the opening of these canals or its breaking by the power of the flood⁴³³ led to the

⁴³¹ al-Nuwayrī (d. 733/1333) mentioned the canals of Baḥr Abī al-Munajjā (misspelled in the text as بَحْر أَبِي الزَّجَا) and al-Kaynūna (unidentified). al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 253.

⁴³² The exact day of this feast and the breaking of the dam across the canal of Baḥr Abī al-Munajjā differed slightly during different epochs. During Fāṭimid period, it fell on 14 Tūt/ca. 24 September (Halm, *Die Zeremonien*, 117, 122.) According to al-Maqrīzī (d. 845/1442), it fell on 17 Tūt/ca. 27 September. (al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 721, 730.) See also about “the Feast of the Cross” (*Ayd al-Ṣalib*) in Oestigaard, Water, Culture and Identity, 148. Lane, *The Manners and Customs*, 504. Tsugitaka, State and Rural Society, 189. St. Paul Brotherhood, *The Feast of the Cross*, Southern California: Coptic Orthodox Diocese of Los Angeles 2010. Lutfi, Coptic Festivals of the Nile, 280–282.

⁴³³ See about the dyke of Baḥr Abī al-Munajjā in footnote 411, p. 531. Cf. the effect of the breakage of the dike Baḥr Abī al-Munajjā in the years 859/1455: Ibn Taghrī Bardī, *Hawādith al-duhūr*, vol. 2, 541–542. ‘Abd al-

decrease of the Nile's height for about a third of the cubit. But this time the water did not decline.⁴³⁴ Nevertheless, al-Nuwayrī (d. 733/1333) mentioned that without “these great canals” (*hādhihi al-khuljān al-‘azīmah*), there would be a total “decay” (*fasād*).⁴³⁵ In fact, the intentional breaking of dykes and deliberate flooding of farmlands was a strategy used as a last resort to prevent greater damage.⁴³⁶ But we can interpret al-Nuwayrī’s comment as his appreciation of the Sultan’s decisive actions, which averted a disaster.

In contrast to the record of this contemporary chronicler, al-Maqrīzī (d. 845/1442), writing at the end of the same century, did not report these preventive measures. Moreover, he mentioned that a number of places were destroyed because of the poor conditions of the dykes.⁴³⁷ This explanation might be a realistic assessment or a mere reflection

Bāsit, *Nayl al-amal*, vol. 2,5, 447–448. 883/1478; ‘Abd al-Bāsit, *Nayl al-amal*, vol. 2,7, 210. Ibn Iyās, *Badā’i‘*, vol. 3, 142.

⁴³⁴ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 253.

⁴³⁵ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 253.

⁴³⁶ Weintritt, *The Floods of Baghdad*, 168.

⁴³⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 2,1–2,3, 171.

of al-Maqrīzī’s own experience of water-related problems, which had increased due to the decay of the irrigation system during his lifetime in the fifteenth century A.D.⁴³⁸

During the flood of 825/1422, the Nile, first, reached plenitude on 29 Abīb/ca. 5 August, and then suddenly rose fifty fingers, which was also considered “odd” (*min al-nawādir*⁴³⁹/‘ajab ‘alā ‘ajab).⁴⁴⁰ When on 1 Tūt/11–12 September (the first day of the Coptic new year called Nawrūz)⁴⁴¹ the Nile reached nineteen cubits and six fingers,⁴⁴²

⁴³⁸ Cf. p. 501.

⁴³⁹ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 616.

⁴⁴⁰ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 114–115. People considered the daily rise of more than ten fingers “odd.” (al-Qalqashandī, *Kitāb ḫubḥ*, vol. 3, 294. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 616–617. Ibn Taghrī Bardī, *al-Nujūm*, vol. 14, 85. al-Suyūṭī, *Kawkab al-Rawḍah*, 258. Ibn Iyās, *Badā’iṣ*, vol. 1,2, 83.) See also the discussion of this “oddity” in *Chapter 5.7.4. High Rises in Succession*, p. 541f. and footnote 454, p. 542.

⁴⁴¹ al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 724. See also footnote 152, p. 109.

⁴⁴² al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 618. In Shawwāl/September, the water reached the maximum of twenty cubits and a half finger. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 620.

referred to as “marvellous” (*‘ajab*)⁴⁴³ for that specific day, the water broke through and spoiled the summer crops such as sesame, melon and other plants. al-Maqrīzī (d. 845/1442) noticed that this height would bring profit had the dykes not been in bad condition. As a result, the price for grain⁴⁴⁴ and sesame oil rose extremely that year.⁴⁴⁵ When the water subsided, diseases spread in New Cairo and Lower Egypt (al-Wajh al-Bahri).⁴⁴⁶

In 882/1477, the Nile similarly inundated at the end of Abib/ca. 6 August,⁴⁴⁷ reaching the maximum of twenty cubits and twenty

⁴⁴³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 618.

⁴⁴⁴ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 618. See the wheat prices, currency exchange rates for some of the years (Allouche, al-Maqrīzī’s *Ighāthah*, 95f.) and salaries of *waqf* servants in Cairo in Sabra, Poverty and Charity.

⁴⁴⁵ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 620.

⁴⁴⁶ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 625.

⁴⁴⁷ Ibn Iyās, *Badā’i‘*, vol. 3, 129. According to ‘Abd al-Bāsiṭ (d. 920/1514), the Nile inundated on 1 Misrā/ca. 7 August. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 191.

fingers. The water flooded roads⁴⁴⁸ in al-Munīyah, Shubrā, al-Rawdah, Old Cairo, Būlāq, the island of al-Fīl and Kūm al-Rīsh, broke dykes, and made the wells stingy.⁴⁴⁹ The same year the Sultan ordered the repair of the dykes, taking their organisation under his own control.⁴⁵⁰

These reports show that early flooding in Abīb/8 July–6 August, perceived as strange, could lead to excessive flooding. In the described cases, these floods caused environmental and material damage which the authorities could probably have averted if the dykes had been in proper condition. The decisive intervention on the side of some rulers to fortify the dykes afterwards only mitigated the impact of the floods.

5.7.4. High Rises in Succession

⁴⁴⁸ Ibn Iyās, *Badā'i'*, vol. 3, 130. 'Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 193–194.

⁴⁴⁹ Ibn Iyās, *Nubdhah min nashq*, 108.

⁴⁵⁰ 'Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 202.

People also wondered and worried when the Nile rose more than ten fingers in a swoop (*duf'ah wāhidah*) per day. The reason for their fear was similar to the previously described cases: a quick increase of water deviated from the usually known average rise per day, normally ranging from two to ten fingers,⁴⁵¹ which could lead to an excessive height. The contemporary reports confirm that the Nile rose a number of times quickly in succession: in 785/1383,⁴⁵² 797/1395,⁴⁵³ 825/1422,⁴⁵⁴ 848/1444,⁴⁵⁵ 891/1486,⁴⁵⁶ 904/1499,⁴⁵⁷ 908/1502,⁴⁵⁸

⁴⁵¹ al-Qalqashandī, *Kitāb ḫubh*, vol. 3, 294. Even ten fingers were sometimes considered “strange.” al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 694.

⁴⁵² al-Maqrīzī, *al-Sulūk*, vol. 5, 150, 154. al-‘Asqalānī, *Inbā’ al-ghumr*, 276. al-Suyūtī, *Kawkab al-Rawdah*, 254. Ibn Iyās, *Nubdhah min nashq*, 90. See the discussion of this flood in *Chapter 5.7.4.1. Floods of 785/1383 and 797/1395*, p. 545f.

⁴⁵³ al-Maqrīzī, *al-Sulūk*, vol. 5, 375–376. al-‘Asqalānī, *Inbā’ al-ghumr*, 494–495. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 363. al-Suyūtī, *Kawkab al-Rawdah*, 254. Ibn Iyās, *Nubdhah min nashq*, 91–92. Ibn Iyās, *Badā’iṣ*, vol. 1,2, 475. See the discussion of this flood in *Chapter 5.7.4.1. Floods of 785/1383 and 797/1395*, p. 549f.

⁴⁵⁴ al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 616–617. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 114. al-Suyūtī, *Kawkab al-Rawdah*, 258. Ibn Iyās, *Badā’iṣ*, vol. 1,2,

912/1506⁴⁵⁹ 913/1507,⁴⁶⁰ 914/1508,⁴⁶¹ 917/1511⁴⁶² and
920/1514.⁴⁶³ In particular, Ibn Iyās' data for the early sixteenth

83. See the discussion of this flood in *Chapter 5.7.3.1. Floods of 717/1317, 825/1422, and 882/1477*, p. 539f.

⁴⁵⁵ 'Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,5, 190.

⁴⁵⁶ 'Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,8, 37. Ibn Iyās, *Nubdhah min nashq*, 109–110. Ibn Iyās, *Badā'i'*, vol. 3, 225–226.

⁴⁵⁷ Ibn Iyās, *Badā'i'*, vol. 3, 413–414.

⁴⁵⁸ Ibn Iyās, *Badā'i'*, vol. 4, 36. Ibn Iyās (d. 930/1524) recorded the same information in the records of the year 907/1501. Ibn Iyās, *Nubdhah min nashq*, 114.

⁴⁵⁹ Ibn Iyās, *Nubdhah min nashq*, 115–116. Ibn Iyās (d. 930/1524) does not mention about the quick rise of the Nile in his chronicler *Badā'i' al-zuhūr*, where he mentioned, instead, the occurrence of a destructive flood in al-Sharqīyah due to the intentional breaking of dykes by the Bedouins. Ibn Iyās, *Badā'i'*, vol. 4, 96–97. See more about this incident in *Chapter 5.7.5. Man-Made Floods in 778/1376 and 912/1506*, p. 551f.

⁴⁶⁰ Ibn Iyās, *Nubdhah min nashq*, 116. Ibn Iyās, *Badā'i'*, vol. 4, 117, 120.

⁴⁶¹ Ibn Iyās, *Badā'i'*, vol. 4, 133–134, 137.

century A.D. shows a certain frequency of the excessive height due to the quick rise, which people regarded, for known reasons, as more profitable than dangerous.⁴⁶⁴ However, from the above-mentioned cases of quick “odd” rises of water in succession, the chroniclers only reported the destructive effect of the floods in three cases: in 785/1383, 797/1395⁴⁶⁵ and the previously discussed flood of 825/1422.⁴⁶⁶

5.7.4.1. Floods of 785/1383 and 797/1395

⁴⁶² Ibn Iyās, *Nubdhah min nashq*, 118. The information in Ibn Iyās’ *Nashq* differs from the one given in his chronicle *Badā'i'*, vol. 4, 230, 234, 238, 241.

⁴⁶³ Ibn Iyās, *Badā'i'*, vol. 4, 389–390.

⁴⁶⁴ See, for example, the year 906/1500: Ibn Iyās, *Badā'i'*, vol. 3, 437. 920/1514: Ibn Iyās, *Badā'i'*, vol. 4, 396. We should treat Ibn Iyās’ instrumental data for the early sixteenth century A.D. with caution because he sometimes gives inconsistent information in his different works.

⁴⁶⁵ See the discussion of these destructive floods in *Chapter 5.7.4.1. Floods of 785/1383 and 797/1395*, p. 545f and 549f.

⁴⁶⁶ See *Chapter 5.7.3.1. Floods of 717/1317, 825/1422, and 882/1477*, p. 539f.

The early record of an excessive flood (*zāda al-Nīl zīyādatan ʻazīmatan*),⁴⁶⁷ which happened due to the high successive rises, relates to 785/1383,⁴⁶⁸ when the Nile rose above twenty cubits, destroying numerous houses.⁴⁶⁹ When the water gushed through the rupture (*maqṭa*^c pl. *maqāṭi*)⁴⁷⁰ in the dyke of al-Zuraybah (unidentified), emirs mobilised efforts to dam it with ships and wood. Several days had to pass before they could bring the situation under control. Afterwards, the Sultan ordered a number of emirs and mamlūks to stay by the banks of the Nile and observe the maintenance of dams across the canals.⁴⁷¹ This particular example shows the employment of both regional and centralised coping strategies in combating the effects of the flood.

⁴⁶⁷ al-‘Asqalānī, *Inbā’ al-ghumr*, vol.1, 276.

⁴⁶⁸ al-Maqrīzī, *al-Sulūk*, vol. 5, 150. al-Suyūtī, *Kawkab al-Rawdah*, 254. Ibn Iyās, *Nubdhah min nashq*, 90.

⁴⁶⁹ al-Maqrīzī, *al-Sulūk*, vol. 5, 154. al-‘Asqalānī, *Inbā’ al-ghumr*, 276. al-Suyūtī, *Kawkab al-Rawdah*, 254. Ibn Iyās, *Nubdhah min nashq*, 90.

⁴⁷⁰ *Maqāṭi*^c were the spots in the dykes which blocked or allowed water to enter the fields when it was necessary.

⁴⁷¹ al-‘Asqalānī, *Inbā’ al-ghumr*, vol.1, 276.

It is noteworthy that the chroniclers also recorded excessive floods during the preceding years in 783/1381 and 784/1382. Despite the predictions of a certain foreigner (*‘ajamī*) about the shortage of the Nile in 783/1381, the water rose⁴⁷² and reached the maximum of nineteen cubits and twelve fingers. According to the non-contemporary chronicler, ‘Abd al-Bāsiṭ (d. 920/1514), this flood in Rajab/September 1381 flooded a number of gardens.⁴⁷³ The contemporaries reported that the same year in Ramadān/November 1381 heavy rains resulted in extreme flooding of streets and fields.⁴⁷⁴ Apart from these events, the chroniclers recorded the spread of the plague at the beginning of the Muslim year 784/1382.⁴⁷⁵

⁴⁷² al-‘Asqalānī, *Inbā’ al-ghumr*, vol.1, 233. al-Maqrīzī, *al-Sulūk*, vol. 5, 120.

‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 178.

⁴⁷³ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 181.

⁴⁷⁴ al-‘Asqalānī, *Inbā’ al-ghumr*, vol.1, 238. al-Maqrīzī, *al-Sulūk*, vol. 5, 127.

‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 185. al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 306. See also the record of this flood due to heavy rains in footnote 361, p. 518.

⁴⁷⁵ al-‘Asqalānī, *Inbā’ al-ghumr*, vol.1, 231, 253. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 174, 189.

Especially striking is the reference by chroniclers to the flood of above nineteen cubits⁴⁷⁶ in 784/1382 as the “deluge” (*tūfān*)⁴⁷⁷ of Noah (Nūḥ),⁴⁷⁸ and as a “universal deluge” (*jumlat al-tūfān*).⁴⁷⁹ This was one of the rare cases when the chroniclers used this concept, charged with manifold cultural meanings,⁴⁸⁰ instead of the general Arabic word for “flood” (*sayl* pl. *suyūl*).

⁴⁷⁶ According to contemporary chroniclers al-‘Asqalānī (d. 852/1449) and al-Maqrīzī (d. 845/1442), the water rose above nineteen cubits (al-‘Asqalānī, *Inbā’ al-ghumr*, vol.1, 261. al-Maqrīzī, *al-Sulūk*, vol. 5, 139), whereas the later chroniclers like Ibn Taghrī Birdī (d. 874/1470), al-Suyūṭī (d. 911/1505) and Ibn Iyās (d. 930/1524) reported that the Nile rose extremely high, above twenty cubits. Ibn Taghrī Bardī, *al-Nujūm al-zāhirah fī mulūk Miṣr wa-al-Qāhirah*, vol. 11, Bayrūt: Dār al-kutub al-‘ilmīyah 1413/1992, 243. al-Suyūṭī, *Kawkab al-Rawḍah*, 242. Ibn Iyās, *Nubdhah min nashq*, 90.

⁴⁷⁷ al-Maqrīzī, *al-Sulūk*, vol. 5, 139. al-Suyūṭī, *Kawkab al-Rawḍah*, 242.

⁴⁷⁸ al-Suyūṭī, *Kawkab al-Rawḍah*, 242.

⁴⁷⁹ Ibn Iyās, *Nubdhah min nashq*, 90.

⁴⁸⁰ See references to the secondary literature on deluge in footnote 100, p. 182.

At first glance the metaphoric use of the word “deluge” seems to be unjustified for the flood of this particular year, as the chroniclers did not report any damage.⁴⁸¹ But in the political context, this flood, which happened during the first year under the Circassian Sultan Barqūq (r. 784–791/1382–1389),⁴⁸² marked the change of power from the *Bahrī* (Turkish) to the *Burjī* (Circassian) rule.⁴⁸³ The chroniclers, who referred to this local flood as the “deluge,” probably wanted to emphasise that this environmental event, accompanied by internal and external conflicts, coincided with the shift in the social, economic, and political structures of the Mamlūk empire.⁴⁸⁴ In fact, as

⁴⁸¹ Ibn Iyās (d. 930/1524) only mentioned that people gathered in the mosque to pray to God for the reduction of water, which happened soon afterwards. Ibn Iyās, *Nubdhah min nashq*, 90.

⁴⁸² See footnote 253, p. 484.

⁴⁸³ See about the periodisation footnote 39, p. 270.

⁴⁸⁴ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 166. See more about this period Garcin, *The Regime of the Circassian Mamlūks*, 290–317.

Claus Wilcke noted in his paper *Weltuntergang als Anfang*, the “deluge” is a standard metaphor for disastrous wars.⁴⁸⁵

Another time when the chroniclers called a flood a “deluge” (*tūfān*) was during Sultan Barqūq’s reign (r. 784–791/1382–1389),⁴⁸⁶ when the Nile, after the high rise in succession that was considered “odd” (*amr gharīb*),⁴⁸⁷ stopped in Dhū al-qādah 797/August 1395 at the maximum height of nineteen cubits and eight fingers.⁴⁸⁸ The records do not give any further information about the damage except for price turbulences during these years.⁴⁸⁹

⁴⁸⁵ Wilcke, *Weltuntergang als Anfang*, 66.

⁴⁸⁶ See about Sultan Barqūq footnote 253, p. 484.

⁴⁸⁷ al-Maqrīzī, *al-Sulūk*, vol. 5, 375.

⁴⁸⁸ al-Maqrīzī, *al-Sulūk*, vol. 5, 375–376. al-‘Asqalānī, *Inbā’ al-ghumr*, 494–495. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 363. al-Suyūṭī, *Kawkab al-Rawḍah*, 254. Ibn Iyās, *Nubdhah min nashq*, 91–92. Ibn Iyās, *Badā’i‘*, vol. 1,2, 475.

⁴⁸⁹ 784/1382: al-Maqrīzī, *al-Sulūk*, vol. 5, 135. al-‘Asqalānī, *Inbā’ al-ghumr*, 253. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 187. 797/1395: al-‘Asqalānī, *Inbā’ al-ghumr*, 495. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 363.

Extreme food shortages followed, in particular the 797/1395 “deluge,” which ended in chaotic conditions in 798/1395–6.⁴⁹⁰ To keep the masses under control, the Sultan ordered the distribution every day of bread, meals and cash to the poor and prisoners in New and Old Cairo and the inhabitants of al-Qarāfah. Some people even made profits from the reselling of alms bread. But, according to al-Maqrīzī (d. 845/1442), nobody died of hunger (*jū'*) during this crisis which ended with the arrival of bread from al-Hijāz and ships with grain in 798/1396.⁴⁹¹

In light of these turbulent years full of socio-political changes, the use of the word “deluge” seems to be justified in both cases. The cultural significance of the deluge story reveals here, on the one hand, the collapse of the social and political order and conditions of chaos after

⁴⁹⁰ al-‘Asqalānī, *Inbā' al-ghumr*, 507–508. al-Sakhāwī, *al-Dhayl al-tām*, vol. 1, 385.

⁴⁹¹ al-Maqrīzī, *al-Sulūk*, vol. 5, 384–385. al-‘Asqalānī, *Inbā' al-ghumr*, vol. 1, 507–508.

the Circassian Sultan Barqūq began his rule.⁴⁹² On the other hand, in the eyes of contemporaries it shows a moral appeal for a new beginning and a wish for a better future.

5.7.5. Man-Made Floods in 778/1376 and 912/1506

As part of the final discussion of destructive floods due to anomalous rises in the Nile, I will briefly turn to two cases of man-made floods, one of which happened accidentally due to human error, while the Bedouins provoked the other as part of a plot.

Shihāb al-Din Ibn Aḥmad Ibn Qāymāz—household master (*ustādār*)⁴⁹³ of Ibn Āqbughā Ḵāṣṣ, who was senior controller of the chancery (*shadd al-dawāwīn*)—made a pool (*birkah*) for private fishing in 778/1376,⁴⁹⁴

⁴⁹² ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 166.

⁴⁹³ See footnote 199, p. 341.

⁴⁹⁴ There is some confusion about the exact date of this flood. Some chroniclers say that it happened on 1 *Rabi‘* I/18 July (al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 265. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 1, 128), others mention either *Rabi‘* II or *Sha‘bān*/August or December. Ibn Qāḍī Shuhbah,

by letting the water of the Nile from the Khalij al-Ḥākimī⁴⁹⁵ flow into it.⁴⁹⁶ As a result the *maqta*⁴⁹⁷ of the canal broke near the bridge of al-Iwazz⁴⁹⁸ and water flooded a number of neighbouring quarters including about 1,000 houses⁴⁹⁹ and caused massive property damage. When the water reached the mosque of Ibn Sharaf al-Dīn, the governor, emir Ḥusayn Ibn al-Kūrānī, fearing the flooding of al-Ḥusayniyah,⁵⁰⁰ spent much effort and more than three thousand dirham to repair the dam, to try to avoid the flooding of the entire neighbourhood. al-Maqrīzī (d. 845/1442) reports that the destroyed

Ta’rīkh, vol. 3, 506. Ibn Taghrī Bardī, al-Nujūm, vol. 11, 55. ‘Abd al-Bāṣīṭ, Nayl al-amal, vol. 1,2, 110.

⁴⁹⁵ Cairo Canal is meant here. See different names of this canal in footnote 241, p. 479.

⁴⁹⁶ al-‘Asqalānī, Inbā’ al-ghumr, 128. al-Maqrīzī, Kitāb al-sulūk, vol. 3,1, 265. ‘Abd al-Bāṣīṭ, Nayl al-amal, vol. 1,2, 110.

⁴⁹⁷ See footnote 470, p. 545.

⁴⁹⁸ See information about this bridge in al-Maqrīzī, al-Khiṭāṭ, vol. 3, 495.

⁴⁹⁹ The editor of al-Maqrīzī’s *al-Sulūk* notes in the footnotes that in another manuscript instead of 1,000 houses 1,000 dīnār related to the material damage are mentioned. al-Maqrīzī, Kitāb al-sulūk, vol. 3,1, 265.

⁵⁰⁰ al-Maqrīzī, al-Khiṭāṭ, vol. 3, 59–63.

houses remained in ruins up to his lifetime: some of the places were turned into gardens, while others stood in expanses of water.⁵⁰¹

In the second case, the Bedouins, who gained more power and destabilised the situation in the provinces from the 885s/1480s,⁵⁰² provoked an excessive flood in 912/1506, by breaking the dykes in al-Sharqīyah. Ibn Iyās (d. 930/1524) briefly reported that the destruction of the dykes caused extreme damage as the water flooded the neighbourhood. This also led to the delay of the inundation.⁵⁰³ However, this was not the only case when the Bedouins destroyed dykes deliberately to sabotage the authorities.⁵⁰⁴ Despite increased attacks and destructive actions by the Bedouins in al-Sharqīyah and

⁵⁰¹ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3, 1, 265. al-‘Asqalānī, *Inbā’ al-ghumr*, 128. Ibn Qādī Shuhbah, *Ta’rīkh*, vol. 3, 506. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1, 2, 110. See also Massoud, *The Chronicles and Annalistic Sources*, 38, 83, 262.

⁵⁰² Garcin, *The Regime of the Circassian Mamlūks*, 290–291, 296.

⁵⁰³ Ibn Iyās, *Badā’i‘*, vol. 4, 96–97.

⁵⁰⁴ Garcin, *The Regime of the Circassian Mamlūks*, 290–291, 296.

al-Gharbiyah,⁵⁰⁵ that year the Nile reached an average height (*mutawassit*) of nineteen cubits and two fingers,⁵⁰⁶ securing a “blessed” year of welfare and *rakhā'* (cheapness).⁵⁰⁷

In summary, excessive floods in Mamlūk Egypt had both natural and social cores. They were sometimes triggered by natural factors like the extreme high minimum of the river in Ba'ūnah/8 June–7 July, out of season inundation in Abīb/8 July–6 August and successive high rises. However, in most of the cases the destructive floods happened because of a mismanaged irrigation system and a failure of proper technical intervention. In these cases, it was not nature alone but humans who were responsible for this destruction, and which the authorities tried to keep within manageable bounds. By implementing practical-technological measures, society evolved and adapted a specific cultural approach to managing floods that repeatedly destroyed their environment and infrastructure. Despite the

⁵⁰⁵ Ibn Iyās, *Badā'i'*, vol. 4, 99, 104. See the map in Petry, (ed.), *The Cambridge History of Egypt*, p. xvii.

⁵⁰⁶ Ibn Iyās, *Badā'i'*, vol. 4, 99–100.

⁵⁰⁷ Ibn Iyās, *Badā'i'*, vol. 4, 111.

destructiveness of these floods, which entailed material damage, the consequences were usually of a short-term nature, except for a few cases when after the reduction of the water diseases spread. As the sources do not provide mortality statistics caused directly by these floods—which is strange in light of the devastation described—we can classify all of the described cases to the hydrological intensity grade of 2, which categorises them as floods of regional character without causing significant human loss.⁵⁰⁸

5.8. Case Studies of Disastrous Droughts: Causes, Effects, and Cultural Responses

Mamlūk Egypt has known periods of prosperity, but also a long series of socio-economic disasters, which frequently befell Egypt, particularly from the end of the fourteenth century A.D. These disasters resulted from the extreme low levels of the Nile, which led to droughts (*qaht/jadb*), followed by crop failures and economic stagnation.

⁵⁰⁸ See the Index of Excessive Floods.

Unlike other extreme events, like earthquakes and excessive floods, drought is a concept not easy to delimit and define in terms of duration and spread of onset. It is a natural hazard in process, covering a certain span of time rather than a sudden event.⁵⁰⁹ This entails problems of its definition in the records. Furthermore, like earthquakes and floods, droughts cannot be considered a disaster by themselves. Their disastrous impact—which is usually interwoven with and difficult to distinguish from the famine and malnutrition in the chronicles—takes effect slowly.⁵¹⁰

⁵⁰⁹ Robinson, Earth Shock, 199, 200, 203 204. A. Madhari and M. Elberier, Trends and Fatality of Natural Disasters in the Arab World, *Disaster Prevention and Management* 5/1 (1996), 29.

⁵¹⁰ Madhari and Elberier, Trends and Fatality, 29. Tucker, Environmental Hazards, 117. See also D. Collet, Th. Lassen et al., Einleitung—Eine Umweltgeschichte des Hungers, in *Handeln in Hungerkrisen. Neue Perspektiven auf soziale und klimatische Vulnerabilität*, ed. D. Collet, Th. Lassen et al., Göttingen: Universitätsverlag Göttingen 2012, 3–13. St. Engler, Hungersnot—Bekannte Theorien und neue Analysemodelle, in *Handeln in Hungerkrisen. Neue Perspektiven auf soziale und klimatische Vulnerabilität*, ed. D. Collet, Th. Lassen et al., Göttingen: Universitätsverlag Göttingen 2012, 67–87. D. Collet, Storage and Starvation: Public Granaries

Terminology is another problem for the analysis of droughts. Although there is a specific word for drought (*qaḥṭ*) in Arabic, seldom do the chronicles use it.⁵¹¹ We instead find it in descriptions of the Nile's water shortage (*qaṣr/naqṣ*) which caused the subsequent drying of lands (*sharraqa al-bilād*) and rise of prices called *ghalā'*, as an opposition to low prices and prosperity (*rakhā'*), which usually secured a good year.⁵¹² Since an increase of prices (*ghalā'*) caused

as Agents of Food Security in Early Modern Europe, in *The Production of Human Security in Premodern and Contemporary History*, ed. C. Zwierlein, G. Rüdiger et al., 2010, 234–253, and projects of HCE Junior Research Groups on famines <http://www.hce.uni-heidelberg.de/jrg/index.html>.

⁵¹¹ See, for example, Ibn al-Dawādārī, Kanz al-durar, vol. 8, 363.

⁵¹² The chroniclers use the terms *ghalā'* and *rakhā'* 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 economic terms with the inundation of the Nile: if the Nile reached sixteen cubits on time, grain prices remained stable or even went down causing (*rakhā'*). If the inundation halted, this caused almost automatically a sharp rise of prices (*ghalā'*) of grain and other products. The prices usually sank shortly after the Nile had reached sixteen cubits. But if

famines—that is, massive scarcity of food, usually accompanied by malnutrition and starvation (*majā*)⁵¹³—the *ghalā'* was associated with “famine” or “dearth.” However, it should be noted here, that unlike droughts, which usually happen as a result of water scarcity, famines⁵¹⁴ are more complex because their occurrences also depend on other compound factors like economic, financial and political instability. One can think about intentional hoarding by merchants or Mamlūk officials who made profits from creation of artificial

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 crop. See more on the notion of *ghalā'* and its antonym *rakhā'* in Allouche, al-Maqrīzī's *Ighāthah*, 11–12, 27. al-Maqrīzī, *Ighāthat al-ummah*, 16.

⁵¹³ A standard Arabic word for famine *majā*, which derives from the word hunger (*jā'*), was seldom used in the chroniclers. We can find this concept in Ibn Khaldūn's *Muqaddimah* and al-Maqrīzī's *Ighāthah* where they discuss the causes and effects of famines. Ibn Khaldūn, *al-Muqaddimah*, vol. 2, al-Dār al-Bayḍā': Bayt al-funūn wa-al-‘ulūm wa-al-ādāb 2005, 109–110. Ibn Khaldūn, *Muqaddimah*, vol. 2, 135–136. al-Maqrīzī, *Ighāthat al-ummah*. Allouche, al-Maqrīzī's *Ighāthah*.

⁵¹⁴ See the typology of famines in Egypt in Lev, *The Regime*, 149.

shortages.⁵¹⁵ As this study only treats Nile-related disasters, I will not look at those famines which mainly occurred in Mamlūk Egypt for other reasons.⁵¹⁶

In the context of Mamlūk history, apart from the lack of rain,⁵¹⁷ and hot (*sumūm*) winds,⁵¹⁸ which will not be treated here, droughts

⁵¹⁵ Tucker, Natural Disasters, 218.

⁵¹⁶ We can find a practical example of a famine in Egypt which happened in 736/1336 not because of the shortage of water in the Nile (al-Yūsufī, *Nuzhat al-nāzir*, 294–301. al-Jazārī, *Ta’rīkh ḥawādith al-zamān*, vol. 2, 864–865. Allouche, al-Maqrīzī’s *Ighāthah*, 48–49), but as Adam Sabra suggests, due to the emirs’ intentional withholding of grain. (Sabra, *Poverty and Charity*, 144–146.) In another case, the crisis of 818–822/1415–1419 happened due to economic, monitory and political instability and the lack of rain in many regions. (al-Maqrīzī, *Kitāb al-sulūk*, vol. 4, 1, 304, 306, 310, 312, 318, 320, 330–338, 342, 343, 344, 347, 348, 349, 351, 354, 355, 357, 388, 397, 431, 436, 440, 460, 470, 471, 483, 492, 498, 500, 503, 510.) See also references of the last disastrous famine in the Mamlūk Sultanate, which induced numerous deaths in 892–893/1487–1488. ‘Abd al-Bāṣīṭ, *Nayl al-amal*, vol. 2, 8, 55, 56, 58, 59, 60, 61, 64, 65, 68, 71, 75, 78, 90, 97.

occurred in Egypt mainly as a result of the Nile's shortage in terms of quantity and duration. This means that the Nile either rose too little or having reached a certain height receded quickly so that the fields could not be irrigated.⁵¹⁹ Discussing the causes for this process in Egypt, Fekri Hassan emphasised the relationship between the Nile floods, climate change and causes of droughts in his paper entitled *Nile Flood Discharge during the Medieval Climate Anomaly*.⁵²⁰ He indicated that "the Nile flood discharge in the Main Nile is influenced by multiple variables associated with the differential effects of global climatic mechanisms, such as NAO [North Atlantic Oscillation] and

⁵¹⁷ See, for example, about the effects of the rain shortage in the disastrous crises of 818–822/1415–1419 in Sabra, *Poverty and Charity*, 155–158.

⁵¹⁸ See, for example, the destructive effects of hot winds in 707/1307: Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 182–183 and in 748/1347: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,1, 161.

⁵¹⁹ See the discussion of these cases below in *Chapter 5.8.1. “Years without Plenitude”*, p. 562f and *Chapter 5.8.2. Review of Cultural Responses to Disastrous Droughts*, p. 607f.

⁵²⁰ F. Hassan, *Nile flood Discharge during the Medieval Climate Anomaly*, *Science Highlights: Medieval Climate* 19/1 (March 2011), 30.

ENSO [ElNiño/Southern Oscillation], on the catchment areas in Equatorial Africa and the Ethiopian Highlands".⁵²¹

The shortage of water in the Nile in combination with insufficient human interaction,⁵²² and economic, monitory and political

⁵²¹ Hassan, Nile flood Discharge, 31. See more on the complex interaction of NAO and ENSO and climate anomalies in A. Polonsky, D. Basharin et al., Relationship between the North Atlantic Oscillation, Euro-Asian Climate Anomalies and Pacific Variability, *Pacific Oceanography* 2/1–2 (2004), 52–66. W. Quinn, A study of Souther Oscillation-related Climatic Activity for A.D. 622–1900 Incorporating Nile River Flood Data, in *El Niño: Historical and Palaeoclimatic Aspects of the Southern Oscillation*, H. Diaz et al. (eds.), Cambridge: Cambridge University Press 1992, 119–149; P. Whetton et al., Historical ENSO Teleconnections in the Eastern Hemisphere, *Climatic Change* 28/3 (1994) 221–253; P. Whetton et al., Historical ENSO Teleconnections in the Eastern Hemisphere: Comparison with Latest El Niño Series of Quinn, *Climatic Change* 32/1 (1996), 103–109; L. Ortlieb, Historical Chronology of ENSO and the Nile Flood Record, in *Past Climate Variability through Europe and Africa*, R. Batterbee et al. (eds.), Dordrecht: Springer 2004, 257–278; C. Spinage, African Ecology—Benchmarks and Historical Perspectives, Heidelberg: Springer 2012, 57–141.

instability, usually led to great food shortages followed by the outbreaks of epidemics. The records in the chronicles reveal that particularly in the fourteenth and fifteenth centuries A.D. the floods were too short or receded quickly. In particular, clusters of years of low floods caused the worst known droughts and famines,⁵²³ an aspect typical to water-dependent cultures like Egypt.⁵²⁴ In the following I will examine their causes, effects and the cultural responses to them.

5.8.1. “Years without Plenitude”

According to an old saying, which found different manifestations in the sources (*Kharāb Misr min jafāf al-Nil*/⁵²⁵ *kharāb Misr min al-inqīṭā‘*

⁵²² See, for example, the drought in 826/1423 due to the poor condition of dykes. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 646.

⁵²³ See also Hassan, Extreme Nile Floods, 109. Borsch, Nile Floods, 137.

⁵²⁴ Hassan, Nile flood Discharge, 30–31. Hassan, The Dynamics of a Riverine Civilization, 51–74. Hassan, Extreme Nile Floods, 101–112. Hassan, A River Runs Through Egypt, 22–25.

⁵²⁵ al-Suyūṭī, *Kawkab al-Rawḍah*, 116. Jalāl al-Dīn al-Mahallī, *Mabdā’ al-Nil*, fol. 10v.

*al-Nil/tahalluk Miṣr gharqan aw ḥarqan),*⁵²⁶ the destruction of Egypt comes from the shortage of water in the Nile. In fact, disastrous droughts happened in Egypt when the Nile failed to reach sixteen cubits,⁵²⁷ the level symbolising the border between the “good” and “bad” effect of the Nile.

Whereas the meanings of levels above sixteen cubits, as presented in *Chapter 5.6.2. “Excessive” and “Low” Floods from the Perspective of the Nile’s Specific Hydrological History* were complex and had different impacts on society levels below sixteen cubits were unanimously considered to be insufficient, at least from the advent of Islam.⁵²⁸ The records and the statistical data in the chronicles reveal that during the Mamlūk period the water never stopped at the levels below fifteen cubits. But there were years when the Nile did not reach plenitude

⁵²⁶ al-Suyūṭī, Kawkab al-Rawḍah, 119. al-Maqrīzī, al-Khiṭāṭ, vol. 2, 133.

⁵²⁷ See about the cultural meaning of sixteen cubits in *Chapter 5.5.1. “The Good News” (al-Bishārah)*, p. 465f.

⁵²⁸ al-Suyūṭī, Kawkab al-Rawḍah, 124. See also about the most feared low levels of the Nile, p. 454.

(*qaṣara al-Nīl wa-lam yūfi*),⁵²⁹ that is, the water failed to reach the level of sixteen cubits in the Nilometer.

People were extremely fearful of the consequences of “years without plenitude,” which they called an “extraordinary oddity”⁵³⁰ just like the previously discussed deviations from the “rule of the Nile.” They perceived their occurrence automatically as a sign of drought, crop failure, famine, starvation, social unrests, chaos, and the spread of epidemics.⁵³¹ Indeed, “years without plenitude” had a long-term effect because the failure of the Nile to reach the plenitude in a particular year determined the price and the availability of grain supplies for the next year. As people used to make provisions by hoarding for an impending shortage, this process disturbed the normal workings of the market mechanism and led to famine.⁵³²

⁵²⁹ See, for example, al-Nuwayrī, *Nihāyat al-arab*, vol. 31, 279.

⁵³⁰ See p. 458.

⁵³¹ al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, 10–11.

⁵³² Lev, *The Regime*, 149. See the description of this process in footnote 512, p. 557.

Mamlūk Egypt experienced “years without plenitude” several times. All of these cases induced a cluster of disastrous droughts and famines followed by cycles of epidemics, which led to considerable mortality among the affected population. As I will show in the following chapters, droughts ushering in horrific famines became increasingly common by the end of the fourteenth and the beginning of the fifteenth centuries A.D. According to al-Maqrīzī (d. 845/1442), during these years, more than a third of Egypt’s population perished and most of the villages were ruined.⁵³³ The reasons and effects were manifold. Solid evidence exists for the disastrous crisis of 693–695/1294–1296, 775–776/1373–1375/, 806–807/1403–1404, and 854–856/1450–1452,⁵³⁴ which I will discuss in the following subchapters.

⁵³³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1135.

⁵³⁴ There are also references to “years without plenitude” in 704/1304–5 and 709/1309, though the evidence is ambiguous. al-‘Aynī (d. 855/1451) mentioned in his chronicle that there was drought in Syria and Egypt due to the lack of rain in 704/1304–5. (al-‘Aynī, ‘Iqd al-jumān, vol. 4, 359.) According to him, it did not happen due to the lack of plenitude, as the Nile stopped that year at seventeen cubits and eighteen fingers. (al-‘Aynī, ‘Iqd al-

5.8.1.1. Drought of 693–695/1294–1296

According to the contemporary chronicler al-Nuwayrī (d. 733/1333), the first series of disastrous years occurred in Mamlūk Egypt during

jumān, vol. 4, 367.) This information contradicts Ibn Iyās' (d. 930/1524) record, which mentioned that the Nile did not reach plenitude, stopping at the level of fifteen cubits and seventeen fingers (Ibn Iyās, Nubdhah min nashq, 83.) A totally different level, sixteen cubits and sixteen fingers, is given in Ibn Taghrī Bardī's (d. 874/1470) record (Ibn Taghrī Bardī, *al-Nujūm al-zāhirah fī mulūk Miṣr wa-al-Qāhirah*, vol. 8, Bayrūt: Dār al-kutub al-‘ilmīyah 1413/1992, 168.) We have similar problems of inconsistency concerning the records of 709/1309. Although contemporary chroniclers reported an extreme shortage of the Nile, the water rose from fourteen cubits and a half finger to sixteen cubits and two fingers after the opening of the canal without inundation so that people could cultivate their lands. (Baybars al-Mansūrī, *Kitāb al-tuhfah*, 192. al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 143. Ibn Taghrī Bardī, *al-Nujūm*, 168, 193, 226. al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 300.) As the evidence for 704/1304–5 is insubstantial and ambiguous, and the extreme shortage of the Nile in 709/1309 did not lead to a disaster, except for a rise of prices for a certain period, I do not treat them here.

the short reign of Kitbughā (r. 694–696/1294–1296)⁵³⁵ due to the lack of inundation in 693/1294⁵³⁶ and 694/1295,⁵³⁷ which induced a prolonged rise of prices (*ghalā'*) and food shortages.⁵³⁸ As a result, the Cairo Canal was broken ahead of time without celebration, which depressed the people because they saw it as an evil omen (*mash'ūm*)

⁵³⁵ See more about the period of Sultan Kitbughā's reign in Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 357.

⁵³⁶ The Nile stopped at fifteen cubits and a third of a cubit. al-Nuwayrī, *Nihāyat al-arab fī funūn al-adab*, vol. 31, al-Qāhirah: al-Hay'ah al-miṣriyah al-‘āmmah lil-kitāb 1992, 279. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 803.

⁵³⁷ al-Nuwayrī, *Nihāyat al-arab*, vol. 31, 286. Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 145. Non-contemporary chroniclers al-Suyūtī (d. 911/1505) and Ibn Iyās (d. 930/1524) recorded that the Nile did not reach plenitude in 696/1296–7 either, leading to drought and rise of prices, which declined soon. al-Suyūtī, *Kawkab al-Rawḍah*, 230. al-Suyūtī, *Husn al-muḥādarah*, vol. 2, 298. Ibn Iyās, *Nubdhah min nashq*, 82–83. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 829, 830.

⁵³⁸ al-Nuwayrī, *Nihāyat al-arab*, vol. 31, 279, 286. Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 358. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 803. al-Suyūtī, *Kawkab al-Rawḍah*, 220.

and a misfortune (*mahdhūr*).⁵³⁹ As Baybars al-Manṣūrī (d. 725/1325) noted, in fact, evil (*shurūr*) was indeed suffered by people consistently during these years.⁵⁴⁰

The distress (*balā'*) increased in Egypt as famine (*ghalā'*) intensified.⁵⁴¹ The price of grain per irdabb (dry measure=198 l)⁵⁴² reached 150 dirham.⁵⁴³ Drought and famine, pertaining in 695/1295–6,⁵⁴⁴ were also recorded in Damascus, in Barqah and its provinces, lands of al-Maghrib, and other kingdoms.⁵⁴⁵

⁵³⁹ Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 144.

⁵⁴⁰ Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 145.

⁵⁴¹ al-Nuwayrī, *Nihāyat al-arab*, vol. 31, 286.

⁵⁴² Wehr, Dictionary, 13.

⁵⁴³ According to Baybars al-Manṣūrī (d. 725/1325), who was at that time in Alexandria, the irdabb of grain reached 160 dirham. (Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 145.) The discrepancy in prices is normal in the chronicles, given that the prices could vary throughout Egypt.

⁵⁴⁴ al-Nuwayrī, *Nihāyat al-arab*, vol. 31, 286, 293–295. al-Jazārī, *Ta'rikh ḥawādith al-zamān*, vol. 1, 280–285, 289. Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 363. The chroniclers usually enumerate products and their prices.

See, for example, al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 813.

al-Nuwayrī (d. 733/1333) mentioned in the reports of the year 695/1296 that apart from water scarcity there was another major reason which worsened the situation before the Nile levels fell short. The Sultan's granaries (*ahrā'*) were empty of crops due to the extravagant spending of the Sultan al-Ashraf Khalil (r. 689–693/1290–1293). Furthermore, after his vizier had bought crops for the Sultan's houses and horses, the prices rose sharply:⁵⁴⁶ the irdabb of grain reached 90 dirham,⁵⁴⁷ which, according to al-Suyūtī (d. 911/1505), at the beginning of the year cost 13 dirham.⁵⁴⁸ Analysing the causes of this disaster retrospectively, the later chroniclers also noticed other factors that precipitated the famine. Among them was

⁵⁴⁵ al-Nuwayrī, *Nihāyat al-arab*, vol. 31, 286. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 810.

⁵⁴⁶ al-Nuwayrī, *Nihāyat al-arab*, vol. 31, 294. al-Maqrīzī (d. 845/1442) mentions the same information in the annals of the year 693/1293–4. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 808–809.

⁵⁴⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 808–809.

⁵⁴⁸ al-Suyūtī, *Husn al-muḥāḍarah*, vol. 2, 297. According to al-Suyūtī's report, the price per irdabb of grain rose from 13 to 60 dirham.

inflation due to the abundance of copper coinage,⁵⁴⁹ diminishing incomes,⁵⁵⁰ and increasing injustice (*jawr*) in different spheres.⁵⁵¹

The situation was exacerbated in 695/1296 during Kitbughā's reign (r. 694–696/1294–1296), shaped by considerable political instability and conflicts among the ruling elite.⁵⁵² Contemporaries report sustained drought (*qaht*), terrible epidemics (*wabā* ‘azīm) and decay (*fanā* ‘azīm) in many regions.⁵⁵³ In Damascus, people gathered in the mosque to listen to readings from al-Bukhārī's *Sahīh*.⁵⁵⁴ al-Nuwayrī (d.

⁵⁴⁹ al-Suyūtī, Ḥusn al-muḥāḍarah, vol. 2, 297. al-Maqrīzī, Ighāthat al-ummah, 95. Allouche, al-Maqrīzī's Ighāthah, 47.

⁵⁵⁰ al-Suyūtī, Ḥusn al-muḥāḍarah, vol. 2, 297.

⁵⁵¹ al-Maqrīzī, Ighāthat al-ummah, 95. Allouche, al-Maqrīzī's Ighāthah, 47.

See about this period characterised by incessant warfare in Northrup, The Bahri Mamluk Sultanate, 251.

⁵⁵² al-Maqrīzī, al-Maqrīzī's Ighāthah, 47. Sabra, Poverty and Charity, 141.

⁵⁵³ al-Nuwayrī, Nihāyat al-arab, vol. 31, 293–295. Baybars al-Manṣūrī, Kitāb al-tuḥfah, 144–145.

⁵⁵⁴ *Sahīh* is the shortened title of *Jāmi‘ al-ṣahīh*, canonical collection of the traditions of the Prophet and his companions compiled by al-Bukhārī (d. 256/870). (M. Carter, “*Sahīh*,” *The Encyclopaedia of Islam*, vol. 8, Leiden:

733/1333) mentioned that, to the people's joy, after the readings God sent abundant rain followed by snow [probably in Damascus],⁵⁵⁵ whereas numerous people⁵⁵⁶ in Egypt continued to perish from hunger, thirst and diseases.⁵⁵⁷

The chroniclers give further details of the disaster, which led to massive depopulation and loss of livestock in Egypt. Corpses littered the streets of New and Old Cairo. Mass burials became common, as

Brill 1995, 835–836.) Readings from al-Bukhārī's *Sahīh* were held during the Mamlūk period at time of rejoicing or at times of distress like the shortage of the waters of the Nile or spread of epidemics. Dols, The Black Death, 247.

⁵⁵⁵ al-Nuwayrī, *Nihāyat al-arab*, vol. 31, 293–295.

⁵⁵⁶ According to Baybars al-Mansūrī (d. 725/1325), 1,000 people died per day. (Baybars al-Mansūrī, *Kitāb al-tuhfah*, 144–145.) al-Nuwayrī (d. 733/1333) recorded about 700 people per day. (al-Nuwayrī, *Nihāyat al-arab*, vol. 31, 293.) al-Jazārī (d. 739/1260–1338) mentioned that the number of those registered as dead reached 17,500 in Dhū al-hijjah/September. al-Jazārī, *Ta'rikh ḥawādith al-zamān*, vol. 1, 256–257. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1, 3, 810.

⁵⁵⁷ Baybars al-Mansūrī, *Kitāb al-tuhfah*, 144–145. Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 363.

people could not properly bury the dead.⁵⁵⁸ The contemporaries report that people dug a big hole and filled it with dead men and women, putting children between their feet, and filling the hole up with earth. Dogs tore to pieces the corpses of those who remained without graves. Because of the extreme hunger, those, who survived, ate everything: cats, dogs, donkeys, corpses and cadavers. This disaster (*balā'*/*fanā'*/*tāmā'*) evolved and afflicted both ordinary and prominent people alike.⁵⁵⁹

Writing about this disaster retrospectively, al-Maqrīzī (d. 845/1442) mentioned that in the beginning people washed the corpses in the basins for the ritual ablution (*mīda'ah*) in compliance with Islamic

⁵⁵⁸ al-Nuwayrī, *Nihāyat al-arab*, vol. 31, 293–294. Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 144–145. al-Jazārī, *Ta'rīkh ḥawādith al-zamān*, vol. 1, 280–284. Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 363–364. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1, 3, 810, 814–815. Allouche, al-Maqrīzī's *Ighāthah*, 43–47.

⁵⁵⁹ al-Nuwayrī, *Nihāyat al-arab*, vol. 31, 293–294. Baybars al-Manṣūrī, *Kitāb al-tuhfah*, 144–145. al-Jazārī, *Ta'rīkh ḥawādith al-zamān*, vol. 1, 280–284. Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 363–364. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1, 3, 810, 814–815. al-Maqrīzī, al-Maqrīzī's *Ighāthah*, 43–47.

law.⁵⁶⁰ However, as the number of dead increased, people buried them without washing and dressing them for the grave or threw them into the Nile.⁵⁶¹

Unlike the contemporary chroniclers, al-Maqrīzī (845/1442) provides descriptions of relief actions on the side of the authorities. According to him, as the crisis continued, Sultan Kitburghā (r. 694–696/1294–1296)⁵⁶² had the poor assemble in Alexandria, New and Old Cairo and assigned emirs to them who had to feed them. Each emir received a number of paupers equivalent to the number of mamlūks they commanded, i.e. “an emir of 100” was responsible for 100 paupers, “an emir of 50” for 50, and “an emir of 10” for 10 paupers. This

⁵⁶⁰ al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 814–815. See rituals necessary for the burial of the dead in Reidegeld, A., *Handbuch Islam: Die Glaubens- und Rechtslehre der Muslime*, Kandern im Schwarzwald: Spohr 2005, 459.

⁵⁶¹ al-Maqrīzī, *Kitāb al-sulūk*, vol. 1,3, 814–815.

⁵⁶² See footnote 535, p. 563.

relieved the hunger of the population, but people continued to die of diseases.⁵⁶³

al-Maqrīzī (d. 845/1442) also records another case of a relief measure. Emir Fakhr al-Dīn al-Tunbughā al-Misāhī, who possessed one hundred faddāns of beans among his cultivated lands, did not restrain the poor from eating unripe beans straight from the field.⁵⁶⁴

However, it seems that these measures were a drop in the ocean when compared with the extent of the catastrophe.⁵⁶⁵ But as Baybars al-Mansūrī (d. 725/1325) noted, “God was graceful”⁵⁶⁶ and the people’s despair came to end after great quantities of crops arrived in 695/1296 in Alexandria from Syria,⁵⁶⁷ and the lands of the Franks: a

⁵⁶³ al-Maqrīzī, *Ighāthat al-ummah*, 51. Allouche, al-Maqrīzī’s *Ighāthah*, 45. Sabra, *Poverty and Charity*, 143.

⁵⁶⁴ al-Maqrīzī, *Ighāthat al-ummah*, 52. Allouche, al-Maqrīzī’s *Ighāthah*, 46.

⁵⁶⁵ Sabra, *Poverty and Charity*, 143–144.

⁵⁶⁶ Baybars al-Mansūrī, *Kitāb al-tuḥfah*, 145.

⁵⁶⁷ Baybars al-Mansūrī, *Kitāb al-tuḥfah*, 145. al-Jazārī, *Ta’rīkh ḥawādith al-zamān*, vol. 1, 285.

big part of it arrived from Sicilia.⁵⁶⁸ Soon afterwards the prices began to drop swiftly.⁵⁶⁹

Ibn al-Dawādārī (d. 736/1336), who was six years old at that time, gives the most dramatic account of the disaster, which he wished “God would not repeat again.”⁵⁷⁰ Despite his young age, he remembers having witnessed people’s ferocity, when behind the Bāb al-Barqīyah (the Gate of Barqīyah)⁵⁷¹ outside New Cairo in the trench (*khandaq*), a group of people, “resembling savage beasts, which had lost any signs of human features,” were waiting for and fighting over the corpses, which people threw out of al-Barqīyah. “They cooked and ate whatever they found: dogs, cats, and even each other.”⁵⁷² Eating corpses and cadavars might be a narrative *topos*, however the

⁵⁶⁸ Baybars al-Mansūrī, *Kitāb al-tuhfah*, 145. Sabra, *Poverty and Charity*, 143.

⁵⁶⁹ al-Suyūtī, *Husn al-muḥāḍarah*, vol. 2, 298. Sabra, *Poverty and Charity*, 144.

⁵⁷⁰ Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 363.

⁵⁷¹ See the map in Kennedy, *An Historical Atlas of Islam*, 31.

⁵⁷² Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 363–364.

number of contemporary reports attesting to it does not exclude this kind of action in times of crisis.

For the first time one chronicler tells stories about the “oddities of the calamity” (*min gharā’ib al-balāyā*),⁵⁷³ mentioning not only the numbers of nameless deaths but focusing on the fate of individuals who suffered hunger and diseases or who fellow men slaughtered because of hunger. In one of the stories, which he heard from a trustful person (*‘adl*),⁵⁷⁴ probably when he was already an adult, he emphasised that the emirs caught a group of people who were responsible for a man’s slaughter and whom they ordered to be hanged at Bāb Zuwaylah.⁵⁷⁵ The misery of the situation culminated in his story, which continued that the corpses of those who were punished for the man’s slaughter did not hang long as others ate them over night (*fa-kamā akalū ukilū*).⁵⁷⁶ “These were the odd sides of the calamities” (*Wa-hadhā min gharā’ib al-balāyā*).

⁵⁷³ Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 364.

⁵⁷⁴ Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 364.

⁵⁷⁵ See the map in Kennedy, *An Historical Atlas of Islam*, 31.

⁵⁷⁶ Ibn al-Dawādārī, *Kanz al-durar*, vol. 8, 364–365.

This retrospective narration of the anthropophagy, which may or may not have occurred, is intentional. By including specific cases into the narrative of the disaster, Ibn al-Dawādārī (d. 736/1336) aimed to show how the nature of human beings could change in times of crisis, becoming brutal and transgressing all moral boundaries. By naming the involved people and giving other details, Ibn al-Dawādārī's form of narration brought the misery of the situation closer to the readers arising their emotional reactions.⁵⁷⁷ The later chronicler al-Maqrīzī (d. 845/1442), who described the people's moral decay while facing this disaster, also mentioned that anthropophagy, "especially the eating of youngsters was widespread" (*kathara akl luḥūm banī Ādam khuṣūṣan al-atfāl*).⁵⁷⁸ He added that looting bread from bakeries increased, and there were segments of the society such as physicians (*aṭibbā'*) and druggists ('aṭṭār) who made profits from the situation, as medicines were in great demand.⁵⁷⁹ All of these factors and the effect of this

⁵⁷⁷ See about the functions of the narratology of crisis in Nünning, Krise als Erzählung und Metapher, 138f.

⁵⁷⁸ al-Maqrīzī, al-Maqrīzī's *Ighāthah*, 45.

⁵⁷⁹ al-Maqrīzī, al-Maqrīzī's *Ighāthah*, 45–46.

disaster contributed to Sultan Kitbughā's unpopularity and led to his forced abdication in 696/1296 and the coming of Ḥisām al-Dīn Lājīn (r. 696–698/1296–1299) to power.⁵⁸⁰ This example shows vividly how a natural disaster, which enormously destabilised the socio-economic conditions, entailed political consequences.

5.8.1.2. Drought of 775–776/1373–1375

About eighty years would pass before Egypt again suffered a disastrous drought and famine during the reign of Sultan al-Ashraf Sha'bān (r. 764–778/1363–1377). The chroniclers report that the crisis⁵⁸¹ of 775–776/1373–1375 began when the Nile did not inundate in Rabī‘ I 775/August 1373, stopping at fifteen cubits and twenty-two fingers. As the water started to decline after Nawrūz (the first day of the Coptic new year),⁵⁸² the canal was opened without

⁵⁸⁰ Irwin, *The Middle East in the Middle Ages*, 94.

⁵⁸¹ See more about the distinctions and similarities between the narratology of crisis and catastrophe in Nünning, *Krise als Erzählung und Metapher*.

⁵⁸² See footnote 151 and 152, p. 109.

reaching plenitude and people became worried (*qalaqa*).⁵⁸³ These events also found a reflection in several poetic verses.⁵⁸⁴

The judges, jurists and other functionaries first gathered in the mosque of ‘Amr Ibn al-‘Āṣ in Old Cairo and then at the prophetic shrine (Ribāṭ al-āthār al-nabawīyah)⁵⁸⁵ outside Old Cairo where they

⁵⁸³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 218–219. al-Sakhāwī, *al-Dhayl al-tām*, vol. 1, 266–267. al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 304.

⁵⁸⁴ Ibn Qādī Shuhbah, *Ta’rīkh*, vol. 3, 431. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 58. al-Suyūṭī, *Kawkab al-Rawḍah*, 239–240. Ibn Iyās, *Nashq al-azhār*, fols. fol. 406.

⁵⁸⁵ Ribāṭ al-āthār was an area surrounding the mosque overlooking the Nile. In this mosque, the relics and traces of Prophet (a piece of iron and wood which had belonged to him) were preserved. (A. Sandouby, *The Ahl al-Bayt in Cairo and Damascus: The Dynamics of Making Shrines for the Family of the Prophet*, University of California 2008, 140. J. Pedersen, “Masjid,” *E. J. Brill’s First Encyclopaedia of Islam, 1913–1936*, Brill: Leiden 1987, 359.) See about this shrine in al-Maqrīzī, *al-Khiṭāṭ*, vol. 4/2, 801–802 and more about the *ribāṭ* in general in D. Little, The Nature of Khānqāhs, Ribāṭs, and Zāwiyas under the Mamlūks, in *Islamic Studies Presented to Charles J. Adams*, ed. W. Hallaq and D. Little, Leiden: Brill 1991, 91–107.

prayed to God to send the flood from the Nile. People also held prayers and recitations from the *Qur'ān* at the Nilometer. But the water continued to decline and the canals dried out (*jaffat*).⁵⁸⁶ Desperation overcame people, who rushed to make food provisions. This resulted in a rise in prices, while the authorities called on people to repent and abstain from sins and fast for three days.⁵⁸⁷

In the course of the same month, prominent emirs and ordinary people with their children went barefoot (*hufāh*)⁵⁸⁸ to the memorial shrine Qubbat al-Naṣr outside New Cairo. There the *khaṭīb* (preacher) of al-‘Amr Ibn al-‘Āṣ mosque, Ibn al-Qastīlānī, held the *khutbah* and prayer for the rain (*istisqā’*).⁵⁸⁹ al-Maqrīzī (d. 845/1442) reported that

⁵⁸⁶ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 218.

⁵⁸⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 218–219. al-Sakhāwī, *al-Dhayl al-tām*, vol. 1, 266–267. al-Suyūtī, *Husn al-muḥādarah*, vol. 2, 304.

⁵⁸⁸ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 219.

⁵⁸⁹ See more about the canonised prayer for rain (*istisqā’*), which is usually performed in times of drought in al-Bukhārī, *Ṣaḥīḥ al-Bukhārī*, vol. 2, 32f. A. Reidegeld, *Handbuch Islam*, 455. Lutfi, *Coptic Festivals of the Nile*, 273–277. See also p. 620.

afterwards people were in despair, as the water continued to decline and the shortage of crops intensified.⁵⁹⁰

The prices sank lightly for a short period after an abundant rain in 775 Rabi‘ II/September 1373, and then they rose again.⁵⁹¹ Because of the continuing *ghalā’*, the Sultan ordered readings from al-Bukhārī’s *Sāhiḥ* to be held in the Citadel⁵⁹² in the presence of judges and sheikhs every day during Ramaḍān/February 1374.⁵⁹³ The resorting to prayers and fasting and the appeal to lead a moral life were joint

⁵⁹⁰ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 218–219. al-‘Asqalānī, *Inbā’ al-ghumr*, 59. al-Sakhāwī, *al-Dhayl al-tām*, vol. 1, 266–267.

⁵⁹¹ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 220–223. al-‘Asqalānī, *Inbā’ al-ghumr*, 59–60.

⁵⁹² Readings from al-Bukhārī’s *Sāhiḥ* every day during Ramaḍān in the Citadel was an innovation, which was habitually performed down to the time of ‘Abd al-Bāsiṭ (d. 920/1514). ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 64.

⁵⁹³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 223.

religious coping measures,⁵⁹⁴ which were believed to ward off calamities.⁵⁹⁵

At the end of the Muslim year, epidemics broke out in Alexandria and Lower Egypt.⁵⁹⁶ Former muhtasib, al-Maqrīzī (d. 845/1442), followed the change of prices and listed them meticulously. According to him, the prices for foodstuffs, medicine and other commodities continued to rise throughout the autumn of 776/1374,⁵⁹⁷ although the Nile reached plenitude in Rabi‘ I/August and stopped afterwards at seventeen cubits and five fingers.⁵⁹⁸ The epidemic continued to spread among the people in New and Old Cairo probably because of

⁵⁹⁴ See the discussion of the function of these emotion-focused socio-religious coping measures, p. 619f.

⁵⁹⁵ See footnotes 755–757, p. 623f.

⁵⁹⁶ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 226. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 66.

⁵⁹⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 225–236. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 79.

⁵⁹⁸ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 231.

widespread malnutrition and unsanitary conditions.⁵⁹⁹ It was the first great outbreak of an epidemic since the plague of 749/1348.⁶⁰⁰

al-Maqrīzī (766–845/1364–1442), who was an eyewitness to the events, reported that “a beggar would ask for bread just to smell it, then he would cry out and die.”⁶⁰¹ Numerous people, whose wages did not suffice, died from hunger, and their bodies filled the streets.⁶⁰² The number of victims among the poor doubled because of extreme *ghaldā'* and cold weather during Rajab and Sha'bān/December and January. Animals also perished. Because of extreme hunger prisoners

⁵⁹⁹ See about the interrelation of natural disasters and epidemics footnote 47, p. 35.

⁶⁰⁰ Irwin, The Middle East in the Middle Ages, 148. See more about the plague of 749/1348 in Raymond, Cairo, 138–149 and p. 504.

⁶⁰¹ al-Maqrīzī, al-Maqrīzī's *Ighāthah*, 49.

⁶⁰² al-Maqrīzī, *Ighāthat al-ummah*, 58–59. Allouche, al-Maqrīzī's *Ighāthah*, 49. al-Maqrīzī, *Kitāb al-sulūk*, vol. 3, 1, 233–234. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1, 2, 77.

ate the clay which had been moved into the prison for the building of a wall there.⁶⁰³

On 24 Sha'bān 776/27 January 1375, the Sultan's deputy, emir Manjak, ordered the poor to be gathered and had the emirs, merchants and other wealthy people feed and house them. Each emir with power over thousands was responsible for 100 people in need. The Sultan prohibited giving alms to the paupers who were wandering and begging in the streets. Meanwhile, the epidemic continued to ravage the population which died in large numbers. al-Maqrīzī (d. 845/1442) mentioned that more than 500 people died every day and more than 200 were registered in the *dīwān al-mawārīth* (the Treasury's Bureau of Estates).⁶⁰⁴ As the dogs began to

⁶⁰³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 235. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 79.

⁶⁰⁴ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 235–236. al-‘Asqalānī, *Inbā’ al-ghumr*, 71–72. Ibn Taghrī Bardī, *al-Nujūm*, vol. 11, 53, 54, 55. Ibn Qādī Shuhbah, *Ta’rīkh*, vol. 3, 446, 447, 448. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 83. See general information on archival documents T. El-Leithy, Living

eat corpses in the streets, several emirs organised the washing and burial of corpses. The plague now afflicted the wealthy segments of society.⁶⁰⁵

Desperation and hopelessness prevailed during these two disastrous years, which ended⁶⁰⁶ with the arrival of the “new” grain. The prices declined immediately so that an irdabb of grain was sold for 60 dirham, having cost 130 dirham.⁶⁰⁷ However, al-Maqrīzī (d. 845/1442) reports that the relief process did not go smoothly. Although the muhtasib al-Damīrī tried to fix the prices in Dhū al-hijjah/May, the millers and traders of the imported crops abstained

Documents, Dying Archives: Towards a Historical Anthropology of Medieval Arabic Archives, *al-Qantara* 32/2 (July–December 2011), 389–434.

⁶⁰⁵ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 236.

⁶⁰⁶ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 239. Allouche, al-Maqrīzī’s *Ighāthah*, 49.

⁶⁰⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 237. Ibn Qādī Shuhbah, *Ta’rīkh*, vol. 3, 449. Adam Sabra gives the development of wheat prices during this crisis *Poverty and Charity*, 147.

from selling the wheat for the fixed price. As a result, the bread in the markets was scarce for a number of days.⁶⁰⁸

al-Maqrīzī (d. 845/1442) finishes his report saying that these were harsh times for the Egyptians, but “prosperity returned” with the Nile’s flow which was attributed to God, because “it is He who sends down rain after [men] have lost all hope, and unfolds his Grace [thereby]: for he alone is [their] Protector, the One to whom all praise is due” (*Qur’ān* 42:28).⁶⁰⁹

The insufficient flood from the Nile in 775/1373–4 together with the demographic crisis and poor economic condition of Egypt after the plague of 749/1348 and its reoccurrence in 760/1358–9, 764/1362–3 and 769/1367–8,⁶¹⁰ made it difficult for the population to cope with the disaster. The long duration of the crisis impeded the relief effort as the granaries were empty and it was difficult to feed the

⁶⁰⁸ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3, 1, 239.

⁶⁰⁹ Allouche, al-Maqrīzī’s *Ighāthah*, 49. Muḥammad, *the Qur’ān*, 949.

⁶¹⁰ al-Suyūtī, *Kawkab al-Rawḍah*, 238. al-Maqrīzī, *Kitāb al-sulūk*, vol. 3, 1, 81, 162.

population for a whole year. Except for a few relief projects launched by certain officials either on the Sultan's order or by their own wishes, the chroniclers do not give any further information about coping measures. However, the fact that the arrival of the crops at the end of the year ameliorated the situation shows that handling it earlier would probably have prevented a worsening of the situation. This suggests that the disaster further evolved due to the lack of proper management and leadership.

5.8.1.3. Drought of 806–807/1403–1404

The crisis of 806–807/1403–1404⁶¹¹ during the reign of al-Nāṣir Faraj (r. 801–808/1399–1405) started when the rise of the Nile first halted (*tawaqqafa al-Nīl min al-zīyādah*)⁶¹² in 806/1403 and, soon after the water reached sixteen cubits and two fingers, it abated (*naqasha mā' al-Nīl*)⁶¹³ so that the Cairo Canal was opened without habitual

⁶¹¹ See the historical background of the events in Garcin, The Regime of the Circassian Mamlūks, 292f.

⁶¹² al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1113.

⁶¹³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1116.

celebrations.⁶¹⁴ As people became worried, the sheikh of Islam, the chief judge Jalāl al-Dīn ‘Abd al-Rahmān Ibñ al-Bulqīnī, called for prayers for rain (*istisqā*)⁶¹⁵ in all of the mosques. He held prayers in the Mosque of al-Azhar for several days and when the Nile continued to decline, he went to the Ribāṭ al-āthār al-nabawīyah,⁶¹⁶ carrying prophetic relics, where he also prayed for rain.⁶¹⁷ The shortage of water from the Nile immediately caused an increase of prices.⁶¹⁸ During the year, the price for an irdabb of wheat rose to three times its nominal value:⁶¹⁹ at the beginning of the Hijrī year it reached 120

⁶¹⁴ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,3, 96. al-Suyūṭī, *Kawkab al-Rawdah*, 255.

⁶¹⁵ See about the prayer for rain footnote 236, p. 352; footnote 589, p. 580 and p. 620.

⁶¹⁶ See about Ribāṭ al-āthār al-nabawīyah footnote 585, p. 579.

⁶¹⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1115, 1116. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,3, 96–97. al-Suyūṭī, *Kawkab al-Rawdah*, 255.

⁶¹⁸ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1113.

⁶¹⁹ See the prices for different commodities and currency value for the year 806/1403: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1116, 1120, 1122, 1125, 1126) and 807/1404: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1130, 1131, 1133–1135, 1161–1162.

dirham,⁶²⁰ in Jumādā I/December 260 dirham,⁶²¹ and the absolute peak of 400 dirham in Shawwāl/April 1404.⁶²² Barley was also scarce as the Sultan's horses got it as fodder.⁶²³ al-Maqrīzī (d. 845/1442) called this development the most “marvellous” thing he had ever experienced during his lifetime (*hādhā min a'jab mā waq'a fī zamāninā*).⁶²⁴

Furthermore, al-Maqrīzī (d. 845/1442) and al-'Asqalānī (d. 852/1449) reported that when the southern cold winds intensified, diseases increased in New and Old Cairo. With the onset of the cold weather in Jumādā II 806/December 1403, the number of deaths from hunger and cold increased. Several emirs organised the burial of the victims, whose number at the end of Shawwāl 806/April 1404

⁶²⁰ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1113.

⁶²¹ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1119.

⁶²² al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1122. al-'Asqalānī, *Inbā' al-ghumr*, vol. 2, 261.

⁶²³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1116.

⁶²⁴ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1126.

reached 12,700.⁶²⁵ The situation in Egypt worsened, when *marīsiyah*⁶²⁶ and *sumūm* hot winds followed the cold weather in Shawwāl and Dhū al-qadah 806/April and May 1404. Medicine, which was in great demand, became very expensive.⁶²⁷

The population of Upper Egypt (al-Šā‘id) was particularly badly afflicted because of extreme drought and the outbreak of diseases, which interrupted agricultural labour. The combination of high prices, cold weather, and diseases took the lives of many people every day. al-Maqrīzī (d. 845/1442) estimates mortality figures registered for Upper Egypt as follows: Qūṣ—17,000; Asyūṭ⁶²⁸—11,000; and

⁶²⁵ al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 2, 260. al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1119–1120.

⁶²⁶ *al-Marīsiyah* winds are hot southern winds which usually blow in spring and are also referred in today’s Egypt as to *al-khamāsin*. (See the footnote in al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1124.) See about *al-khamāsin* and their connection to the spread of epidemics in footnote 217, p. 133 and p. 334.

⁶²⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1124–1125. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 2, 260–261. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,3, 100, 104.

⁶²⁸ See the map in Petry, (ed.), *The Cambridge History of Egypt*, p. xvii.

Hiwu (unidentified)—15,000.⁶²⁹ However, there were those who made profits during these hard times, especially the farmers who could irrigate the fields in al-Sharqīyah and al-Gharbīyah.⁶³⁰

When Ibn Abī al-Raddād “the guardian of the Nilometer”⁶³¹ announced on 27 Ba‘ūnah/ca. 4 July that the minimum was one cubit and ten fingers, it was possible to wade from Old Cairo to al-Jīzah⁶³² shore. Such a drying of the Nile (*ihtirāq*) was “unprecedented.” al-Maqrīzī (d. 845/1442) reported that because of these “misfortunate” events Egypt and its provinces were in a state of “destruction.”⁶³³ But the conditions improved slightly after the Nile reached plenitude in

⁶²⁹ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1126. *Sabra, Poverty and Charity*, 153.

⁶³⁰ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1126. The location of al-Sharqīyah and al-Gharbīyah along the Nile Delta in Lower Egypt probably made the irrigation there possible. See footnote 246, p. 480 and the map in Petry, (ed.), *The Cambridge History of Egypt*, p. xvii.

⁶³¹ See p. 461f.

⁶³² See the map in Warner, *The Monuments of Historic Cairo*, p. 1.

⁶³³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1127. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,3, 106.

807/1404.⁶³⁴ Sultan Faraj (r. 808–815/1399–1412), probably fearing a reoccurrence of the 806/1403 events, decided to participate at the celebration of the Inundation Day.⁶³⁵ When it later reached the maximum of nineteen cubits and three fingers,⁶³⁶ the water even flooded some fields in Upper Egypt (al-Šā‘īd).⁶³⁷

As mentioned before,⁶³⁸ Faraj (r. 808–815/1399–1412) was the second *Burjī* (Circassian) Sultan who followed this tradition during some of the years of his reign. When the Nile stopped at nineteen cubits and three fingers,⁶³⁹ and the “new wheat” arrived, prices began

⁶³⁴ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1130–1131. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 2, 289.

⁶³⁵ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1130–1131. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 2, 289.

⁶³⁶ Ibn Taghrī Bardī, *al-Nujūm*, vol. 12, 288.

⁶³⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1135.

⁶³⁸ See p. 485.

⁶³⁹ Ibn Taghrī Bardī, *al-Nujūm*, vol. 12, 288.

to fall,⁶⁴⁰ although the Sultan's campaign in Syria led to a shortage of bread.⁶⁴¹ But the farmers were still in need of seed. In some of the lands, such as in Upper Egypt, the high rise of the Nile impeded the cultivation process. Many people continued to die from hunger and cold weather.⁶⁴² These conditions forced people to sell their children to slavery in New Cairo and as far as Syria.⁶⁴³

Another impact of the *ghalā'* was massive emigration from the afflicted regions. al-Maqrīzī (d. 845/1442) and al-‘Asqalānī (d. 852/1449) reported that five ships full of emigrants sank while departing from Alexandria.⁶⁴⁴ This probably happened because the ships were overcrowded. The number of dead among the poor

⁶⁴⁰ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1155. Allouche, al-Maqrīzī's *Ighāthah*, 51.

⁶⁴¹ Sabra, *Poverty and Charity*, 153.

⁶⁴² al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1135. Allouche, al-Maqrīzī's *Ighāthah*, 51. See also p. 522.

⁶⁴³ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1135.

⁶⁴⁴ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1145. al-‘Asqalānī, *Inbā' al-ghumr*, vol. 2, 289. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,3, 113.

continued to rise and people became extremely cruel due to hunger. It occasionally led people to “unbelievable” deeds. A person was told to have eaten “the heart and lever”⁶⁴⁵ of a hung criminal outside the city of Bilbays. When he was brought to the commissioner in charge of war (mutawallī al-ḥarb), he confessed that he “did it because of hunger” (*al-jū‘ hamalnī alā hādhā*).⁶⁴⁶

When the year ended Egypt was on the verge of “complete destruction” (*lam tansalikh hādhihi al-sanah hattā shamila al-kharāb iqṭīm Misr*).⁶⁴⁷ A number of cities and villages were wiped out. The great part of the lands remained without irrigation.⁶⁴⁸ According to al-Maqrīzī (d. 845/1442), “more than one-half of the population” (*nīṣf*

⁶⁴⁵ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1145. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,3, 113.

⁶⁴⁶ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1145.

⁶⁴⁷ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1167.

⁶⁴⁸ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1167. Allouche, al-Maqrīzī’s *Ighāthah*, 54.

*al-nās)*⁶⁴⁹ of Egypt died of hunger and coldness. “Death was so prevalent that even the animals perished” during these harsh years.⁶⁵⁰

For these years, there is almost no evidence of relief measures sponsored by the authorities. Only in Dhū al-hijjah 807/May 1405, did some relief begin to be in sight when emir Yalbughā al-Sālimī succeeded in stabilising the price of gold.⁶⁵¹ However, the outbreak of plague in 808–810/1405–1407, 816/1413, 820–823/1417–1420, 841–842/1437–1438, 847–849/1443–1445⁶⁵² would only add to the misery experienced by the Egyptians.

Apart from the shortage of the waters of the Nile and famine, al-Maqrīzī (d. 845/1442), who analysed the causes of this disaster, in

⁶⁴⁹ Allouche, al-Maqrīzī’s *Ighāthah*, 51. al-Maqrīzī, *Ighāthat al-ummah*, 61.

⁶⁵⁰ Allouche, al-Maqrīzī’s *Ighāthah*, 51.

⁶⁵¹ al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,3, 1161–1162.

⁶⁵² ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,3, 136, 248, 323. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 59. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,5, 19, 80, 183. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 3, 360, 378. See also the records of these years in different chronicles.

particular blamed the political and economic corruption and instability that followed the death of the *Burjī* (Circassian) Sultan Barqūq in 801/1399.⁶⁵³ We have records of revolts of mamlūks because of delayed payments, conflicts among the Sultan's kin and between emirs and Bedouins.⁶⁵⁴ "The lack of harmony in the government and the frequent change of officials in the provinces"⁶⁵⁵ led to their dissaffection as officials knew that they would not retain their positions for a long time due to the instability. This demotivated them from dealing with events when necessary. Moreover, the managers of *iqtā'* (granted land)⁶⁵⁶ burdened the population with a

⁶⁵³ al-Maqrīzī, al-Maqrīzī's *Ighāthah*, 51–52.

⁶⁵⁴ 'Abd al-Bāsit, *Nayl al-amal*, vol. 1,3, 92, 110, 121. See more about the historical background in Garcin, *The Regime of the Circassian Mamlūks*, 292f.

⁶⁵⁵ Adel Allouche took this citation from William Popper's translation of Ibn Taghrī Bardī's *History of Egypt 1382–1469. Part II, 1399–1411 A.D.* Translated from the Arabic Annals of Abu l-Maḥasin Ibn Taghrī Birdī by W. Popper, vol. 2, California: University of California Press 1954, 80.

⁶⁵⁶ Allouche, al-Maqrīzī's *Ighāthah*, 15, 52–53. See about *iqtā'* footnote 320, p. 506.

multitude of taxes for the land as the revenues decreased because of diminishing agriculture, depopulation, and emigration.⁶⁵⁷

This explains the lack of evidence for the state-sponsored relief measures as the corrupt transactions of influential officials and military commanders actually led to the lack of bread.⁶⁵⁸ They kept quantities of grain out of the reach of people unless they agreed to pay the prices set by them. This led to the extreme increase in grain prices, “unparalleled in living memory.”⁶⁵⁹ The landowners could not sow their lands because of the high price of seed and the decreased numbers of peasants. These conditions ruined most of the villages, and the majority of the lands remained uncultivated.⁶⁶⁰

Furthermore, al-Maqrīzī (d. 845/1442) briefly mentioned in *Khīṭāt* that the crisis of 806–807/1403–1404 led to reforms of the tax system because the officials squandered the collected taxes, meant for the

⁶⁵⁷ Allouche, al-Maqrīzī’s *Ighāthah*, 15, 52–53.

⁶⁵⁸ Allouche, al-Maqrīzī’s *Ighāthah*, 54.

⁶⁵⁹ Allouche, al-Maqrīzī’s *Ighāthah*, 51.

⁶⁶⁰ Allouche, al-Maqrīzī’s *Ighāthah*, 54.

maintenance of canals and dykes, especially those of the *sultāni*.⁶⁶¹ This implies that the irrigation system was in poor condition, and that in particular the management of the centrally regulated irrigation network failed. The debasing of the currency in 805/1402 also saw a deterioration in financial affairs. In particular, the use of different currencies and the widespread circulation of copper coins (*fulūs*), following the cessation of silver minting in Egypt in 807/1403, resulted in massive inflation.⁶⁶² In conclusion, the crises of 806–807/1403–1404, which led to the deaths of numerous people and caused emigration, weakened Egypt's agricultural productivity in the fifteenth century A.D.⁶⁶³

5.8.1.4. Drought of 854–856/1450–1452

⁶⁶¹ al-Maqrīzī, al-Khiṭāṭ, vol. 2, 272, 297. Tsugitaka, State and Rural Society, 226. See about *jusūr al-sultāniyah* footnote 247, p. 481.

⁶⁶² al-Maqrīzī, Kitāb al-sulūk, vol. 3, 3, 1098, 1112, 1131–1132. al-‘Asqalānī, Inbā’ al-ghumr, vol. 2, 297. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 1, 3, 108, 118. Allouche, al-Maqrīzī’s Ighāthah, 51. al-Suyūṭī, Ḥusn al-muḥāḍarah, vol. 2, 308. Sabra, Poverty and Charity, 151.

⁶⁶³ Sabra, Poverty and Charity, 154.

The crisis of 854–856/1450–1452 had already begun to evolve in 852/1449⁶⁶⁴ and 853/1449 with the outbreak of plague in New Cairo, which took the lives of more than 1,000 people.⁶⁶⁵ Among the victims of the plague were Sultan al-Zāhir Jaqmaq's (r. 842–857/1438–1453) four children and numerous mamlūks.⁶⁶⁶ The situation worsened in 854/1450 when the Nile did not reach plenitude. As the water continued to decline and people became greatly worried ('zuma qalaq al-nās),⁶⁶⁷ the Sultan sent a message to Caliph⁶⁶⁸ al-Mustakfī II (r. 1441–1451 A.D.),⁶⁶⁹ requesting him to go to the prophetic shrine

⁶⁶⁴ 'Abd al-Bāsiṭ, Nayl al-amal, vol. 2,5, 268.

⁶⁶⁵ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 1, 202. al-Sakhāwī, al-Dhayl al-tām, vol. 2, 40. 'Abd al-Bāsiṭ, Nayl al-amal, vol. 2,5, 277, 283. Ibn Iyās, Badā'i', vol. 2, 272.

⁶⁶⁶ 'Abd al-Bāsiṭ, Nayl al-amal, vol. 2,5, 286, 277.

⁶⁶⁷ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 1, 286.

⁶⁶⁸ The Mamluk Sultanate kept members of the 'Abbāsid family as titular caliphs in Cairo until the Ottoman conquest of Egypt in 1517." "Caliph/Caliphate," *The Oxford Dictionary of Islam*, Oxford: Oxford University Press 2003.

⁶⁶⁹ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 1, 286f. 'Abd al-Bāsiṭ, Nayl al-amal, vol. 2,5, 315. See short poetic verses that describe the occurrence of

(Ribāṭ al-āthār al-nabawīyah),⁶⁷⁰ give alms, and pray to God to send the usual flow. The Sultan also commissioned Sheikh ‘Alī al-‘Ajamī, muhtasib of New Cairo, to give a good meal to the poor at the shrine and at the Nilometer where people gathered for the prayer.⁶⁷¹ On the Sultan’s order, prayers for the rain (*istisqā’*)⁶⁷² were also organised outside New Cairo and in the mosques during the subsequent days. People of all faiths followed the chief judge Sharaf al-Dīn Yahyā al-Manāwī al-Shāfi‘ī who stopped in the open space between the mausoleum of al-Malik al-Zāhir Barqūq⁶⁷³ and Qubbat al-Naṣr⁶⁷⁴ (the

the Nile’s shortage in Ibn Iyās, *Nashq al-azhār*, fols. 414–415. al-Suyūtī, *Kawkab al-Rawdah*, 259–260.

⁶⁷⁰ See footnote 585, p. 579.

⁶⁷¹ Ibn Taghrī Bardi, *Ḥawādith al-duhūr*, vol. 1, 287. ‘Abd al-Bāsit, *Nayl al-amal*, vol. 2,5, 315.

⁶⁷² See about *istisqā’* footnotes 236, p. 352 and footnote 589, p. 580.

⁶⁷³ See about the first Circassian Sultan Barqūq in footnote 253, p. 484 and the location of this complex in N. Warner, *The Monuments of Historic Cairo*, p. 121.

⁶⁷⁴ I could not identify the position of this shrine. Most probably it was situated in the vicinity of Bāb al-Naṣr (Gate of Victory). See the map in Kennedy, (ed.), *An Historical Atlas of Islam*, p. 31.

Memorial Shrine of Victory) where he held a *khutbah* and prayer for the rain in the open air (in the desert).⁶⁷⁵

Despite their efforts, the Nile declined further. People rushed to buy bread which was scarce. The mamlūks began to take the crops from the ships and those who possessed it abstained from selling it. The Sultan called for people to refrain from sins and to fast. Then he ordered the canal to be opened without celebrations as the situation was disastrous (*al-muṣībah al-‘uzmā*).⁶⁷⁶ It was a terrible day for people (*kāna yawman muhawwilan muz‘ijan*),⁶⁷⁷ who cried when they witnessed the scarcity of water flowing into the canals. The water receded more and more, leading to extreme drought in Upper and Lower Egypt.⁶⁷⁸

⁶⁷⁵ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 1, 288. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,5, 315.

⁶⁷⁶ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 1, 292.

⁶⁷⁷ ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,5, 318.

⁶⁷⁸ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 1, 294. See short poetic verses that describe this “unprecedented” (‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,5,

The lack of inundation automatically induced a rise in prices for all commodities.⁶⁷⁹ The chroniclers recorded the development of these prices, which fluctuated during the whole the year. The price for the grain per irdabb at the beginning of the year was 800 dirham.⁶⁸⁰ In Shawwāl 854/November 1450, news came from Alexandria that the Franks captured four Muslim ships with grain after they had reached the port of al-Rashīd (Rosetta).⁶⁸¹ They appropriated all the crops and flour exceeding the value of 100,000 dīnār brought from Turkey

318) shortage of the Nile in Ibn Iyās, *Nashq al-azhār*, fols. 414–415. al-Suyūṭī, *Kawkab al-Rawḍah*, 259–260.

⁶⁷⁹ Ibn Taghrī Bardī, *Hawādith al-duhūr*, vol. 1, 293–294, 285–286. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 5, 300, 315.

⁶⁸⁰ Ibn Taghrī Bardī, *Hawādith al-duhūr*, vol. 1, 248, 297. There are slight discrepancies in the records of prices. Cf. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2, 5, 300.

⁶⁸¹ See the map in Petry, (ed.), *The Cambridge History of Egypt*, p. xvii.

(Bilād al-Turkiyah) and other places.⁶⁸² As a result, the price of grain reached the absolute peak of 1,500 dirham in 855/1451.⁶⁸³

The disastrous drought (*qaht*), famine (*ghalā'*), and spread of diseases, which took the lives of numerous people,⁶⁸⁴ continued down to Rabi' I

⁶⁸² Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 1, 298. This refers most probably to the situation when the Catalan piracy, directed against Muslim shipping visiting Alexandria, and Catalan raids against Egyptian and Syrian harbour towns in the 1440s and 1450s A.D. increased. This put under strain the relationship between the Mamlūk Sultans and the Catalans, who were granted preferential terms as regarded the loading of merchandise in the port of Alexandria since the treaty of 1430 A.D. concluded between King Alfonso V of Aragon (r. 1416–1458) and the Mamlūk Sultan Barsbay (r. 1422–1438). N. Coureas, Commerce between Mamluk Egypt and Hospitaler Rhodes in the Mid-Fifteenth Century: The Case of Sidi Galip Ripolli, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. U. Vermeulen, Leuven: Peeters 2010, 207–208.

⁶⁸³ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 317. ‘Abd al-Bāṣīṭ, Nayl al-amal, vol. 2, 5, 315.

⁶⁸⁴ ‘Abd al-Bāṣīṭ, Nayl al-amal, vol. 2, 5, 317, 333. Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 1, 292.

855/April 1451.⁶⁸⁵ The Nile's minimum was so low (*ihtaraqa ihtirāqan zā'iðan*) that wading became possible from Būlāq to Manbābah (unidentified). Egypt was on the verge of destruction (*kharāb*), and deaths and poverty increased so that innumerable people migrated to Syria.⁶⁸⁶ When the Nile inundated and the canal was opened at the proper time in 855/1451 people were so happy that they perfumed each other with saffron (*za'farān*).⁶⁸⁷ The prices declined slightly,⁶⁸⁸ but relief did not come with the rise of the Nile, which stopped at eighteen cubits and nine fingers.⁶⁸⁹ The chroniclers reported the lack of cows necessary for ploughing and sawing seeds. Due to the scarcity

⁶⁸⁵ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 324. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,5, 333.

⁶⁸⁶ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 327. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,5, 337. Ibn Iyās, Nubdha min nashq, 102–103.

⁶⁸⁷ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 330. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,5, 339.

⁶⁸⁸ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 324, 329, 331.

⁶⁸⁹ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 332, 343. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,5, 340.

of meat, people sold dog meat and dead animals.⁶⁹⁰ In addition, in Shawwāl 855/October 1451 worms spoiled the cultivated *qurt* (plant).⁶⁹¹ During this famine, which lasted almost four years, indescribable and “extraordinary odd” things happened (*wa-waqa‘a fi hādhā al-ghalā’ min al-gharā’ib wa-al-nawādir mā lā yu‘abbar ‘anhu bi-wasf*).⁶⁹² Diseases and deaths continued at the beginning of 856/1452⁶⁹³ and only after *al-khamāsin*,⁶⁹⁴ did the number of dead decline and prices fall.⁶⁹⁵

⁶⁹⁰ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 333–334. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2, 5, 340–341.

⁶⁹¹ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 338. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2, 5, 344.

⁶⁹² ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2, 5, 341. Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 333–334.

⁶⁹³ ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2, 5, 352. Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 358. Ibn Iyās, Badā’i‘, vol. 2, 293.

⁶⁹⁴ See about *al-khamāsin* footnote 217, p. 133 and p. 334.

⁶⁹⁵ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 360.

After the rise of the Nile in 856/1452, the water halted again and declined. People were worried,⁶⁹⁶ and to de-escalate the situation, the Sultan ordered Sheikh muhtasib ‘Alī to distribute food to the poor.⁶⁹⁷ When the Nile, rising high all of a sudden, in Rajab 856/July 1452 reached sixteen cubits, people happily celebrated Inundation Day and the Opening of the Canal.⁶⁹⁸ However, in Sha‘bān 856/August 1452, a terrible incident (*amr muz‘ij*)⁶⁹⁹ during the opening of the dam of Bahr al-Munajjā⁷⁰⁰ tarnished that happiness. While breaking the dam, the water stream hit and flooded the dyke where people stood watching. More than twenty people fell into the water and drowned.⁷⁰¹

⁶⁹⁶ ‘Abd al-Bāsit, *Nayl al-amal*, vol. 2,5, 362.

⁶⁹⁷ Ibn Taghrī Bardī, *Ḩawādith al-duhūr*, vol. 2, 365.

⁶⁹⁸ Ibn Taghrī Bardī, *Ḩawādith al-duhūr*, vol. 2, 366–367. See about these festivals *Chapter 5.5.2. The Inundation Day (Yawm al-Wafā’)*, p. 474f. and *Chapter 5.5.3. The Opening of the Canal (Kasr al-Nīl)*, p. 479f.

⁶⁹⁹ Ibn Taghrī Bardī, *Ḩawādith al-duhūr*, vol. 2, 371.

⁷⁰⁰ See about this dam footnote 411, p. 531; footnote 432, p. 537 and footnote 433, p. 537.

⁷⁰¹ Ibn Taghrī Bardī, *Ḩawādith al-duhūr*, vol. 2, 371.

Matters improved in Ramaḍān 856/September 1452 when the Nile finally reached nineteen cubits and twelve fingers. As the farmers then could trap the water until the end of Bābih/9–10 November⁷⁰² and start to irrigate the lands, the prices of every commodity automatically declined.⁷⁰³ ‘Abd al-Bāsiṭ (d. 920/1514) finished his record saying that the year was full of unprecedented hardships. (*Wakhārijat hādhihi al-sanah wa-qad hasala bi-hā min al-ṣu‘ubāt wa-al-shiddah mā qad ‘arafihu*).⁷⁰⁴

5.8.2. Review of Cultural Responses to Disastrous Droughts

In all of the cases described here, natural and social factors such as the lack of inundation, the debasement of the currency, corruption and the Sultan’s ineffectiveness except for occasional relief measures, led to a long-term disaster which weakened Egypt. Taking into consideration the extent of human suffering and the enormous loss of animals and human lives, we can grade all of these droughts, caused primarily by the lack of inundation, to the index of -3 from the

⁷⁰² Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 373.

⁷⁰³ Ibn Taghrī Bardī, Ḥawādith al-duhūr, vol. 2, 379.

⁷⁰⁴ ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2, 5, 376.

hydrological perspective. This level refers to disastrous droughts with extensive material damage and loss of animal and human lives.⁷⁰⁵

The catastrophic impact of these years explains why people were extremely worried when the rise of the Nile halted. While reading the reports in the chronicles, one has the impression that the delay caused more trouble among the population than the actual rising afterwards and the final height. There are numerous contemporary records about the delay of the Nile's rise, especially in the fourteenth and fifteenth century A.D.⁷⁰⁶ These records usually opened with the typical sentence: "the rise of the Nile delayed for days, people worried because of it, and prices rose" (*fī-hi tawaqqafat zīyādat al-Nīl ayyāman wa-qalaqa al-nās bi-sabab dhālikā wa-irtafa'at al-as'ār*

⁷⁰⁵ See the Index of Short Floods, p. 496.

⁷⁰⁶ See, for example, records of the following Hijrī years in the chronicles: 709, 740, 748, 764, 787, 789, 796, 802, 819, 823, 824, 827, 830, 832, 833, 837, 853, 856, 866, 867, 870, 871, 872, 873, 876, 879, 885, 889, 890, 892, 897, 899, 902, 909, 910, 914 and 916. See also Borsch, The Black Death.

*shay'an).*⁷⁰⁷ To ascribe importance to this occurrence, later chroniclers usually finished their report with a short verse.⁷⁰⁸

The inundation of the Nile during Misrā/7 August–5 September and its connection with the psychological condition of people and financial and economic affairs was incredible. Once, in 866/1461–2, when the rise of the Nile was delayed and prices rose,⁷⁰⁹ Sultan Khushqadam (r. 865–872/1461–1467) expressed a wish to destroy the Nilometer so that the public might not know of the delay.⁷¹⁰ However, this was a mere wish. If he had destroyed the Nilometer it would have deprived the people of psychological security and the feeling of having the Nile under control. Moreover, people would perceive it as a rejection of Egyptian culture and tradition, which would provoke their anger even more.

⁷⁰⁷ ‘Abd al-Bāsit, *Nayl al-amal*, vol. 2,7, 420.

⁷⁰⁸ Ibn Iyās, *Nashq al-azhār*, fols. 421–422. al-Suyūtī, *Kawkab al-Rawdah*, 266. Ibn Iyās, *Badā’i‘*, vol. 2, 395–396.

⁷⁰⁹ See footnote 182, p. 466.

⁷¹⁰ Ibn Iyās, *Nashq al-azhār*, fol. 416. Popper, *The Cairo Nilometer*, 60. Cf. the Sultan’s attitude during an extreme rise of water, footnote 191, p. 468.

But what was meant by “delayed”? As previously described, the Nile habitually reached plenitude in Misrā/7 August–5 September. In the thirteenth and the beginning of the fourteenth century A.D., during al-Nuwayrī’s lifetime, the inundation was usually expected in the middle or the end of this Coptic month, sometimes even later,⁷¹¹ whereas from the end of the fourteenth A.D. century onwards—during al-Maqrīzī’s and Ibn Iyās’ lifetime—the natural course of events changed. The water usually began to reach plenitude earlier, i.e. in the beginning of Misrā.⁷¹² Later than that was thus considered

⁷¹¹ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 252.

⁷¹² According to late Mamlūk chroniclers, the average date at which the Nile reached sixteen cubits changed in the course of the centuries. (al-Maqrīzī, *al-Khiṭāṭ*, vol. 1, 161. al-Suyūṭī, *Kawkab al-Rawdah*, 151. Ibn Iyās, *Nuzhat al-umam*, 89. Popper, *The Cairo Nilometer*, 209.) That the Nile normally reached plenitude during their epoch in the beginning of Misrā might be a subjective assumption, as the evidence for the end of the fourteenth and fifteenth A.D. centuries shows that the inundation also occurred in the second half of Misrā (see the records in the chronicles and Sāmī, *Taqwīm al-Nīl*, vol. 2). However, if we take for granted their assumption, we should be able to explain the reason for this change. Most probably we can link it to

to be a delay.⁷¹³ As we have seen, it caused disturbances among the population, leading to the spread of rumours that the Nile had not reached plenitude, which immediately caused price manipulations in the market and the increase of prices for the main agricultural products, especially for grain.⁷¹⁴ But as soon as the water rose prices declined.⁷¹⁵

The sudden recession of water (*hubūt/inhiṭāt/naqṣ*), which happened quite frequently from the end of the fourteenth century A.D.,⁷¹⁶ was also potentially dangerous for the year ahead as most of the lands

the problem of sediment, which, as the chroniclers noticed, rose in the bed of the Nile (see p. 502). And with the rise of the bed, as a logical consequence, the same amount of water seemed to arrive earlier than before.

⁷¹³ al-Maqrīzī, al-Khiṭāṭ, vol. 1, 161. al-Suyūṭī, Kawkab al-Rawdah, 151. Ibn Iyās, Nuzhat al-umam, 89.

⁷¹⁴ al-Maqrīzī, Kitāb al-sulūk, vol. 4,2, 893–894, 920.

⁷¹⁵ al-Maqrīzī, al-Khiṭāṭ, vol. 1, 162.

⁷¹⁶ See the records of the following Hijrī years in the chronicles: 764, 782, 796, 822, 827, 829, 830, 831, 832, 833, 836, 837, 873, 889, 892, 897 and 902.

remained without water, and drought was to be expected. Its impact was similar to that of a delayed inundation. When the water quickly declined, merchants and brokers withheld supplies pushing up the prices of grain, which aroused anxiety and chaotic conditions among the population. There are numerous descriptions of crowds at the mills and bakeries, struggling to obtain grain or bread.⁷¹⁷ The Bedouins sometimes intercepted the grain destined for Cairo and Delta regions, looted it from barns⁷¹⁸ or burnt it intentionally,⁷¹⁹ which also made the situation worse during the years of drought.⁷²⁰ al-Maqrīzī (d. 845/1442) explained in *al-Khitāt* that the interrelation

⁷¹⁷ al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 2, 106. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 805–806, 809. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,6, 332. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 162, 219, 258. Shoshan, “Nile,” 561. B. Shoshan, Grain Riots and the “Moral Economy:” Cairo, 1350–1517, *The Journal of Interdisciplinary History* 10/3 (1980), 459–478.

⁷¹⁸ ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,1, 144, 218–219.

⁷¹⁹ Ibn Iyās, *Badā’i‘*, vol. 3, 360.

⁷²⁰ Ibn Taghrī Bardī, *al-Nujūm*, vol. 10, 183.

of the Nile's rise and the prices was a characteristic of Egypt.⁷²¹ This makes me conclude that the Nile was a barometer for Egypt's socio-economic stability.

The increase of disastrous droughts from the fourteenth century A.D. also brings me to the following conclusion. The early Mamlūk period, especially the periods of Sultan al-Mansūr Qalāwūn's (r. 678–689/1279–1290) and al-Nāṣir Muḥammad Ibn Qalāwūn's long reign (r. 693–694/1293–1294; 698–708/1299–1309; 709–741/1310–1341)⁷²² were relatively stable⁷²³ as both of them attached great importance to the irrigation works.⁷²⁴

Essential evidence published by Sato Tsugitaka in *State and Rural Society in Medieval Islam* supports this supposition. This evidence

⁷²¹ al-Maqrīzī, al-Khitāt, vol. 1, 162. See also footnote 512, p. 557 and p. 455.

⁷²² See footnote 127, p. 100 and p. 537.

⁷²³ Cf. the data in *The Catalogue of Nile-Induced Droughts and Famines* in the appendix, p. 668 during the period of their reign.

⁷²⁴ See also Borsch, The Black Death.

refers to Sultan al-Manṣūr Qalāwūn's *Memorandum* (*Tadhkirah*), which strictly regulated control of the irrigation system in Egypt and state affairs in general.⁷²⁵ The Sultan issued this edict in 679/1280–1 for the vice-Sultan emir Kitburghā⁷²⁶—who later became Sultan (r. 694–696/1294–1296)—as a legal basis regulating different matters in the public sphere.⁷²⁷ Articles 13, 14, and 15 of this *Memorandum* were specifically devoted to the management of the water control system. They prescribed the construction of canals and cleaning of dykes, repairs of bridges and watergates to protect them from decay (*fasād*). They also determined who the officials in charge of these matters would be, promising punishment if they did not follow the rules.⁷²⁸ This singular evidence shows the ideal way the state regulated a “top-

⁷²⁵ Sato Tsugitaka gives the full translation and Arabic source of this *Memorandum*, which provides invaluable information about the Egyptian society under the Mamlūk regime in the end of the thirteenth century A.D. Tsugitaka, State and Rural Society, 107–115, 123.

⁷²⁶ See footnote 535, p. 567.

⁷²⁷ Tsugitaka, State and Rural Society, 105f.

⁷²⁸ Tsugitaka, State and Rural Society, 111, 118–119.

down”⁷²⁹ irrigation policy, which, however, depended much on the sovereign and his objectives.

Egypt’s productivity, security and welfare, indeed, depended greatly on the maintenance of the irrigation system.⁷³⁰ Sato Tsugitaka notes that an important term *maṣlahah* pl. *maṣāliḥ* (welfare), which contrasts with the term *fasād* (corruption, calamity)—also used in the context of Nile-related disasters—appears repeatedly in the articles of the above-mentioned *Memorandum*. According to him, as al-Maqrīzī (d. 845/1442) noted in *Ighāthat al-ummah*, if the rulers neglected *maṣāliḥ*, corruption would inevitably increase.⁷³¹ This must have been the case during the late Mamlūk period, when poor administration of the irrigation system and water-related disasters increased

⁷²⁹ “Top-down” means “controlled, directed, or instituted from the top level” as opposed to “bottom-up,” i.e. “controlled or directed from the lower levels.” *Merriam-Webster Online Dictionary*, www.merriam-webster.com/dictionary.

⁷³⁰ Willcocks, Egyptian Irrigation.

⁷³¹ Tsugitaka, State and Rural Society, 115. al-Maqrīzī, *Ighāthat al-ummah*, 12.

respectively. This development shows that the normative character of this “top-down” memorandum was the ideal case, which was not always possible to implement in reality given that late Mamlūk Egypt in particular experienced a frequent change of Sultans who possessed different leadership qualities. Apart from this, the increase of epidemics and disastrous famines, which also had a negative impact on the management and administration, weakened their power.

Further evidence supporting the supposition that the irrigation system was in better condition during the early Mamlūk period stems from Sultan al-Nāṣir Muḥammad Ibn Qalāwūn’s long reign.⁷³² The latter also attached great importance to controlling the network of dykes and canals.⁷³³ Among other things,⁷³⁴ he initiated epochal water-related projects, like the construction and innovation of dykes and

⁷³² See about this Sultan footnote 127, p. 100.

⁷³³ Tsugitaka, State and Rural Society, 227. Borsch, The Black Death.

⁷³⁴ During his long reign, Sultan Nāṣir headed big projects like the creation of gardens along the Nile and renovation of squares and other important public structures. al-Maqrīzī, *Kitāb al-sulūk*, vol. 2,1–2,3, 541–542. See also Behrens-Abouseif, an-Nāṣir Muḥammad and al-Ašraf Qāytbāy, 266–274.

dams, bridges and the digging of small and big canals, like al-Nāṣirī Canal and the Alexandria Canal.⁷³⁵

In fact, there is no evidence of outstanding floods during Sultan Nāṣir's reign,⁷³⁶ except for the flood of 724/1324⁷³⁷ and the excessive out of season flood in 717/1317, when the Sultan's decisive measures averted a disaster.⁷³⁸ The preventive farseeing measures implemented by the Sultan and his representatives seem to have functioned well during the early Mamlūk period.

There is also no evidence of extreme droughts and famines during the early Mamlūk period, except for the disastrous famine of 662/1263–

⁷³⁵ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 67, 180. al-Jazārī, *Ta'rīkh ḥawādith al-zamān*, vol. 2, 1030. al-Maqrīzī, *Kitāb al-sulūk*, vol. 2, 1–2, 3, 541542, 541546.

⁷³⁶ See *The Catalogue of Excessive Nile Floods* in the appendix, p. 661.

⁷³⁷ al-Nuwayrī, *Nihāyat al-arab*, vol. 32, 68–69. See about this flood in *Chapter 5.7.1. General Overview of Major Destructive Floods*, p. 516f.

⁷³⁸ See the discussion of this out of season excessive flood in *Chapter 5.7.3.1. Floods of 717/1317, 825/1422, and 882/1477*, p. 536f.

4, not discussed here for two reasons. First, the chroniclers did not name the Nile as the cause of the crisis. Second, Sultan Baybars' (r. 658–676/1260–1277)⁷³⁹ effective policy of price regulation, especially the organisation of food distribution by the military and civilian elites, prevented the escalation of the famine which lasted only several months.⁷⁴⁰ Thus as the sources did not mention any deaths from hunger or outbreaks of diseases it suggests that the disaster was successfully averted.⁷⁴¹ However, Baybar's "successful" effort at coping was an exception. The increase of disastrous droughts from the fourteenth century A.D. reveals that, despite the Sultans' intervention, the response to the disasters was usually late or insufficient in terms of prevention. The major reason for the

⁷³⁹ See about Baybars footnote 255, p. 484 and Northrup, *The Bahri Mamluk Sultanate*, 251f.

⁷⁴⁰ al-Yūnīnī, Dhayl, vol. 1, 554–555. Baybars al-Mansūrī, *Kitāb al-tuhfah*, 52. al-Nuwayrī, *Nihāyat al-arab fī funūn al-adab*, vol. 30, al-Qāhirah: Markaz tāhqiq al-turāth 1990, 96. al-Maqrīzī, *Kitāb al-sulūk*, vol. 1, 2, 506–508. al-Suyūtī, *Husn al-muḥādarah*, vol. 2, 295.

⁷⁴¹ See more details about the implemented measures in Sabra, *Poverty and Charity*, 138–140. Lev, *The Regime*, 156.

inefficiency of their measures was the poor condition of canals and dykes, neglected due to the corruption of officials and the extreme depopulation because of hunger, frequent outbreaks of epidemics and emigration.

To pacify the population during the occurrence of critical situations, like the delayed rise of the Nile or its failure to reach sixteen cubits, the authorities took specific measures to avert the “unpreventable.” We can categorise the most important patterns of coping measures undertaken by the Mamlūk Sultans and the population as (a) emotion-focused socio-religious coping, and (b) practical problem-focused coping.

a) One of the important emotion-focused socio-religious coping measures during droughts was the call to prayers. The importance of prayer as a mechanism in propitiating an environment and society has been noted in many cultures.⁷⁴² The recitation of certain verses

⁷⁴² Bankoff, *Cultures of Disaster*, 168.

from the *Qur'ān*,⁷⁴³ readings from al-Bukhārī's *Sahīh*⁷⁴⁴ during Ramaḍān or holding *khuṭbah* (sermon)⁷⁴⁵ usually accompanied the prayers. In particular, during droughts the Sultan immediately ordered the four judges, chaired by the Supreme judge, the muhtasib, the 'ulamā', *Qur'ān* reciters, and prominent emirs to summon the people and held "prayers for rain" (*istisqā'*) as long as the delay of the Nile's waters persisted.

In Muslim culture the prayer for rain (*istisqā'*) had a long tradition and was canonised similarly to the prayer of the eclipse, which was performed during earthquakes.⁷⁴⁶ The chroniclers reported that the prayers for rain were delivered in the desert outside the city, at the Nilometer, in the mosques and other import places of worship like the

⁷⁴³ 'Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,3, 307. 'Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 219. 'Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,6, 145.

⁷⁴⁴ Ibn Iyās, *Badā'i'*, vol. 1,2, 64. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,1, 367. al-Suyūṭī, *Kawkab al-Rawdah*, 256. See also footnote 554, p 571.

⁷⁴⁵ Ibn Iyās, *Nubdhah min nashq*, 95. 'Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 62–83. al-Suyūṭī, *Kawkab al-Rawdah*, 256–258.

⁷⁴⁶ See p. 351 and 407.

prophetic shrine (Ribāṭ al-āthār al-nabawīyah).⁷⁴⁷ Writing about the “*istisqā’* ritual,”⁷⁴⁸ Huda Lutfi noticed that the prayer for rain in the desert, “a space of purity where the Almighty might be more receptive to human supplication,” constructed a spatial opposition to the city as “a contaminated space conducive only to sin.”⁷⁴⁹ These rituals, usually narrated in a dramatic way to play on the pious emotions of the reader, expressed “a collective desire” to bring about divine forgiveness and a reversal of the drought through abstinence from sins or by repenting them.⁷⁵⁰ She also drew attention to the chroniclers’ silence about the presence of women during this ritual. According to her, this must have been a metaphorical rejection of

⁷⁴⁷ al-Suyūṭī, *Kawkab al-Rawdah*, 233, 255. al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,1, 531–532. Ibn Iyās, *Badā’i‘*, vol. 2, 395–396. ‘Abd al-Bāsit, *Nayl al-amal*, vol. 2,6, 265. Ibn Iyās, *Badā’i‘*, vol. 4, 133–134, 230–231. Ibn Iyās, *Nubdhah min nashq*, 97–98. See also footnote 585, p. 579.

⁷⁴⁸ Huda Lutfi calls *istisqā’* “rituals of anxiety.” See more in Lutfi, Coptic Festivals of the Nile, 273–277.

⁷⁴⁹ Lutfi, Coptic Festivals of the Nile, 275.

⁷⁵⁰ Lutfi, Coptic Festivals of the Nile, 273.

female presence, unwished for in the sacred place, to make it devoid of temptation.⁷⁵¹

In most of the cases of a delayed inundation, listed in footnote 706 (p. 608), the chroniclers reported that usually God heard people's prayers, eventually favouring plenitude. Thereupon, the prices and people's condition returned to their previous state.⁷⁵² However, in numerous other cases,⁷⁵³ a delayed inundation in combination with a

⁷⁵¹ Lutfi, Coptic Festivals of the Nile, 276–277.

⁷⁵² al-Suyūṭī, Kawkab al-Rawḍah, 258. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 1,4, 221. Ibn Iyās, Nubdhah min nashq, 105–106. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,6, 332. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,7, 16, 380, 424.

⁷⁵³ See the years and corresponding references about the delayed inundation and quick decline of the Nile in 764/1363: al-Maqrīzī, Kitāb al-sulūk, vol. 3,1, 85, 91. Ibn Iyās, Nubdhah min nashq, 88. 782/1380: al-Maqrīzī, Kitāb al-sulūk, vol. 3,1, 395. 795/1392–3: al-Maqrīzī, al-Sulūk, vol. 5, 359. Allouche, al-Maqrīzī's Ighāthah, 51–53. 818–822/1415–1419: al-Maqrīzī, Kitāb al-sulūk, vol. 4,1, 318, 357, 397, 454, 460, 503, 505. See more about the crisis of 818–822/1415–1419 in footnote 517 and 516. 827/1424: al-Maqrīzī, Kitāb al-sulūk, vol. 4,2, 669, 672. 829–833/1425–1430: al-Maqrīzī, Kitāb al-sulūk, vol. 4,2, 709–710, 748, 749–753, 764, 805–806, 809, 810,

quick decline before or after plenitude resulted in famines and the spread of epidemics. During some of these years the lands dried as the basins remained without water, necessary for irrigation and cultivation. The food shortage with occasional loss of animals and human lives due to hunger followed the same pattern as discussed in *Chapter 5.8.1. “Years without Plenitude”*.⁷⁵⁴

Apart from prayers, believed to ward off calamities (excessive floods,⁷⁵⁵ famines and epidemics),⁷⁵⁶ the Sultan occasionally called for

see also p. 486 and footnote 264. 836–837/1433–1434: al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 893–894, 903, 904. al-‘Asqalānī, *Inbā’ al-ghumr*, vol. 3, 512. 873/1468–9: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,6, 346, 357, 361, 363, 364, 365, 369, 370. 889/1484: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 386. 892/1487: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,8, 71, 72, see also footnote 516, p. 559. 897/1491–2: al-Suyūṭī, *Kawkab al-Rawdah*, 266. 902/1496–7: Ibn Iyās, *Nubdhah min nashq*, 111–112.

⁷⁵⁴ See p. 562f.

⁷⁵⁵ Fasting and prayers for the decline of the water and the decrease of epidemics and was a common practice. 761/1359: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 53–54. 773/1371: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 195. 915/1510: Ibn Iyās, *Badā’iṣ*, vol. 4, 172.

a fast of three days.⁷⁵⁷ Since “heavenly disasters” (*āfāt samāwīyah*)⁷⁵⁸ were “the Almighty’s customary treatment of His creatures” whenever “they disobey Him and violate His divine law [...],”⁷⁵⁹ during certain years the Sultan also called for people to abstain from sins (*āthām/ma‘āsin/fisq*) in repentance.⁷⁶⁰ These acts of “purification” reminded the people of divine punishment, admonishing them to repent their sins and return to virtue, after which God might bring back the flow of the Nile. The frequent public announcements were

⁷⁵⁶ See, for example, the records of the year 822/1419: al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,1, 487. Tucker, Environmental Hazards, 126–127.

⁷⁵⁷ See, for example, 823/1420: al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,1, 531–532. al-Suyūṭī, *Kawkab al-Rawdah*, 255. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 62. Ibn Iyās, *Nubdhah min nashq*, 95.

⁷⁵⁸ al-Maqrīzī, *Ighāthat al-ummah*, 59.

⁷⁵⁹ Allouche, al-Maqrīzī’s *Ighāthah*, 50.

⁷⁶⁰ See, for example, 823/1420: al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,1, 531–532. 866/1462 ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,6, 145. 879/1474: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 2,7, 101. 917/1511: Ibn Iyās, *Badā’iṣ*, vol. 4, 230–231.

also strategies to calm down and control masses of troubled people who were in a state of panic.⁷⁶¹

However, the Sultans sometimes used violent measures, especially against those whom they blamed for the delay. This aggression was directed against those “corruptive people” (*ahl al-fasād*)⁷⁶² who usually gathered on the Nile’s banks waiting for the celebration of the Inundation Day. They were accused of “abominable” deeds (*munkar*)⁷⁶³ like merrymaking, wine drinking and sexual promiscuity, which were told to accompany their festivities.⁷⁶⁴ Thus, in such cases, the government imposed restraints on all forms of popular celebrations. Besides the previously discussed repeated abolition of the Coptic festivals of the Nile,⁷⁶⁵ we have references to officially organised intentional burning of tents pitched in the island of al-

⁷⁶¹ Lutfi, Coptic Festivals of the Nile, 275.

⁷⁶² ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,6, 145.

⁷⁶³ ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,7, 101.

⁷⁶⁴ ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,6, 145. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,7, 101. Ibn Iyās, Badā’i‘, vol. 4, 230–231. Shoshan, “Nile,” 562.

⁷⁶⁵ See p. 444.

Rawḍah.⁷⁶⁶ There were also occasional Sultanic attempts to ban congregations on the Nile in anticipation of the water's rise and splendid preparations for the inundation.⁷⁶⁷ Finding scapegoats⁷⁶⁸ was the easiest way to divert the attention of the population's aggravated mood from Egypt's poor state of affairs.

b) Among the practical problem-focused measures to prevent or alleviate the disastrous effects of drought, the following attitudes on the side of the authorities can be summarised:

(1) The authorities tried to fix or bring down the price of foodstuffs, principally of grain, as quickly as possible, to avoid mass disturbances and social disruptions. This was accomplished by large-scale

⁷⁶⁶ See, for example, 830/1426–7, 853/1449, 870/1465: Ibn Iyās, Nubdhah min nashq, 97, 101, 105–106. 866/1462: ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 2,6, 145. 819/1416: ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 1,3, 307. 870/1466: Ibn Iyās, Badā’i‘, vol. 2, 440–441.

⁷⁶⁷ See, for example, 830/1427: ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 1,4, 218. 810/1407–8: Lutfi, Coptic Festivals of the Nile, 274.

⁷⁶⁸ See, for example, the aboulishment of Coptic festivals, p. 446.

purchases of food from unaffected areas or abroad, underselling the market price, and applying political pressure on hoarders and grain merchants to follow suit.⁷⁶⁹ Though it should be mentioned that at times, as we have seen, the emirs and the Sultan themselves—the largest grain suppliers in the Sultanate—were responsible for the hoarding which intensified or even brought on food crises.⁷⁷⁰

- (2) The Sultan usually ordered the allocation of poor segments of society to rich emirs who were told to supply them with food, goods

⁷⁶⁹ Sabra, Poverty and Charity, 170–175. See, for example, the crisis of 662/1263–4 al-Yūnīnī, Dhayl, vol. 1, 554–555. Baybars al-Manṣūrī, Kitāb al-tuhfah, 52. al-Nuwayrī, Nihāyat al-arab, vol. 30, 96. al-Maqrīzī, Kitāb al-sulūk, vol. 1,2, 506–508. al-Suyūtī, Ḥusn al-muḥādarah, vol. 2, 295. Lev, The Regime, 149–161. See other cases in *Chapter 5.8. Case Studies of Disastrous Droughts: Causes, Effects, and Cultural Responses*, p. 555f.

⁷⁷⁰ See, for example, 835/1432: al-Maqrīzī, Kitāb al-sulūk, vol. 4,2, 872. ‘Abd al-Bāsiṭ, Nayl al-amal, vol. 1,4, 312. Tucker, Environmental Hazards, 122. 736/1336: al-Yūsufī, Nuzhat al-nāzir, 294–301. al-Jazārī, Ta’rīkh ḥawādith al-zamān, vol. 2, 864–865. Allouche, al-Maqrīzī’s Ighāthah, 48–49.

and sometimes cash.⁷⁷¹ However, it appears that after the disastrous drought and food shortage of 775–776/1373–1374, we have no evidence of emirs' being mobilised to combat the crisis probably because the Sultans' authority over them weakened gradually⁷⁷² due “to the lack of harmony in the government.”⁷⁷³ Private alms giving certainly played a role during the years of crisis, but the records of disasters occasionally show the greed of the rich who were reluctant to help the poor.⁷⁷⁴

(3) During some disastrous years, powerful high-ranked emirs organised the washing and the burial of the dead in accordance to

⁷⁷¹ 829/1426: al-Maqrīzī, *Kitāb al-sulūk*, vol. 4,2, 712. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,4, 191. 764/1363: ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,1, 355. Sabra, *Poverty and Charity*, 165, 170–175.

⁷⁷² Sabra, *Poverty and Charity*, 166.

⁷⁷³ See footnote 655, p. 596.

⁷⁷⁴ See, for example, 776/1374: al-Maqrīzī, *Kitāb al-sulūk*, vol. 3,1, 233, 234. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 77. Sabra, *Poverty and Charity*, 164, 166.

Islamic Law.⁷⁷⁵ It was an important relief measure implemented by certain rulers and emirs. This was done on the one hand to provide a dignified burial of the disaster victims, and, on the other hand, to avoid unsanitary conditions in the streets, which were described as being littered with corpses during some famines.⁷⁷⁶

When faced with disastrous droughts and famines, the population, especially the poor, also developed practical coping measures to survive the disasters. Among the first measures was people's attempt to attract the authorities' attention, either in a peaceful way, like begging for food, or by creating social disturbances, like scavenging or looting.⁷⁷⁷ Such conditions motivated the ruling elites to look for solutions.

Other measures were emigration⁷⁷⁸ from the affected areas, exceptional cases of parents' selling of their children to slavery,⁷⁷⁹ the

⁷⁷⁵ See references in footnote 560, p. 573.

⁷⁷⁶ Sabra, Poverty and Charity, 94–95.

⁷⁷⁷ Sabra, Poverty and Charity, 166–167.

⁷⁷⁸ Cf. Bankoff, Cultures of Disaster, 166.

common tendency towards the consumption of items which were normally considered to be inedible, like unripe crops out of the fields, the carcasses of cats, dogs, and even human corpses. The explicit contemporary references to such occurrences lead me to conclude that these responses to disastrous droughts and famines were not a mere literary device but plausible behavioural deviations in the light of the catastrophe, which disrupted normal social life. These measures were destructive, but they were generated from people's hopelessness and wish to overcome the impasse.

⁷⁷⁹ See p. 593.

CONCLUSION

Drawing the final conclusion, the critical evaluation of the primary sources, including unpublished manuscripts, and secondary literature suggests that the authors of the Mamlūk period paid considerable attention to natural disasters, their perception, interpretation and human response, treated them both as isolated “marvellous oddities” and as disasters in the socio-political and economic contexts. The chapters in Part I of this thesis have demonstrated that Mamlūk authors, while explaining causes of natural hazards, integrated into the narrative of their works different interpretations, which signifies their plurality.

Catastrophic events, perceived as God’s signs, were embedded in various astro-meteorological, cosmological, and theological discourses. 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 religious and fictional knowledge. This strict division is not the most effective because it separates interpretations that are often overlapping. But

this distinction is inherent in the structural, textual and functional differences of the genres, where these interpretations appear.

With regard to the astro-meteorological interpretations of natural disasters in form of *malḥamah*-predictions, which has preserved the pre-Islamic heritage of Assyrian-Babylonian and the Hermetic tradition of Late Antiquity, we can conclude that the common human desire to predict and avert future disastrous events made it possible for this ancient tradition to survive and develop further in Mamlūk culture. Equally important is the fact that, by going through various modifications, the astro-meteorological perception of disasters adapted to cultural flows and beliefs dominant during the Mamlūk period.

We can make a similar conclusion about the physical and fictional interpretations of natural disasters found in the *‘ajā’ib wa-gharā’ib* cosmographic genre. Regarding the physical interpretations of natural disasters, we can assume that ancient Greek theories and Islamic revelation shaped knowledge about natural phenomena in Mamlūk *‘ajā’ib wa-gharā’ib* cosmographic works, elaborating it into a system of

its own. Early Arab scholars, who were inclined towards classical Greek heritage, encouraged Mamlūk authors to cite Greek theories about the causes of natural disasters, in particular those of Aristotle. The direct and indirect transmission of classical Greek thought about natural disasters attests to the fact that their reception did not come to end during the Mamlūk period, as generally accepted.¹ Moreover, reviving the attested traditional views of Arab ancestors, Mamlūk authors legitimised the ancient physical interpretations, connecting them to the message of the *Qur'ān*, which emphasises the marvels of God's creation in the governing of the physical cycles of creation and destruction.

Furthermore, relying on the achievements of their predecessors, Mamlūk authors expanded the *qur'ānic* perception of the universe with fictional interpretations of natural disasters as “marvellous oddities,” which evoked astonishment. They borrowed, reframed and shaped basic metaphoric symbols in these interpretations under the influence of Jewish-Christian, Indo-Iranian, and Babylonian traditions. By adopting them to local demands, they also introduced

¹ See footnote 32.

widespread motifs, popular arguments and new symbolic elements into the established narratives.

Irrespective of the contextual differences between the Mamlūk plots and those of Pre-Islamic sources, the “commonness” of the natural phenomena in Wolfgang Welsch’ sense of transculturality,² as well as the universal interest towards the understanding of the secrets of nature, presented in a symbolic way, made these fictional interpretations timeless. The entanglement and mixture of cultural narrative elements in them created its own unique hybrid vision of natural phenomena, contextualised in conformity with the requirements of Islamic traditions. In particular, the religious views often reinforced fictional interpretations. With this inclusion of a normative character, Mamlūk authors aimed either to maintain people’s fear of God’s wrath and so follow his rules or discredit disseminators of physical interpretations, which had pre-Islamic and foreign roots.

² See p. 41.

All this confirms the first hypothesis: Mamlūk authors viewed multiple interpretations of disasters from various angles. They reflected and modified these interpretations drawn from pre-Islamic cultures, by adding new understandings that they gleaned in the process of transcultural flows, entanglements and textual interactions. Thus the evidence marks not only the plurality and transculturality of interpretations but also the continuity of knowledge transfer as Mamlūk authors ensured the maintenance and continuity of the ancient knowledge.

Interestingly, the interpretations which Mamlūk authors presented in the astro-meteorological and *'ajā'ib wa-gharā'ib* genre isolated from the discourse of their impact on the society, found their way into the narratives of natural disasters in the historical genre discussed in Part II of this thesis. The analysis of the historiographic primary sources in Part II has revealed that the inclusion of causes of earthquakes, floods and droughts, as well the interrelation between disasters, belonged to the constructive elements in the narratology of exceptionally disastrous events, such as, for example, the 702/1303 earthquake.

The critical analysis in Part II of the thesis has also shown that of about thirty-five earthquakes³ which occurred during the Mamlūk period (648–922/1250–1517), excluding those with a doubtful status, only eight earthquakes were described as being violent. In particular the earthquakes of 702/1303⁴ and 886/1481⁵ were perceived and interpreted as disastrous. Furthermore, the analysis discerned twenty-eight cases of destructive floods,⁶ not counting excessive floods due to heavy rainfall. In six cases, in 717/1317, 761/1359, 785/1383, 797/1395, 825/1422, 882/1477, the excessive floods were induced by natural causes, such as an “extraordinary odd,” i.e. anomalous, out of season increase of water. Two other cases, the flood of 778/1376 and 912/1506, were provoked by human interactions.⁷ Although the

³ See *The Catalogue of Earthquakes* in the appendix, p. 643f.

⁴ See *Chapter 4.4. The Disastrous Earthquake of 702/1303: A Comprehensive Account of Effects and Attitudes*, p. 323f.

⁵ See *Chapter 4.5. The Disastrous Earthquake of 886/1481: Comprehensive Account of Effects and Attitudes*, p. 383f.

⁶ See *The Catalogue of Excessive Nile Floods* in the appendix, p. 661.

⁷ See the discussion of these floods in *Chapter 5.7. Case Studies of Excessive Floods: Causes, Effects and Cultural Responses*, p. 509.

quantitative presentation of Nile-induced droughts may pose problems, as droughts, like a crisis,⁸ are processes rather than events, we can discern six major clusters of disastrous years: 693–695/1294–1296, 775–776/1373–1375, 806–807/1403–1404, 854–856/1450–1452⁹ due to the “extraordinary odd” shortage of the Nile in rapid succession and in 829–833/1425–1420 and 836–837/1432–1434 due to the delayed rise and quick decline of the water.¹⁰ Apart from these major episodes of Nile-induced droughts, there are numerous cases of the extreme shortage of water in the Nile,¹¹ which led to socio-political instability from resulting famines and the spread of epidemics.

On the basis of the preceding case studies of disastrous earthquakes, floods and droughts, all of which have natural and social roots, one can come to a number of conclusions. Compared with earthquakes

⁸ Nünning, Krise als Erzählung und Metapher, 124f.

⁹ See *Chapter 5.8.1. “Years without Plenitude”* p. 562f.

¹⁰ See footnote 753, p. 622.

¹¹ See the *Catalogue of Nile-Induced Droughts and Famines* in the appendix, p. 668 and footnote 753, p. 622.

and excessive “odd” floods, which were more frequent, the shortage of the water in the Nile during the six major periods had the most destructive long-term impact as it induced clusters of disastrous droughts and the worst famines in Egypt. These droughts and famines afflicted all segments and spheres of society, prompting economic instability, political turmoil, and social and health scares because of the spread of disease. This suggests a causal interrelation between a disaster, be it natural or social, and the onset of another. Their effect was especially devastating because the recovery period between the events was too short.

Looking at the years of their occurrence shows that almost every generation of Egyptians, especially those who lived during the late fourteenth and fifteenth centuries A.D., faced the threat of hunger and experienced the continuous decrease of the population due to the plague. The latter, the most dangerous of all disasters, along with the effects of drought was responsible for the largest number of fatalities as compared to the effects of earthquakes and excessive floods, for which we do not have any explicit evidence about the loss of human lives, or at least no death toll.

Coming to the second hypothesis: although the Nile was a “blessing” for the Egyptians because it secured life, we can call Mamlūk Egypt in compliance with Greg Bankoff’s theory¹² a culture of Nile-induced disasters, as its erratic fluctuations constantly confronted people with the fear of abnormal flooding and its consequences. On the one hand, living in the flood-prone environment, the Egyptians adapted to the dangers emanating from it as they knew the risks. On the other hand, they had to face those disasters and repeatedly negotiate them, which stimulated the development of a sophisticated “culture of coping,” and a “culture of adapting.”

The Nile, indeed, shaped cultural attitudes as people incorporated its flooding into their way of life. In this process, the perpetuation of the established institutionald warning system, provided by the measurements in the Nilometer, and procedures in the control of the complex centralised and community irrigation system played a significant role. This refutes the effectiveness of the mere “top-down” irrigation policy, as evident in Karl Wittfogel’s theory of centralised

¹² See p. 52.

“hydraulic societies” such as Egypt,¹³ and postulates the inadequacy of this one-sided system in practice, at least during the Mamlūk period.

The important emotion-focused, socio-religious coping measures together with practical problem-focused coping strategies in dealing with water-related risks became a cultural routine. However, the sorrow and the tragedy described by the chroniclers, who often refer to these disasters as “unprecedented,” makes me conclude that the disasters caused by the Nile and other factors were not accepted as “normal” and “routine,” as they caused irreparable consequences for society. With regards to this point, I take a different view of the controversial theoretical basis of Greg Bankoff’s concept of a “culture of disaster”—introduced in the opening part of this study—which further suggests that “hazard and disaster are simply just accepted [normal] aspects of daily life” in hazard-prone areas.¹⁴

¹³ See more about this theory in footnote 247, p. 481.

¹⁴ Bankoff, *Cultures of Disaster*, 3. See also G. Bankoff, *Cultures of Disaster, Cultures of Coping. Hazard as a Frequent Life Experience in the Philippines*, in *Natural Disasters, Cultural Responses. Case Studies toward a Global*

However with regards to a different point, I fully agree with Greg Bankoff's view that "the resultant cultures also change over time."¹⁵ This is, indeed, the case with Egyptian culture. The adaptive strategies and the collective technological and social efforts to combat and reduce the repetitive negative impact of the Nile's flooding finally bore fruit. Today, notions of threat and even the memory of the seasonal rhythm of the Nile, which was embedded in the area's cultural traditions, have been lost following the construction of the High Aswān Dam in the twentieth century A.D.¹⁶ People adapted in the course of technological development in so far as they reached "permanent accommodation."¹⁷

Environmental History, ed. Ch. Mauch and Ch. Pfister, Lanham: The Rowman & Littlefield Publishing Group 2009, 265.

¹⁵ Bankoff, *Cultures of Disaster*, 277. See also 7, p. 20 and Hassan, *Environmental Perception*, 121–140.

¹⁶ See footnote 57–58, p. 39f., footnote 247, p. 481 and more on the ambivalent effect of this dam in Benedick, *The High Dam*, 119–144.

¹⁷ Bankoff, *Cultures of Disaster*, 159.

Indeed, “the environment shapes human society.”¹⁸ This point opens up other research questions about how the Egyptians in modern times perceive and incorporate the Nile’s floods into their daily lives. What cultural role does it play in the modern tradition, which has been disconnected from the old traditions by technological advances?¹⁹

¹⁸ Brewer, The Archaeology of Ancient Egypt, 124. Hassan, F., Environmental Perception, 121–140.

¹⁹ A good starting point for this and further research questions may be Richard Benedick’s paper The High Dam and the Transformation of the Nile, *Middle East Journal* 33/2 (1979), 119–144 as well as the references mentioned in *Chapter 2. State of Research*, footnote 42, p. 32.

APPENDIX

Note: In the following catalogues contemporary sources are presented in *Italics*.

CATALOGUE OF EARTHQUAKES

657 before 12 Jumādā II/5 June 1259

Location: Egypt

Intensity: strong

Status: doubtful due to the lack of contemporary evidence and due to misinterpretations

Sources: Ibn Duqmāq, Nuzhah, 254; al-‘Aynī, ‘Iqd, vol. 1, 224; al-Maqrīzī, Sulūk, vol. 1,2, 420; al-Suyūtī, Kashf, 199; al-Suyūtī, Ḥusn, vol. 2, 295; Anonymous manuscript, al-Barākīn, 107.

Catalogues: Ambraseys, 40–41; Guidoboni, 271–272; Ṭāhir, Nuşuş, 115–116; al-Għunaym, 179.

660/25 November 1261–13 November 1262

Location: Egypt, Syria, Iraq

Intensity: strong

Status: doubtful due to the lack of contemporary evidence

Sources: al-Qalqashandī, Ma'āthir, vol. 2, 114–115.

Catalogues: Ambraseys, 41; Guidoboni, 273; Tāhir, Nuşūş, 116; Tāhir, Les grandes, 94; al-Ghunaym, 180–181.

662 20 Rabī‘ II, Tuesday/19 February 1264

Location: New Cairo?

Intensity: strong

Sources: *al-Yūnīnī, Dhayl*, vol. 1, 553; al-Maqrīzī, Sulūk, vol. 1, 2, 508; al-Suyūtī, Kashf, 200.

Catalogues: Ambraseys, 41; Tāhir, Nuşūş, 117; al-Ghunaym, 181.

693/1 December 1293–19 November 1294

Location: Old Cairo, New Cairo

Intensity: strong in Old Cairo, light in New Cairo

Status: doubtful due to the lack of contemporary evidence

Sources: al-Suyūtī, Kashf, 200; al-Suyūtī, Ḥusn, vol. 2, 297.

Catalogues: Guidoboni, 319–320; al-Ghunaym, 185; Tāhir, Nuşūş, 121.

698 24 Ṣafar/30 November 1298

698 3 Rabī‘ II/7 January 1299

Location: Egypt

Intensity: strong

Sources: *al-Jazari, Ta'rikh*, vol. 1, 440.

Catalogues: Ambraseys, 41; Guidoboni, 331–332; al-Ghunaym, 185.

702 23 Dhū al-hijjah/9 August 1303

Location: Egypt, Syria, Barqah, Tunis, Sicily, Qābis, Marrakech, Antioch, Antalya, Sīs, Cyprus, Constantinople

Intensity: strong

Sources: *Baybars al-Manṣūrī, Kitāb al-tuhfah* 173; *Abū al-Fidā'*, *al-Mukhtaṣar*, vol. 4, 50; *al-Nuwayrī, Nihāyat al-arab*, vol. 32, 57–59; *al-Dawādārī, Kanz*, 100–102; *Mufaddal Ibn Abī al-Fadā'il, al-Nahj*, vol. 3, 592–596; al-‘Aynī, ‘Iqd, vol. 4, 260–265; al-Maqrīzī, *Sulūk*, vol. 1, 3, 942–945; al-Suyūtī, *Kashf*, 203–204; al-Suyūtī, *Husn*, vol. 2, 298–299; al-Suyūtī, *Kawkab*, 96–97; al-Nuwayrī al-Iskandarānī, *Kitāb al-ilmām*, vol. 4, 124.

Catalogues: Ambraseys, 42–44; Guidoboni, 335–358; Tāhir, Nuşuş, 121–131; Tāhir, Les grandes, 95; al-Ghunaym, 187–197.

707 9 Ṣafar/9 August 1307

Location: Egypt

Intensity: light

Sources: *Mufaddal Ibn Abī al-Fadā'il, al-Nahj*, vol. 3, 640.

Catalogues: Ambraseys, 44; Guidoboni, 366, al-Ghunaym, 198.

712 29 Shawwāl/26 February 1313

Location: Egypt

Intensity: light

Sources: *Mufaddal Ibn Abī al-Fadā'il, al-Nahj*, vol. 3, 733.

Catalogues: Ambraseys, 44; Guidoboni, 370, al-Ghunaym, 198.

735 5 Shawwāl/28 May 1335

Location: New Cairo

Intensity: -

Sources: *al-Jazari, Ta'rīkh*, vol. 2, 773.

Catalogues: Ambraseys, 44–45; al-Ghunaym, 199.

736 5 Shawwāl/17 Mai 1336

Location: New Cairo

Intensity: -

Sources: *al-Jazari, Ta'rīkh*, vol. 2, 874.

Catalogues: Ambraseys, 45.¹

740 after Ṣafar/after 7 August 1339

Location: Egypt

Intensity: -

Status: doubtful due to misinterpretations

Sources: al-Maqrīzī, Sulūk, vol. 2,2, 475.

Catalogues: -----²

741 Dhū al-ḥijjah/17 Mai–15 June 1341

Location: Old Cairo, Syria and Alexandria

Intensity: strong

Status: doubtful due to the lack of contemporary evidence

Sources: Ibn al-‘Imād, Shadharāt, vol. 6, 127.

Catalogues: Tāhir, Nuṣūṣ, 134; Tāhir, Les grandes, 95; al-Għunaym, 200.

744 15–16 Sha‘bān/1–2 January 1344

Location: Syria, Egypt?

Intensity: strong

¹ According to Nicholas Ambraseys et al., this and the previous earthquake could be the same event.

² This earthquake is not included in any of the catalogues.

Sources: *Ibn Kathīr*, *al-Bidāyah*, vol. 2, 2204; *Ibn Ḥabīb*, *Tadhkīrah*, vol. 3, 58; ‘Aynī, ‘Iqd, 70; al-Suyūṭī, *Kashf*, 206; Anonymous, *al-Barākīn*, 10.

Catalogues: Ambraseys, 45; Guidoboni, 394; Ṭāhir, *Nuṣūṣ*, 134–137; Ṭāhir, *Les grandes*, 95; al-Ghunaym, 200.

748 4 Ramaḍān/7 December 1347

Location: New Cairo

Intensity: -

Status: doubtful due to the lack of contemporary evidence

Sources: al-Maqrīzī, *Sulūk*, vol. 2,3, 741; al-Suyūṭī, *Kashf*, 206; ‘Abd al-Bāsiṭ, *Nayl*, vol. 1,1, 153.

Catalogues: Ambraseys, 45; Guidoboni, 403; Ṭāhir, *Nuṣūṣ*, 138; al-Ghunaym, 203.

753 Ramaḍān/10 October–8 November 1352

Location: Cairo/Egypt?

Intensity: -

Status: doubtful due to the lack of contemporary evidence

Sources: al-Maqrīzī, *Sulūk*, vol. 2,3, 876.

Catalogues: Ambraseys, 45; Guidoboni, 479; Ṭāhir, *Nuṣūṣ*, 138; al-Ghunaym, 203.

758 26 Dhū al-qa‘dah/9 November 1357

Location: New Cairo

Intensity: light

Status: doubtful due to the lack of contemporary evidence and
due to misinterpretations

Sources: Ibn Iyās, *Badā’i‘*, vol. 1,1, 563.

Catalogues: -----

760 13 Dhū al-hijjah/4 November, 1359

Location: Syria and Egypt

Intensity: strong

Status: doubtful due to the lack of contemporary evidence

Sources: Anonymous, *al-Barākin*, 111–112.

Catalogues: -----

762/10 November 1360–29 October 1361

Location: Old Cairo

Intensity: -

Status: doubtful due to subjective implications

Sources: *Ibn Kathīr*, *al-Bidāyah*, vol. 2, 2233; *al-Maqrīzī*, *Sulūk*,
vol. 3,1, 60.

Catalogues: Ambraseys, 45–46; *al-Ghunaym*, 204.

775 1 Jumādā I/18 October 1373

Location: New Cairo

Intensity: strong or light

Sources: *al-‘Aynī, Ta’rīkh al-Badr, Ms. BL Or Add. 22,360, fol. 88vo*; *al-‘Asqalānī, Inbā’*, vol. 1, 60; ‘Abd al-Bāsiṭ, *Nayl*, 1,2, 64; *al-Suyūṭī, Kashf*, 206; *al-Suyūṭī, Ḥusn*, vol. 2, 304; Anonymous, *al-Barākīn*, 112.

Catalogues: Ambraseys, 46; Guidoboni, 519–520; Tāhir, *Nuṣūṣ*, 139.

787 13 Sha‘bān/18 September 1385

Location: Old and New Cairo

Intensity: light

Sources: *al-Maqrīzī, Sulūk*, vol. 3,2, 534; *al-‘Asqalānī, Inbā’*, vol. 1, 303; *al-Suyūṭī, Kashf*, 206; *al-Suyūṭī, Ḥusn*, vol. 2, 307; ‘Abd al-Bāsiṭ, *Nayl*, vol. 1,2, 229; Anonymous, *al-Barākīn*, 112.

Catalogues: Ambraseys, 46; Guidoboni, 523; Tāhir, *Nuṣūṣ* 139.

788 18 Jumādā II/16 July 1386

Location: New and Old Cairo

Intensity: light

Sources: *al-Maqrīzī*, *Sulūk*, vol. 3,2, 546; *al-‘Asqalānī*, *Inbā’*, vol. 1, 315; al-Suyūtī, *Kashf*, 206–207; al-Suyūtī, *Husn*, vol. 2, 307; ‘Abd al-Bāsiṭ, *Nayl*, vol. 1,2, 237.

Catalogues: Ambraseys, 46; Guidoboni, 524; Tāhir, *Nuṣūṣ*, 139.

791 after 17 Dhū al-hijjah/after 6 December 1389

Location: New Cairo?

Intensity: strong

Status: doubtful due to the lack of contemporary evidence and due to the location error

Sources: Ibn Iyās, *Badā’īc*, vol. 1,2, 423; *al-Maqrīzī*, *Sulūk*, vol. 3,2, 682; Ibn Qādī Shuhbah, *Ta’rīkh*, vol. 3, 265.

Catalogues: Guidoboni, 526–534; Tāhir, *Nuṣūṣ*, 140; al-Għunaym, 206.

825 8 Rajab/27 June 1422

Location: New Cairo

Intensity: light or strong

Sources: *al-‘Asqalānī*, *Inbā’*, vol. 3, 273; al-Suyūtī, *Kashf*, 208; al-Suyūtī, *Husn*, vol. 2, 309; ‘Abd al-Bāsiṭ, *Nayl*, vol. 1,4, 113; Ibn Iyās, *Badā’īc* vol. 2, 83; Anonymous, *al-Barākin*, 112.

Catalogues: Ambraseys, 47; Guidoboni, 577; Tāhir, Nuşüş, 144, al-Ghunaym, 214.

826 16, 17 Dhū al-hijjah/20, 21 November 1423

Location: New Cairo?

Intensity: -

Sources: *al-Maqrīzī, Sulūk*, vol. 4,2, 648; *al-‘Asqalānī, Inbā’*, vol. 3, 309; ‘Abd al-Bāsiṭ, Nayl, vol. 1,4; 142.

Catalogues: al-Ghunaym, 214.

828 6, 17 Sha'bān/22 June, 3 July 1425

Location: New and Old Cairo

Intensity: strong

Sources: *al-Maqrīzī, Sulūk*, vol. 4,2, 690–691; *al-‘Asqalānī, Inbā’*, vol. 3, 348; al-Şuyūṭī, Kashf, 208; ‘Abd al-Bāsiṭ, Nayl, vol. 1,4, 176.

Catalogues: Ambraseys, 46; Guidoboni, 578–579; Tāhir, Nuşüş, 144.

837 1 Jumādā I/13 December 1433

Location: New Cairo?

Intensity: -

Sources: “The continuator of Ibn Duqmāq,” Paris Ms. Ar. 5762, fol. 15ovo.³

Catalogues: Ambraseys, 48; al-Ghunaym, 221.

838 3 Rabī‘ II/5 November 1434

Location: New Cairo

Intensity: light

Sources: *al-Maqrīzī, Sulūk*, vol. 4,2, 935; *al-‘Asqalānī, Inbā’*, vol. 3, 546; *al-Suyūtī, Kashf*, 208; ‘Abd al-Bāsiṭ, *Nayl*, vol. 1,4, 367; *Ibn Iyās, Badā’i‘*, vol. 3, 161.

Catalogues: Ambraseys, 49; Guidoboni, 597–598; al-Ghunaym, 222; Tāhir, *Nuṣūṣ*, 148.

841 17 Sha‘bān/12 February 1438⁴

Location: New Cairo, Old Cairo?

Intensity: light

Sources: *al-Maqrīzī, Sulūk*, vol. 4,2, 1029; *al-Suyūtī, Kashf*, 209; ‘Abd al-Bāsiṭ, *Nayl*, vol. 2,5, 21; *Ibn Iyās, Badā’i‘*, vol. 2, 181.

³ See Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 48.

⁴ Nicholas Ambraseys mistakenly wrote that 17 Sha‘bān corresponded to 25 February. Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 49.

Catalogues: Ambraseys, 49; Guidoboni, 600–601; Ṭāhir, Kashf, 148; al-Ghunaym, 222.

859 16 Rabi‘ I/5 March 1455

Location: New Cairo

Intensity: light

Sources: *Ibn Taghrī Bardī, Muntakhabāt min ḥawādith*, vol. 8,2, 225; ‘Abd al-Bāṣīṭ, *Nayl*, vol. 2,5, 21; *Ibn Iyās, Badā’i‘*, vol. 2, 323.

Catalogues: Ambraseys, 49; Guidoboni, 617; al-Ghunaym, 223.

863 1 or 9 Muḥarram/7 or 15 November 1458

Location: Syria, Karak, Jerusalem, Ramala, New Cairo

Intensity: strong in Karak, Ramala, Jerusalem and light in New Cairo

Sources: *Ibn Taghrī Bardī, Muntakhabāt min ḥawādith*, vol. 8,2, 319; *Ibn Taghrī Bardī, Nujūm*, vol. 16, 102, *Ibn Iyās, Badā’i‘*, vol. 2, 350; *al-Sakhāwī, al-Dhayl*, vol. 2, 134; ‘Abd al-Bāṣīṭ, *Nayl*, vol. 2,6, 48.

Catalogues: Ambraseys, 49–50; Guidoboni, 731–732; Ṭāhir, Nuşūş, 149; al-Ghunaym, 223–224.

872 17 Jumādā I/13 December 1467⁵

Location: New Cairo

Intensity: light

Sources: *Ibn Taghrī Bardī, Muntakhabat min ḥawādith*, vol. 8,3, 616; ‘Abd al-Bāsit, *Nayl*, vol. 2,6, 302; *Ibn Iyās, Badā’i‘*, vol. 2, 471.

Catalogue: Ambraseys, 50; Guidoboni, 752–753; Tāhir, Nuşuş, 149; al-Għunaym, 225.

881 Rajab/19 October–17 November 1476

Location: New and Old Cairo

Intensity: strong or light

Sources: ‘Abd al-Bāsit, *Nayl*, vol. 2,7, 164; *Ibn Iyās, Badā’i‘*, vol. 3, 117; *al-Şuyūṭī, Kashf*, 209.

Catalogues: Ambraseys, 50; Guidoboni, 760; Tāhir, Nuşuş, 149; al-Għunaym, 225.

886 17 Muḥarram/18 March 1481

⁵ As I have mentioned earlier, there is one day discrepancy between the the Gregorian days calculated by Nicholas Ambraseys et al. and the electronic computation. (See footnote 13, p. 289) In this case, we have a two-day difference (15 December: Ambraseys, 50).

Location: Old and New Cairo

Intensity: strong

Sources: *al-Sakhāwī*, *al-Dhayl*, vol. 2, 341; *'Abd al-Bāsit*, *Nayl*, vol. 2, 7, 281–282; *al-Suyūtī*, *Kashf*, 209; *Ibn Iyās*, *Badā'i'*, vol. 3, 173; *Ibn Tūlūn*, *Mufākahah*, vol. 1, 34; Anonymous, *al-Barākīn*, 113.

Catalogues: Ambraseys, 50–51; Guidoboni, 769–774; Ṭāhir, Nuşuş, 149; al-Ghunaym, 225–226.

888 Rabī' II/8 May–5 June 1483

888 9 Jumādā I/14 June 1483

Location: New Cairo

Intensity: light

Sources: *al-Suyūtī*, *Kashf*, 209; *'Abd al-Bāsit*, *Nayl*, vol. 2, 7, 348; *Ibn Iyās*, *Badā'i'*, vol. 3, 196.

Catalogues: Ambraseys, 51; Guidoboni, 789–790; Ṭāhir, Nuşuş, 151; al-Ghunaym, 226.

891 12 Shawwāl/10 October 1486

Location: New Cairo

Intensity: light or strong

Sources: *al-Sakhāwī*, *al-Dhayl*, vol. 2, 406; ‘Abd al-Bāsit, *Nayl*, vol. 2, 8, 42.

Catalogues: Ambraseys, 51.

892 Jumādā I/24 April–23 May 1487

Location: New Cairo

Intensity: light

Sources: ‘Abd al-Bāsit, *Nayl*, vol. 2, 8, 66.

Catalogues: -----

896 Jumādā I/11 March–9 April 1491

896 16 Jumādā II/25 April 1491

896 22 Jumādā II/1 May 1491

Location: New and Old Cairo, Damascus, the Mediterranean

Intensity: strong or light

Sources: ‘Abd al-Bāsit, *Nayl*, vol. 8, 225, 227; *al-Sakhāwī*, *al-Dhayl*, vol. 2, 612; *al-Šuyūṭī*, *Kashf*, 210; *Ibn Tūlūn*, *Mufākahah*, vol. 1, 139; *Ibn Iyās*, *Badā’i‘*, vol. 3, 275, 276; Anonymous, *al-Barākīn*, 113.

Catalogues: Ambraseys, 51–52; Guidoboni, 805; Tāhir, *Nuṣūṣ*, 152; al-Ghunaym, 228.

904 Ṣafar/17 September–15 October 1498

Location: New Cairo

Intensity: light

Sources: *Ibn Iyās, Badā'i^c, vol. 3, 389.*

Catalogues: Ambraseys, 52; Guidoboni, 826; al-Ghunaym, 230.

905 27 Dhū al-hijjah/23 July 1500

Location: Old and New Cairo

Intensity: light

Sources: *al-Suyūtī, Kashf, 210; Ibn Iyās, Badā'i^c, vol. 3, 433–434.*

Catalogues: Ambraseys, 52; Tāhir, Nuṣūṣ, 152; al-Ghunaym, 230.

908 15 Jumādā I/15 November 1502⁶

Location: New Cairo

Intensity: -

Sources: Ibn al-Himsī, Hawādith, CUL, Ms. Dd.11.2., fol. 89vo.⁷

⁶ There is a two days discrepancy between the Gregorian day calculated by Nicholas Ambraseys et al. (17 November, see Ambraseys, 52) and the electronic computation.

Catalogues: Ambraseys, 52; al-Ghunaym, 231.

914 30 Muḥarram/30 May 1508⁸

Location: Egypt

Intensity: light

Sources: *al-Dā'udī*, in *Hāfiẓ*, 261; *Ibn Iyās*, *Badā'iṣ*, vol. 4, 132.

Catalogues: Ambraseys, 53; Țāhir, Nuşūş, 153; al-Ghunaym,

232.

914 Dhū al-ḥijjah/22 March–19 April 1509

Location: Egypt?

Intensity: light

Sources: *Ibn Iyās*, *Badā'iṣ*, vol. 4, 148.

Catalogues: Ambraseys, 53; al-Ghunaym, 232.

915 Jumādā I/16 August–14 September 1509

Location: Egypt?

Intensity: light

Sources: *Ibn Iyās*, *Badā'iṣ*, vol. 4, 160.

⁷ See this reference in Ambraseys, Melville et al. (ed.), *The Seismicity of Egypt*, 52.

⁸ In Nicholas Ambraseys' and 'Abdallāh Yūsuf al-Ghunaym's records, this date corresponded to 29 May.

Catalogues: Ambraseys, 53; al-Ghunaym, 233.

916 7 Dhū al-hijjah/7 March 1511

Location: Egypt

Intensity: light

Sources: *Ibn Iyās, Badā'i^c, vol. 4, 207; al-Dā'udī, in Hāfiẓ, 261.*

Catalogues: Ambraseys, 53; Tāhir, Nuṣūṣ, 153; al-Ghunaym,

233.

918 20 Muḥarram/6 April 1512

Location: Old Cairo

Intensity: light

Status: doubtful due to duplication

Sources: *al-Dā'udī, in Hāfiẓ, 261.*

Catalogues: Ambraseys, 54; Tāhir, Nuṣūṣ, 154; al-Ghunaym,

235.

919 20 Muḥarram/27 March 1513

Location: Egypt?

Intensity: light

Sources: *Ibn Iyās, Badā'i^c, vol. 4, 297.*

Catalogues: Ambraseys, 54; al-Ghunaym, 235.

CATALOGUE OF EXCESSIVE NILE FLOODS

664 7 Dhū al-hijjah/ September 1266

Location: Egypt, al-Jazīrah (al-Rawdah)

Sources: al-Suyūṭī, Kawkab, 219–220.

717/1317

Location: the Nile banks of Egypt, al-Rawdah, New and Old

Cairo

Sources: *al-Nuwayrī, Nihāyah*, vol. 32, 252–253; *al-Maqrīzī*,
Sulūk, vol. 2,1, 171.

724/1324

Location: banks of Upper Egypt, al-Fayyūm, al-Buhayrah

Sources: *al-Nuwayrī, Nihāyah*, vol. 33, 69.

744/1343

Location: some regions of Upper and Lower Egypt

Sources: *al-Maqrīzī*, Sulūk, vol. 2,3, 648–649; *Ibn Iyās*,
Nubdhah, 86.

750/1349

Location: some regions of Lower Egypt

Sources: *al-Maqrīzī*, vol. 2,3, 811; ‘Abd al-Bāsiṭ, Nayl, vol. 1,1,
196.

755/1354

Location: Lower Egypt (al-Maṭarīyah, al-Minyāh, al-Amīrīyah, Shubrā)

Sources: al-Maqrīzī, *Sulūk*, vol. 3,1, 12–13; ‘Abd al-Bāsiṭ, *Nayl*, vol. 1,1, 276; Ibn Iyās, *Badā’i‘*, vol. 1,1, 555.

761/1359–1360

Location: al-Fayyūm, Jazīrat al-Fil, Shubrā, al-Rawdah, Būlāq

Sources: al-Maqrīzī, *Sulūk*, vol. 3,1, 53–54, Ibn Taghrī Bardī, *Nujūm*, vol. 10, 264; ‘Abd al-Bāsiṭ, vol. 1,1, 318; al-Suyūtī, *Kawkab*, 235–236; Ibn Iyās, *Nubdhah*, 86–88.

773/1371

Location: not specified

Sources: *al-Maqrīzī*, *Sulūk*, vol. 3,1, 195; al-‘Asqalānī, *Inbā‘*, vol. 1, 10; Ibn Qādī Shuhbah, *Ta’rīkh*, vol. 3, 397–398; ‘Abd al-Bāsiṭ, *Nayl*, vol. 1,2, 31.

778/1376

Location: al-Ḥusaynīyah

Sources: *al-Maqrīzī*, *Sulūk*, vol. 3,1, 265; al-‘Asqalānī, vol. 1, 128; Ibn Qādī Shuhbah, *Ta’rīkh*, vol. 3, 506; Ibn Taghrī Bardī, *Nujūm*, vol. 11, 55; ‘Abd al-Bāsiṭ, *Nayl*, vol. 1,2, 110.

781/1379

Location: Lower Egypt (Munīyat al-Shīrj, al-Munākh, Kūm al-Rīsh, Shubrā)

Sources: *al-‘Asqalānī, Inbā’*, vol. 1, 193; ‘Abd al-Bāsiṭ, Nayl, 1,2, 156.

783/1381

Location: not specified

Sources: ‘Abd al-Bāsiṭ, Nayl, vol. 1,2, 181.⁹

784/1382

Location: -

Sources: *al-Maqrīzī, Sulūk*, vol. 5, 139; *al-‘Asqalānī, Inbā’*, vol. 1, 261; al-Suyūṭī, Kawkab, 242; Ibn Iyās, Nubdhah, 90.

785/1383

Location: not specified

⁹ The record of this flood in Rajab/September should not be confused with the flood caused by the heavy rains during Ramadān/November recorded both by the contemporaries and non-contemporaries. *al-‘Asqalānī, Inbā’* al-ghumr, 238. *al-Maqrīzī, al-Sulūk*, vol. 5, 127. ‘Abd al-Bāsiṭ, *Nayl al-amal*, vol. 1,2, 185. al-Suyūṭī, *Husn al-muḥāḍarah*, vol. 2, 306.

Sources: *al-Maqrīzī*, *Sulūk*, vol. 5, 154; *al-‘Asqalānī*, *Inbā’*, vol. 1, 276; al-Suyūtī, *Kawkab*, 254; Ibn Iyās, *Nubdhah*, 90.

795/1393

Location: not specified

Sources: *al-Maqrīzī*, *Sulūk*, vol. 5, 359.

797/1395

Location: not specified

Sources: *al-Maqrīzī*, *Sulūk*, vol. 5, 376; *al-‘Asqalānī*, *Inbā’*, vol. 1, 495; al-Suyūtī, *Kawkab*, 254; Ibn Iyās, *Nubdhah*, 91–92; Ibn Iyās, *Badā’iṣ*, vol. 1.2, 475.

807/1404

Location: Upper Egypt

Sources: *al-Maqrīzī*, *Sulūk*, vol. 3, 3, 1135.

812/1409

Location: Jazīrat al-Fil

Sources: Ibn Iyās, *Nubdhah*, 93; Ibn Iyās, *Nashq*, Petersburg, Ms. B 1033, fols. 408–409; Ibn Iyās, *Badā’iṣ*, vol. 1, 2, 800–801.¹⁰

¹⁰ Contemporary chroniclers did not report anything about the destructiveness of this high flood.

825/1422

Location: not specified

Sources: *al-Maqrīzī, Sulūk*, vol. 4,2, 616, 618; ‘Abd al-Bāsiṭ, Nayl, vol. 1,4, 114; *al-Suyūtī, Kawkab*, 258; *Ibn Iyās, Badā’i‘*, vol. 1,2, 83.

835/1432

Location: not specified

Sources: *al-Maqrīzī, Sulūk*, vol. 4,2, 874, 875; *al-‘Asqalānī, Inbā’*, vol. 3, 475; ‘Abd al-Bāsiṭ, vol. 1,4, 315.

838/1435

Location: not specified

Sources: *al-Maqrīzī, Sulūk*, vol. 4,2, 947; *al-‘Asqalānī, Inbā’*, vol. 3, 551–552; *al-Suyūtī, Kawkab*, 259.

845/1441

Location: not specified

Sources: *al-‘Asqalānī, Inbā’*, vol. 4, 177; ‘Abd al-Bāsiṭ, Nayl, 2,5, 141; *Ibn Iyās, Badā’i‘*, vol. 2, 229.

856/1452

Location: not specified

Sources: *Ibn Taghrī Bardī, Ḥawādith*, vol. 2, 371.

859/1455

Location: not specified

Sources: *Ibn Taghrī Bardī, Ḥawādith*, vol. 2, 541–542; ‘Abd al-Bāṣīṭ, *Nayl*, vol. 2, 5, 447–448.

882/1477

Location: al-Rawḍah, Būlāq, Jazīrat al-Fil

Sources: *Ibn Iyās, Badā’iṣ*, vol. 3, 129; 130; *Ibn Iyās, Nubdhah*, 107–108; ‘Abd al-Bāṣīṭ, *Nayl*, vol. 2, 7, 193–194.

883/1478

Location: not specified

Sources: ‘Abd al-Bāṣīṭ, *Nayl*, vol. 2, 7, 210; *Ibn Iyās, Badā’iṣ*, vol. 3, 142.

912/1506

Location: al-Sharqīyah

Sources: *Ibn Iyās, Badā’iṣ*, vol. 3, 96–97.

914/1508

Location: al-Rawḍah

Sources: *Ibn Iyās, Badā’iṣ*, vol. 4, 137.

915/1509

Location: al-Jīzah

Sources: *Ibn Iyās*, *Badrā'i*, vol. 4, 159, 172.

CATALOGUE OF NILE-INDUCED DROUGHTS AND FAMINES

693–695/1294–1296

Location: Egypt, (also in Barqah, Damascus, Maghrīb, Ḥijāz)

Sources: *Baybars al-Manṣūrī, Kitāb al-tuhfah*, 144–145; *al-Jazari, Ta’rīkh*, vol. 1, 256–257, 280–285; *al-Nuwayrī, Nihāyat al-arab*, vol. 31, 279, 286, 293–295; Ibn al-Dawādārī, *Kanz*, vol. 8, 358, 363–364; al-Maqrīzī, *Sulūk*, vol. 1, 3, 803, 808–809, 810, 814–815; 829, 830; al-Maqrīzī, *Ighāthat al-ummah*, 51, 52; Allouche, “*Ighāthah*,” 43–47; *al-Suyūtī, Kawkab*, 220; 230; *al-Suyūtī, Ḥusn*, vol. 2, 239; Ibn Iyās, *Nubdhah*, 82–83; Sabra, Poverty, 143–144.

704/1304–5

Location: Egypt (also in Syria)

Sources: *al-‘Aynī, ‘Iqd*, vol. 4, 359; Ibn Iyās, *Nubdhah*, 83.

709/1309

Location: not specified

Sources: *Baybars al-Manṣūrī, Kitāb al-tuhfah*, 192; *al-Nuwayrī, Nihāyat al-arab*, vol. 32, 143; *al-Dawādārī, Kanz*, vol. 9, 163f.; *al-Suyūtī, Ḥusn*, vol. 2, 300; Ibn Iyās, *Nashq*, Petersburg, Ms. B 1033, fols. 401–402.

764/1363

Location: not specified

Sources: al-Maqrīzī, *Sulūk*, vol. 3,1, 85; Ibn Iyās, *Nubdhah*, 88.

775–776/1373–1375

Location: Egypt

Sources: *al-Maqrīzī*, *Sulūk*, vol. 3,1, 218–219, 231–232, 233, 234, 235, 236, 239; *al-Maqrīzī*, *Ighāthat al-ummah*, 58–59; *Allouche*, “*Ighāthah*,” 49; al-‘Asqalānī, *Inbā’*, vol. 1, 59, 60, 71–72; Ibn Qādī Shuhbah, *Ta’rīkh*, vol. 3, 431, 446, 447; Ibn Taghrī Bardī, *Nujūm*, vol. 11, 53, 54; al-Sakhawī, *al-Dhayl*, vol. 1, 266–267; al-Suyūtī, *Huṣn*, 304; al-Suyūtī, *Kawkab*, 239–240; ‘Abd al-Bāsiṭ, *Nayl*, vol. 1,2, 58, 64, 77, 79; Ibn Iyās, *Nashq*, Petersburg, Ms. B 1033, fol. 406.

782/1380

Location: not specified

Sources: *al-Maqrīzī*, *Sulūk*, vol. 3,1, 395.

795/1392–3

Location: not specified

Sources: *al-Maqrīzī*, *Sulūk*, vol. 5, 359.

806–807/1403–1404

Location: Egypt

Sources: *al-Maqrīzī, Sulūk*, vol. 3,3, 1115, 1116f.; *al-‘Asqalānī, Inbā’*, vol. 2, 289; ‘Abd al-Bāsiṭ, *Nayl*, vol. 1,3, 96, 106; al-Suyūṭī, *Kawkab*, 255.

826/1423

Location: Upper and Lower Egypt, al-Jīzah

Sources: *al-Maqrīzī, Sulūk*, vol. 4,2, 646.

827/1424

Location: not specified

Sources: *al-Maqrīzī, Sulūk*, vol. 4,2, 669, 672.

829–833/1425–1420

Location: Egypt

Sources: *al-Maqrīzī, Sulūk*, vol. 4,2, 709–710, 748, 749, 750–751, 752, 753, 764, 766, 767, 769, 778, 783, 805–806, 809–810, 834–836; ‘Abd al-Bāsiṭ, *Nayl*, 1,4, 218, 219, 220, 221, 258; al-Suyūṭī, *Kawkab*, 259; Ibn Iyās, *Nubdhah*, 97; Ibn Iyās, Nashq, Petersburg, Ms. B 1033, fols. 411–412.

836–837/1432–1434

Location: Upper Egypt, al-Jīzah

Sources: *al-Maqrizi*, *Suluk*, vol. 4,2, 893–894, 902, 903, 904; *al-Asqalani*, *Inbā'*, vol. 3, 512.

854–856/1450–1452

Location: Egypt

Sources: *Ibn Taghri Bardī*, *Hawādith*, vol. 1, 285, 286–294; vol. 2, 324, 327, 333, 334, 365; *'Abd al-Bāsit*, *Nayl*, vol. 2,5, 300, 315, 316, 317, 318, 337, 340–341, 362; *al-Suyūtī*, *Kawkab*, 259–260; *Ibn Iyās*, Nashq, St. Petersburg, Ms. B 1033, fols. 414–415; *Ibn Iyās*, *Nubdhah*, 102–103.

873/1468–9

Location: Egypt, (also Syria)

Sources: *'Abd al-Bāsit*, *Nayl*, vol. 2,6, 343, 346, 357, 364–366.

889/1484

Location: Egypt

Sources: *'Abd al-Bāsit*, *Nayl*, vol. 2,7, 386.

897/1491–2

Location: not specified

Sources: *al-Suyūtī*, *Kawkab*, 266.

902/1496–7

Location: not specified

Sources: *Ibn Iyās*, *Nubdhah*, 111–112.

BIBLIOGRAPHY

ARABIC MANUSCRIPT SOURCES

Bodleian Library

Anonymous, *Kitāb gharā'ib al-funūn wa-mulah al-‘uyūn. The Book of Curiosities.* E. Savage-Smith and Y. Rapoport (Online ed.), Ms.

Arab. c. 90, 48 fols.,

<http://cosmos.bodley.ox.ac.uk/content.php/boc?expand=732%20E>.

al-Idrīsī, *The Book of Roger*, Ms. Pococke 375, dated 1553 A.D.,
Bodleian Library, University of Oxford.

The Chester Beatty Library

Anonymous, *al-Malḥamah*, Ms. Ar 4041, 15th century A.D., 282 fols.

Egyptian National Library, Cairo

Abū Ma'shar, *Kitāb al-malḥamah al-murawīyah ‘an al-Iskandar*, Ms. S 4467, 1200 A.H., fols. 59–74.

Anonymous, *al-Barākin wa-al-zalāzil*, Ms. T 114, 273 fols.

Anonymous, *Fī al-ḥawādīth al-samāwīyah [...] min kalām Dāniyāl wa-Hirmis wa-Dhī al-Qarnayn*, Ms. 1156,4 DM (copies Ms. 1092 DM, Ms. 159 ṬM), ca. 800 A.H., fols. 45v–87v.

Anonymous, *Hawādīth al-nujūm wa-al-ru‘ūd wa-al-zalāzil wa-al-khusūf fī shuhūr al-sanah*, known as *al-Ra‘dīyah (The Book of Thunder)*, Ms. ṬM 214, copied in 1321/1903.

Anonymous, *Kitāb bulūgh al-amāniyah fīmā yata‘allaqu bi-ṭulū‘ al-shi‘rā al-yamāniyah*, Ms. DM 994, 1271 A.H, 16 fols. (copies Ms. DM 59,2 + 3, 1000 A.H.; Ms. DJ 289,2, 1222 A.H., fols. 56–59; Ms. DM 1056,1, 1308 A.H., fols. 1–33; Ms. DM 788, 1050 A.H., 40 fols.; Ms. HM 2,2, 1290 A.H., fols. 203–209; Ms. DM 79,2, 1150 A.H., fols. 4–13; Ms. Sh 72, 1301 A.H. 13 fols.).

Anonymous, *Kitāb Hirmis [...] fī al-ḥikm ‘inda ṭulū‘ al-shi‘rā wa-mā la-hā min al-ḥawādīth*, Ms. 132 DM, 1100 A.H, 92 fols. (copies Ms. DM 575, 48 fols.; Ms. DH 16,2, fols. 73v–117v; Ms. K 3852, 68 fols.).

Anonymous, *al-Qawl ‘alā ‘ayd al-ṣalib (Mansūb ilā Dāniyāl)*, Ms. S 70,3.

Anonymous, *Rasā'il fī dalā'il al-shi'rā al-yamāniyah*, Ms. DM 59,2 + 3

(copies Ms. DJ 289,2; Ms. DM 994; Ms. DM 1056,1; Ms. DM 788; Ms. HM 2,2; Ms. DM 79,2; Sh 72).

Anonymous, *Risālah fī aḥkām al-shi'rā al-yamāniyah*, Ms. Sh 73, 1130 A.H. (copy Ms. Sh 71).

Anonymous, *Risālah fī ma'rufat zīyādat al-Nīl wa-al-hawādith al-mustaqlalah 'alā ḥasab al-kawākib*, Ms. MM 89 (Microfilm 5275), 1050/1640, fols. 1–4.

Anonymous, *Risālah tataḍammana al-Nīl wa-al-kawākib wa-ghayr dhālikā*, Ms. ZK 326 (Microfilm 58697), copied in 1294/1877.

Badr al-Dīn al-Bulqīnī, *al-Nīl al-rā'iḍ fī al-Nīl al-zā'iḍ*, Ms. J 380 (Mircorfilm 45844), copied in 1342/1923, 9 fols.

al-Manūfi, *al-Fayḍ al-madīd fī akhbār al-Nīl al-sa'iḍ*, Ms. J429 (Microfilm 45762), copied in 988/1580, 30 fols.

Jalāl al-Dīn al-Mahallī, *Mabdā' al-Nīl 'alā al-tahrīr*, Ms. J 381 (Microfilm 45847), 18 fols.

National Library of France, Paris

Anonymous, *Kitāb Hirmis al-Harāmisah al-manqūl min kitāb Idrīs*, Ms. Arabe 4580, fols. 86–102.

Anonymous, *Kitāb Hirmis al-Harāmisah wa-huwa Idrīs fī al-hikm ‘inda tūlū‘ al-shi‘rah al-yamāniyah*, Ms. Arabe 2578, fols. 1–41.

Anonymous, *Malḥamah*, Ms. Arabe 2593, 3, 16th century, fols. 94–104.

Anonymous, *Malḥamah*, Ms. Arabe 2633, 17th century.

National Library of Russia, St Petersburg

Anonymous, *Kitāb Hirmis fī al-hikmat tūlū‘ al-shi‘rah*, Samaritan Collection, Ms. Фирк. Сам. VII 13, copied in the 17th century, fols. 1–51.

Russian Academy of Sciences, Institute of Oriental Manuscripts, St Petersburg

Ibn Iyās, *Nashq al-azhār fī ‘ajā‘ib al-aqtār*, Ms. B 1033, 1007/1599.

Staatsbibliothek zu Berlin

Anonymous, *Hādhā kitāb malḥamat sayyidanā Dāniyāl ‘alāyhi al-salām*, Ms. Spr 1936 (5912), copied in 1150/1737, fols. 1–63.

Anonymous, *Hādhā kitāb qā‘idat al-Nīl wa-mā yahduthu min al-khusūf wa-al-kusūf wa-al-zalāzil wa-al-ra‘d wa-al-ṣawā‘iq wa-mā yaq‘u*

fīha li-Dāniyāl, Ms. Mo 198 (5915), copied in 1200/1785, fols.

1–55.

Anonymous, *Hādhīhi malḥamah tadullu ‘alā waqā’i‘ allatī takūnu fī dhālikā al-‘ām bi-ḥukm al-yawm al-sādis min ṭubah al-qubṭī*, Ms.

Mo 197 (5903), copied in 1215/1800, fols. 1–3.

Anonymous, *Kitāb Hirmis al-Harāmisah wa-huwa Idrīs al-nabīy fī al-ḥukm ‘inda ṭulū‘ al-shi‘rā wa-mā la-hā min al-jawādāt [sic al-ḥawādīth]*, Ms. Mq. 657 (5913), 77 fols., also Mf. 39,6 (5914), copied in 1000/1591 fols. 85–96.

Anonymous, *Kitāb taqwīm al-shi‘rā al-yamāniyah wa-mā fī dhālikā min al-ḥawādīth wa-dalā‘il fī kull al-sanah*, Ms. We. 1155 (5916), copied 1238/1822, fols. 1–57; Ms. Mo. 197,2 (5914) fols. 4–30a; Ms. We. 1752 (5902), fols. 40–61; Ms. Mq. 98 (5904), fols. 14b–15a; Ms. Mq. 466 (5915), copied in 1100/1688.

Ibn Zunbul, *al-Kitāb naql min kitāb al-qānūn lil-Shaykh Aḥmad Ibn Zunbul al-Mahallī*, Ms. Pet 668 (5889), copied in 1100/1688, fols. 121.

Ibn Iyās, *Kitāb nashq al-azhār fī ‘ajāib al-aqtār*, Ms. or. oct. 3940.

-----, *Nashq al-azhār fī ‘ajāib al-aqtār wa-fūmā qīl shi‘ruhu*, Ms. or. oct. 2966.

PRINTED EDITIONS OF SOURCES

- ‘Abd al-Bāsit, *Nayl al-amal fī dhayl al-duwal*, ed. by ‘U. Tadmuri, vols. 1,1–2,8, Şaydā: al-Maktabah al-‘asrīyah 1422/2002.
- Abū al-Fidā’, *al-Mukhtaṣar fī akhbār al-bashar. Ta’rīkh Abī al-Fidā’*, vol. 4, al-Qāhirah: Maktabat al-mutanabbī 1970.
- Abu Nu‘aym, *Hilyat al-awliyā’ wa-tabaqāt al-asfiyā’*, vol. 5, al-Qāhirah: Maktabat al-khānjī 1416/1996.
- ‘Alī Bāshā Mubārak, *al-Khiṭāṭ al-tawfiqiyah al-jadīdah li-Miṣr al-Qāhirah*, vols. 1–20, al-Qāhirah: al-Maṭba‘ah al-kubrā al-amīriyah 1306/1888.
- Anonymous, *Kalandologion*, Coptic Texts, Ms. P. Mich inv. 590, 9th century A. D., in Michigan Coptic Texts, G. Browne (ed.), Barcelona: Papyrologica Castroctaviana 1979, 45–47.
- Anonymous, *The Book of Medicines. Syrian Anatomy Pathology and Therapeutics*. The Syriac Text, Edited from a Rare Manuscript, with an English Translation by W. Budge, vol. 1, London: Oxford University Press 1913.
- Anonymous, The Book of the Zodiac (*Sfar Malwašia*), tr. by E. S. Drower, London: The Royal Asiatic Society 1949.

Anonymous, The Epic of Gilgamesh and the Goddess Ishtar, in *The Sacred Books and Early Literature of the East. Babylonia and Assyria*, ed. by Ch. Horne et al., New York: Parke 1917, 185–221.

al-Aqfahsī, *Kitāb akhbār Nīl Miṣr*, ed. by L. Muṣṭafā, al-Qāhirah: Dār al-kutub wa-al-wathā'iq al-qawmīyah 2006.

Aristoteles, *Physics*. Translated by Robin Waterfield with an Introduction and Notes by David Bostock, Oxford: Oxford University Press 1996.

Aristotle, *Metaphysics*. Book I, ed. by W. Ross, Raleigh: Alex Catalogue 2000.

-----, *Meteorology*: Book I-II, ed. by E. Webster, Raleigh: Alex Catalogue 2000.

al-Asadī, *al-Taysīr wa-al-i‘tibār wa-al-tahrīr wa-al-ikhtibār fīmā yajibu min ḥusn al-tadbīr wa-al-taṣarruf wa-al-ikhtiyār*, ed. by ‘A. Tulaymāt, al-Qāhirah: Dār al-fikr al-‘arabī 1387/1967.

al-‘Asqalānī, *Inbā’ al-ghumr bi-anbā’ al-‘umr*, ed. by Ḥ. Ḥabashī, vols. 1–4, al-Qāhirah: al-Majlis al-a‘lā lil-shu‘ūn al-islāmīyah, lajnat iḥyā’ al-turāth al-Islāmī 1415–1419/1994–1998.

al-‘Aynī, *Iqd al-jumān fī ta’rīkh ahl al-zamān*, vols. 1–4, al-Qāhirah: al-Hay’ah al-miṣrīyah al-‘āmmah lil-kitāb 1407–1412/1987–1992.

Baybars al-Manṣūrī, *Kitāb al-tuhfah al-mulūkīyah fī al-dawlah al-turkīyah: ta’rīkh dawlat al-mamālik al-bahriyah fī al-fatrāh min 648–711 hijriyah*, ed. by Ḥamdān, al-Qāhirah: al-Dār al-miṣrīyah al-lubnānīyah 1407/1987.

al-Bīrūnī, *India. The Land and the People*. Abridged Edition of E. Sachau’s English Translation, ed. by Q. Ahmad, New Delhi: National Book Trust 1993.

-----, *Kitāb al-Bīrūnī fī taḥqīq mā lil-Hind*, Ḥaydar Ābād: Maṭba‘at majlis dā’irat al-ma‘ārif al-‘uthmānīyah 1377/1958.

-----, *Kitāb taḥdīd nihāyāt al-amākin li-taṣhīḥ masāfāt al-masākin*, vol. 25, Frankfurt: Ma‘had ta’rīkh al-‘ulūm al-‘arabīyah wa-al-islāmīyah 1413/1992.

-----, *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, tr. and ed. by E. Sachau, London: W. H. Allen & Co. 1879.

-----, *The Determination of the Coordinates of Positions for the Correction of Distances between Cities. A Translation from the Arabic of al-Bīrūnī's Kitāb taḥdīd nihāyāt al-amākin liṭaṣḥīḥ masāfāt al-masākin* by J. Ali, ed. by F. Sezgin, Frankfurt am Main: Institute for the History of Arabic-Islamic Science at the Johann Wolfgang Goethe Institute 1992.

al-Bukhārī, *Ṣaḥīḥ al-Bukhārī*, vol. 2, al-Qāhirah: Dār wa-al-maṭābi‘ al-sha‘b 1960.

Caius Plinius Secundus, *Die Naturgeschichte des Caius Plinius Secundus*, ed. by M. Vogel et al., Wiesbaden: Marix 2007.

Charpentier, J., *The livro da seita dos indios orientais of Father Jacobo Fenicio* (Brit. Mus. MS. Sloane 1820), Uppsala: Almqvist & Wiksells 1933.

al-Dimashqī, *Kitāb nukhbāt al-dahr fī ‘ajā’ib al-barr wa-al-bahr*, ed. by M. Mehren, Leipzig: Otto Harrassowitz 1923.

Firdusii, *Liber Regum qui inscribitur Schahname*, ed. by J. Vullers, vol. 1–2, Leiden: Brill 1294–1295/1877–1878.

al-Ḥāfiẓ, M., Nuṣūṣ ghayr manshūrah ‘an al-zalāzil min sanah 914 wa-ḥattā sanah 1124H./1508–1712m, *Bulletin d'études orientales* 32–33 (1980–1981), 264–258.

Ibn Abī al-Fadā'il, *Ägypten und Syrien zwischen 1317 und 1341 in den*

Chroniken des Mufaddal ibn Abi'l-Fadā'il, ed. by S. Kortantamer,

Freiburg im Breisgau: Schwarz 1973.

Ibn al-Dawādārī, *Kanz al-durar wa-jāmi' al-ghurar*, ed. by U.

Haarmann, vol. 8, *al-Qāhirah: al-Ma'had al-almānī lil-āthār bi-*

al-Qāhirah 1971.

----, *Kanz al-durar wa-jāmi' al-ghurar*, ed. by H. Roemer, vol. 9, *al-*

Qāhirah: al-Ma'had al-almānī lil-āthār 1379/1960.

Ibn al-'Imād, *Shadharāt al-dhahab fī akhbār man dhahab*, vol. 6, *al-*

Qāhirah: Maktabat al-Qudsī 1351/1932.

Ibn al-Wardī, *Kharīdat al-'ajā'ib wa-farīdat al-gharā'ib*, Miṣr: Maṭba'a

Muṣṭafā al-Bābī al-Ḥalabī 1358/1939.

Ibn Duqmāq, *Nuzhat al-anām fī ta'rīkh al-islām (628–659/1230–1261)*,

ed. by S. Ṭabbārah, Bayrūt: al-Maktabah al-'aṣrīyah 1420/1999.

Ibn Ḥabīb, *Tadhkirat al-nabīh fī ayyām al-Mansūr wa-banīh (741–*

770/1340–1368), vol. 3, *al-Qāhirah: al-Hay'ah al-misriyah al-*

'āmmah lil-kitāb 1986.

Ibn Ḥawqal, *Kitāb šūrat al-arḍ*, Bayrūt: Manshūrāt dār maktabat al-

hayāt 1979.

- Ibn Iyās, *Badā'i' al-zuhūr fī waqā'i' al-duhūr*, ed. by M. Muṣṭafā, vol. 1,1, al-Qāhirah: Dār al-iḥyā' al-kutub al-‘arabīyah 1395/1975.
- , *Badā'i' al-zuhūr fī waqā'i' al-duhūr*, vol. 1,2, Stuttgart: Steiner in Komm. 1974.
- , *Badā'i' al-zuhūr fī waqā'i' al-duhūr*, ed. by M. Muṣṭafā, vol. 2, Wiesbaden: Franz Steiner 1392/1972.
- , *Badā'i' al-zuhūr fī waqā'i' al-duhūr*, ed. by M. Muṣṭafā, vol. 3–4, İstānbūl: Maṭba‘at al-dawlah 1931–1936.
- , *Badā'i' al-zuhūr fī waqā'i' al-duhūr*, ed. by M. Muṣṭafā, vol. 5, al-Qāhirah 1931.
- , *Nubdhah min nashq al-azhār fī ‘ajā'ib al-aqtār. Extraits de l'odeur des fleurs dans les merveilles de l'univers; (Cosmographie) de Mohammed ben-Ahhmed ben-Ayās*, tr. by Louis Langlès, Paris De l'imprimerie impériale 1810.
- , *Nuzhat al-umam fī ‘ajā'ib wa-al-hikam*, ed. by M. ‘Azab, al-Qāhirah: Maktabat Mabdūlī 1995.
- Ibn Kathīr, *al-Bidāyah wa-al-nihāyah*, vol. 2, Bayrūt: Bayt al-afkār al-dawliyah 2004.
- Ibn Khaldūn, *al-Muqaddimah*, vol. 2, al-Dār al-Bayḍā': Bayt al-funūn wa-al-‘ulūm wa-al-ādāb 2005.

-----, *The Muqaddimah*. An Introduction to History, tr. by F. Rosenthal,
vol. 2, London: Routledge & Kegan Paul 1958.

Ibn Manzūr, “Dajjāl,” *Lisān al-‘arab*, ed. by Y. Khayyāt, vol. 1, Bayrūt:
Dār lisān al-‘arab 1988.

-----, “Malḥamah,” *Lisān al-‘arab*, vol. 3, Bayrūt: Dār lisān al-‘arab
1988, 352.

Ibn Qādī Shuhbah, *Ta’rīkh Ibn Qādī Shuhbah*, ed. by ‘A. Darwīsh, vol.
3, Dimashq: al-Ma‘had al-‘ilmī al-faransī lil-dirāsāt al-‘arabiyyah
1977.

Ibn Qayyim al-Jawziyah, *Miftāh dār al-sa‘ādah wa-manshūr wilāyat ahl
al-‘ilm wa-al-irādah*, vol. 1, Bayrūt: Dār al-kutub al-‘ilmīyah
1419/1998.

Ibn Sīnā, *al-Najāh: fī al-hikmah al-mantiqiyah wa-al-ṭabī‘iyah wa-al-
ilāhiyah*, al-Qāhirah: Muhyī al-Dīn Ṣabrī al-Kurdī 1357/1938.

-----, *al-Shifā’. al-Ṭabī‘iyāt. al-Samā’ wa-al-‘ālam*, ed. by I. Madkūr, vol.
4, al-Qāhirah: Dār al-kātib al-‘arabī lil-ṭabā‘ah wa-al-nashr
1389/1969.

-----, *al-Shifā’. al-Ṭabī‘iyāt. al-Ma‘ādin wa-al-āthār al-‘ulwīyah*, ed. by
‘A. Muntasir, vol. 5, al-Qāhirah: al-Hay’ah al-‘ammah li-shu‘ūn
al-maṭābi‘ al-amīriyyah 1385/1965.

Ibn Taghrī Bardī, *Hawadīth al-duhūr fī madā al-ayyām wa-al-shuhūr*,

ed. by M. ‘Izz al-Dīn, vol. 2, Bayrūt: ‘Ālam al-kutub 1410/1990.

-----, *Muntakhabāt min ḥawādīth al-duhūr fī madā al-ayyām wa-al-*

shuhūr, 8 vols., Berkeley: University of California Press 1930–42.

-----, *al-Nujūm al-zāhirah fī mulūk Miṣr wa-al-Qāhirah*, vols. 8, 10–12,

14, Bayrūt: Dār al-kutub al-‘ilmīyah 1413/1992.

-----, *History of Egypt 1382–1469. Part II, 1399–1411 A.D.* Translated

from the Arabic Annals of Abu l-Maḥasin Ibn Taghrī Birdī by W.

Popper, vol. 2, California: University of California Press 1954.

Ibn Ṭūlūn, *Mufākahat al-khillān fī ḥawādīth al-zamān [Ta’rīkh Miṣr wa-*

al-Shām], vol. 1, al-Qāhirah: Wizārat al-thaqāfah wa-al-irshād al-

qawmī 1381/1962.

al-Idrīsī, *Opus Geographicum. Kitāb nuzhat al-mushtāq fī ikhtirāq al-*

āfāq, ed. by Instituto Universitario Orientale di Napoli, vol. 1,

1970.

Ikhwān al-Ṣafā’, *Die Abhandlungen der Ikhwān es-Safā in Auswahl*, tr.

by Fr. Dieterici, vol. 2, Leipzig: Hinrichsche Buchhandlung

1884.

al-Jāhīz, *Kitāb al-ḥayawān*, vols. 1–2, Bayrūt: Dār al-‘Irāq 1956.

al-Jazārī, *Ta’rīkh ḥawādith al-zamān wa-anbā’ihī wa-wafayāt al-akābir wa-al-a‘yān min abnā’ihī: al-ma‘rūf bi-ta’rīkh Ibn al-Jazārī*, ed. by ‘U. Tadmurī, vols. 1–2, Ṣaydā: al-Maktabat al-‘aṣrīyah 1419/1998.

Hermes Trismegistus, *Die griechischen Traktate und der lateinische “Asclepius,”* Das Corpus Hermeticum Deutsch: Übersetzung, Darstellung und Kommentierung in drei Teilen, vol. 1, ed. by C. Colpe et al., Stuttgart-Bad Cannstatt: Frommann-Holzboog 1997.
al-Khwārizmī, *Kitāb ḫūrat al-ard*, ed. by H. Mžik, Leipzig: Otto Harrassowitz 1345/1926.

Kitāb alf laylah wa-laylah, ed. by W. Macnaghten, vol. 2, Calcutta: W. Thacker and Co. St. Andrew’s Library 1839.

Labat, R., *Un Calendrier Babylonien des Travaux des Signes et des Mois.* (Séries IQQUR ĪPUŠ), Paris: Champion 1965.

Last Days of the Buddha: the Mahā Parinibbāna Sutta. Translated from the Pali and Edited by S. Varjirā and F. Story, Sri Lanka: Buddhist Publication Society 2007.

Lydus, J., *Liber de Ostentis et Calendaria Graeca Omnia*, ed. by C. Wachsmuth, Lipsiae: Teubner 1897.

Manetho, *Aegyptiaca*, tr. by W. Waddell, Aberdeen: University Press
1948.

al-Manūfi, Extrait d'un manuscrit arabe intitulé *Kitāb al-fayd al-madīd*
fī aḥbār an-Nīl as-sa‘īd. Le Livre du Don Abondant, *Journal*
Asiatique 7 (Juin 1846), 485–521.

-----, Extrait d'un manuscrit arabe intitulé *Kitāb al-fayd al-madīd* fī
akhbār al-Nīl al-sa‘īd. Les sources du Nil, *Journal Asiatique* 3
(Février 1837), 97–164.

al-Maqdisī, *al-Bad' wa-al-tarīkh*. al-Mansūb ilā Abī Zayd Ahmad Ibn
Sahl al-Balkhī, vol. 2, Ṭihrān: Maktabat al-Asadī 1962.

al-Maqrīzī, *al-Mawā‘iz wa-al-i‘tibār fī dhikr al-khitāṭ wa-al-āthār*, ed. by
A. Sayyid, vols. 1–4,2, Landan: Mu‘assasat al-furqān lil-turāth al-
islāmī 1423–1424/2002–2003.

-----, *Kitāb al-sulūk li-ma‘rifat duwal al-mulūk*, ed. by M. Ziyādah, vols.
1,2–1,3; 2,1–2,3, al-Qāhirah: Maṭba‘at lajnāt al-ta‘līf wa-al-
tarjamah wa-al-nashr 1941–1970.

-----, *Kitāb al-sulūk li-ma‘rifat duwal al-mulūk*, ed. by S. ‘Āshūr, vols.
3,1–3,3; 4,1–4,2, al-Qāhirah: Maṭba‘at dār al-kutub 1970–1972.

-----, *al-Sulūk li-ma‘rifat duwal al-mulūk*, ed. by M. ‘Atā, vol. 5, Bayrūt:
Dār al-kutub al-‘ilmīyah 1418/1997.

-----, *Ighāthat al-ummah bi-kashf al-ghummah*, ed. by J. al-Shayyāl,
Dimashq: Maktabat al-thaqāfah al-dīnīyah 1420/2000.

-----, *Mamluk Economics. A Study and Translation of al-Maqrīzī's Ighāthah* by A. Allouche, Salt Lake City: University of Utah Press
1994.

al-Mas‘ūdī, *Murūj al-dhahab wa-ma‘ādin al-jawhar*, vols. 1–2, Bayrūt:
al-Jami‘ah al-lubnāniyah 1965–1966.

Mufaddal Ibn Abī al-Faḍā‘il, *Moufazzal Ibn Abil-Fazail. Histoire des sultans mamlouks. al-Nahj al-sadid wa al-durr al-farid fīmā ba‘d ta‘rīkh Ibn al-‘Amīd*, tr. and ed. by E. Blochet, vol. 3, Paris:
Firmin-Didot 1929.

Muhyī al-Dīn Ibn ‘Abd al-Zāhir, *Tashrif al-ayyām wa-al-‘uṣūr fī sīrat al-Malik al-Manṣūr* (678–689), ed. by M. Kāmil, al-Qāhirah: al-Sharikah al-‘arabīyah lil-ṭibā‘ah wa-al-nashr 1961.

al-Nuwayrī, *Nihāyat al-arab fī funūn al-adab*, vol. 1,1 and vol. 14, al-Qāhirah: Maṭābi‘ Kūstātsūmās wa-shurakā‘hu 1963–1970.

-----, *Nihāyat al-arab fī funūn al-adab*, vols. 30–33, al-Qāhirah: Markaz taḥqīq al-turāth 1990–1998.

al-Nuwayrī al-Iskandarānī, *Kitāb al-ilmām bi-al-i‘lām fīmā jarat bi-hi al-ahkām al-umūr al-maqdīyah fī waq‘at al-Iskandariyah*, ed. by ‘A.

‘Aṭīyah, vols. 1–4, Haydar Ābād: Dā’irat al-ma‘ārif al-‘uthmānīyah 1388–1390/1968–1970.

Parker, R., *A Vienna Demotic Papyrus on Eclipse and Lunar Omina*, Providence: Brown University Press 1959.

Ptolemy, *Ptolemy’s Almagest*. Translated and Annotated by G. J. Toomer, Princeton: Princeton University Press 1998.

----, *Tetrabiblos*, tr. by F. Robbins, Aberdeen: University Press 1948.

----, *The Geography*, tr. by E. Stevenson, New York: Dover Publications 1991.

al-Qalqashandī, *Kitāb ṣubḥ al-a‘shā*, vol. 1, al-Qāhirah: Dār al-kutub al-miṣriyah 1340/1922.

----, *Kitāb ṣubḥ al-a‘shā*, vols. 2–4, al-Qāhirah: al-Maṭba‘ah al-amīriyah 1331–1332/1913–1914.

----, al-Qalqashandī, *Ma‘āthir al-ināfah fī ma‘ālim al-khilāfah*, vol. 2, al-Kuwayt 1964.

al-Qazwīnī, *Kitāb ‘ajā’ib al-makhlūqāt (wa-al-hayawānāt wa-gharā’ib al-mawjūdāt)*, ed. by F. Wüstenfeld, Wiesbaden: Sändig 1967.

----, *Zakarija Ben Muhammed Ben Mahmūd el-Kazwīni’s Kosmographie. Die Wunder der Schöpfung*, tr. by H. Ethé, vol. 1, Nach der Wüstenfeldschen Textausgabe, mit Benutzung und Beifügung

der Reichhaltigen Anmerkungen und Verbesserungen des Herrn

Prof. Dr. Fleischer, Leipzig: Fues's Verlag 1868.

al-Sakhāwī, *al-Dhayl al-tām ‘alā duwal al-islām lil-Dhahabī*, ed. by H. Marwah, vols. 1–3, al-Kuwayt: Maktabat dār al-‘urūbah 1413–1418/1992–1997.

al-Suyūtī, *Husn al-muḥādarah fī ta’rīkh Miṣr wa-al-Qāhirah*, ed. by M. Ibrāhīm, vols. 1–2, al-Qāhirah: Dār iḥyā’ al-kutub al-‘arabīyah 1387/1967–8.

al-Suyūtī, *Kashf al-ṣalṣalah ‘an wasf al-zalzalah*, ed. by A. Sa‘adānī, al-Rabāṭ: al-Mamlakah al-maghribīyah 1971.

-----, *Kashf al-ṣalṣalah ‘an wasf al-zalzalah*, ed. by M. ‘Izz al-Dīn, Bayrūt: ‘Ālam al-kutub 1987.

-----, *Kawkab al-rāwḍah fī ta’rīkh al-Nīl wa-Jazīrat al-Rāwḍah*, ed. by al-Shishtāwī, al-Qāhirah: Dār al-Āfāq al-‘arabīyah 2002.

-----, *Mā rawāhu al-wā‘ūn fī akhbār al-ṭā‘ūn*, Dimashq: Dār al-kalām 1997.

Tāhir, M., Traité de la fortification des demeures contre l'horreur des séismes. (Tahṣīn al-manāzil min hawl al-zalāzil) d’Abū'l-Hasan ‘Alī Ibn al-Ǧazzār, écrit à l'occasion du tremblement de terre de 984H./1576, *Annales Islamologiques* 12 (1975), 131–159.

al-Tha'labī, 'Arā'is al-majālis fī qīṣāṣ al-anbiyā' or "Lives of the Prophets," Translated and Annotated by W. Brinner, Leiden: Brill 2002.

-----, *Qīṣāṣ al-anbiyā'* al-musammā 'arā'is al-majālis, al-Qāhirah: Dār iḥyā' al-kutub al-'arabīyah Ḥasan al-Bābī al-Halabī 2005.

The Book of the Thousand Nights and a Night. Translated from the Arabic by R. Burton, ed. by L. Charles et al., vol. 4, London: H.S. Nichols & Co. 1894.

The Books of Enoch: A Complete Volume Containing: 1 Enoch (The Ethiopic Book of Enoch), 2 Enoch (The Slavonic Secrets of Enoch), 3 Enoch (The Hebrew Book of Enoch), ed. by J. Lumpkin, AL: Fifth Estate Publishers 2010.

Theophrast, *Neue meteorologische Fragmente des Theophrast: arabisch und deutsch*, ed. by G. Bergsträsser, Heidelberg: Carl Winters al-Tifāshī, *Surūr al-nafs bi-madārik al-ḥawāss al-khams*, (*hadhdhabahu: Ibn Manzūr*), ed. by A. 'Abbās, Bayrūt: al-Mu'assasah al-'arabīyah lil-dirāsāt wa-al-nashr 1400/1980.

The Sacred Books of the East. Pahlavi Texts. The Bundahis, Bahman Yast, and Shāyast lā-Shāyast, tr. by E. W. West, ed. by M. Müller, vol. 5, 1, Oxford: At the Clarendon Press 1880.

al-Tirmidhī, *al-Jāmī‘ al-kabīr*, vol. 4, Bayrūt: Dār al-gharb al-islāmī 1996.

al-‘Umarī, *Masālik al-abṣār fī mamālik al-amṣār*, ed. by al-Sarīhī, vol. 1, Abū al-Zabī: al-Majma‘ al-thaqāfī 2003.

Yāqūt al-Ḥamawī, *Mu‘jam al-buldān*, vol. 3, Bayrūt: Dār Ṣādir 1984.

-----, *Kitāb mu‘jam al-buldān. al-Jughrāfiyah al-islāmīyah*, vol. 4, Frankfurt am Main: Ma‘had ta‘rīkh al-‘ulūm al-‘arabīyah wa-al-islāmīyah 1994.

al-Yūnīnī, *Dhayl mir‘āt al-zamān*, vol. 1, Ḥaydar Ābād: Maṭba‘ majlis dā’irat al-ma‘ārif al-‘uthmānīyah 1374/1954.

al-Yūsufī, *Nuzhat al-nāzir fī sīrat al-Malik al-Nāṣir*, ed. by Huṭayṭ, Bayrūt: ‘Ālam al-kutub 1406/1986.

PRINTED MODERN WORKS

Abdalla, M., Ibn Khaldūn on the Fate of Islamic Science after the 11th Century, *Islam & Science* 5/1 (2007), 61–70.

Abdel Salam, M. and Sowelim, M., Dustfall Caused by the Spring Khamasin Storms in Cairo: A Preliminary Report, *Atmospheric Environment* 1/3 (1967), 221–426.

- Adnan, B., Al Khwarizmi's Contributions to the Science of Mathematics: al Kitab al Jabr wa'l Muqabalah, *Journal of Islamic Academy of Sciences* 5/3 (1992), 225–228.
- Ahlwardt, W., „Die Handschriften-Verzeichnisse der königlichen Bibliothek zu Berlin. Verzeichnis der arabischen Handschriften,” Berlin: A. Asher & C., 1893, 272–308.
- Ahmad, Y., *Factors Behind the Decline of Islamic Science after the Sixteenth Century, History of Science and Technology in Islam*, www.history-science-technology.com/articles/articles%208.htm
- Ahmed, H., *Review of Erlich, H.: The Cross and the River. Ethiopia, Egypt and the Nile*, Boulder: Lynne 2002.
- Akasoy, A., *Interpreting Earthquakes in Medieval Islamic Texts, in Natural Disasters, Cultural Responses. Case Studies toward a Global Environmental History*, ed. by Ch. Mauch et al., Lanham: The Rowman & Littlefield Publishing Group 2009, 183–196.
- , Islamic Attitudes to Disasters in the Middle Ages: A Comparison of Earthquakes and Plagues, *The Medieval History Journal* 10/1–2 (2007), 387–410.
- , The Man-Made Disaster: Fire in Cities in the Medieval Middle East, *Historical Social Research* 32/3 (2007), 75–87.

Alexander, D., *Confronting Catastrophe. New Perspectives on Natural Disasters*, Oxford: University Press 2000.

Allouche, A., “Epidemics,” *Medieval Islamic Civilization: an Encyclopedia*, ed. by J. Meri et al., London: Routledge 2006, 235–236.

Ambraseys, N., Melville, C. et al. (ed.), *The Seismicity of Egypt, Arabia and the Red Sea. Historical Review*, Cambridge 1994.

Amitai-Preiss, R., “Baybars I, Mamluk Sultan,” *Medieval Islamic Civilization: an Encyclopedia*, ed. by J. Meri: Routledge 2006, 101–102.

Amitai-Preiss, R., “Ibn ‘Abd al-Zahir, Muhyi al-Dīn,” *Encyclopaedic Historiography of the Muslim World*, ed. by N. Singh et al., Delhi: Global Vision Publishing House 2003, 339.

-----, al-Maqrīzī as a Historian of the Early Mamluk Sultanate (or: Is al-Maqrīzī an Unrecognized Historiographical Villain?), *Mamlūk Studies Review* 7 (2003), 99–118.

-----, *Mongols and Mamluks. The Mamluk-Īlkhānid War, 1260–1281*, Cambridge: Cambridge University Press 1995.

Ammann, L., “Shadjar al-Durr,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 9, Leiden: Brill 1997, 176.

- Ansari, B., “al-Djazarī,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 2, Leiden: Brill 1965, 522–523.
- Arbel, B., Renaissance Geographical Literature and the Nile, in *The Nile. Histories, Cultures, Myths*, ed. by H. Erlich et al., Colorado: Lynne Rienner 2000, 105–121.
- Ardagh, J., Nilometers, in *The Cairo Nilometer: Texts and Studies*, ed. by F. Sezgin, Frankfurt am Main: Institute for the History of Arabic-Islamic Science 2001, 62–72.
- Arieh, E., “Earthquake,” *Encyclopaedia Judaica*, ed. by F. Skolnik et al., vol. 6, Detroit: Thomson Gale 2007, 83.
- “Aristoteles,” *Enzyklopädie Philosophie und Wissenschaftstheorie*, ed. by J. Mittelstraß, vol. 1, Stuttgart: Verlag J. B. Metzler 1995, 167–175.
- Arnaldez, R., “Manṭık,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 6, Leiden: Brill 1991, 442–452.
- Ashtor, E., “Baybars al-Mansuri,” *Encyclopaedic Historiography of the Muslim World*, ed. by N. Singh et al., vol. 1, Delhi: Global Vision Publishing House 2003, 189–190.
- , “Baybars al-Manṣūrī,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 1127–1128.

- Atiya, A., “Feast of the Martyr,” *The Coptic Encyclopedia*, ed. by A. Atiya, vol. 5, New York: Macmillan Publishing Company 1991, 1547–1548.
- Awulachew, S. et al. (ed.), *The Nile River Basin. Water, Agriculture, Governance and Livelihoods*, London: Routledge 2012.
- Ayalon, D. and Holt, P., “Mamlūk(s),” *The Encyclopaedia of Islam*, vol. 6, Leiden: Brill 1991, 314–321, 321–331.
- Bacharach, J., Circassian Mamluk Historians and their Quantitative Economic Data, *Journal of the American Research Center in Egypt* 12 (1975), 75–87.
- Baker, V., Paleoflood Hydrology: Origin, Progress, Prospects, *Geomorphology* 101/1 (2008), 1–13.
- Baltussen, H., “Theophrastus,” *Encyclopedia of Philosophy*, ed. by D. Borchert, vol. 9, Detroit: Thomson Gale 2006, 411–412.
- Bankoff, G., Cultures of Disaster, Cultures of Coping. Hazard as a Frequent Life Experience in the Philippines, in *Natural Disasters, Cultural Responses. Case Studies toward a Global Environmental History*, ed. by Ch. Mauch et al., Lanham: The Rowman & Littlefield Publishing Group 2009, 265–284.

-----, *Cultures of Disaster. Society and Natural Hazard in the Philippines*, London: Routledge 2003.

-----, Living with Hazard: Disaster Subcultures, Disaster Cultures and Risk Societies, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. by G. Schenk, Heidelberg: Springer forthcoming.

Bar-Matthews, M. et al. (ed.), The Eastern Mediterranean Paleoclimate as a Reflection of Regional Events: Soreq Cave, *Earth and Planetary Science Letters* 166 (1999), 85–95.

Barnhart, R. “Catastrophe,” *Chambers Dictionary of Etymology*, New York: Wilson Company 2000, 150.

-----, “Charity,” *Chambers Dictionary of Etymology*, New York: Wilson Company 2000, 160.

Bashear, S., Apocalyptic and other Materials on Early Muslim-Byzantine Wars: A Review of Arabic Sources, *JRAS* 3/1/2 (1991), 173–207.

-----, *Studies in Early Islamic Tradition, Collected Studies in Arabic and Islam*, Jerusalem: Hebrew University, Max Schloessinger Memorial Foundation 2004.

Bazin, M., Ehlers, E. et al., “Alborz (Elborz, Elbors),” *Encyclopædia Iranica*, ed. by E. Yarshater, vol. 1, London: Routledge 1985, 810–821.

Behrens-Abouseif, D., an-Nāṣir Muḥammad and al-Ašraf Qāytbāy—Patrons of Urbanism, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. by U. Vermeulen et al., Leuven: Peeters 1995, 266–284.

Bell, B., The Oldest Records of the Nile Floods, *The Geographical Journal* 136/4 (1970), 569–573.

Ben-Shammai, H., Saadia’s Introduction to Daniel: Prophetic Calculation of the End of Days vs. Astrological and Magical Speculation, *Aleph* 4 (2004), 11–87.

Benedick, R., The High Dam and the Transformation of the Nile, *Middle East Journal* 33/2 (1979), 119–144.

Berg, C., “Şawm,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 9, Leiden: Brill, 1997, 94–95.

Berkel, M., “Ibn Khaldūn,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 835–837.

Berkey, J., Storytelling, Preaching, and Power in Mamluk Cairo, *Mamlük Studies Review* 4 (2000), 53–73.

- Bernburg-Richter, L., Between Marvel and Trial: al-Harawī and Ibn Jubayr on Architecture, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. U. Vermeulen and K. D'Hulster, Leuven: Peeters 2010, 115–145.
- Bezold, C. and Boll, F., *Reflexe astrologischer Keilinschriften bei griechischen Schriftstellern*, Heidelberg: Carl Winter's Universitätsbuchhandlung 1911, 3–54.
- Bhargava, M., Changing River Courses in North India: Calamities, Bounties, Strategies—Sixteenth to Early Nineteenth Centuries, *The Medieval History Journal* 10/1,2 (2007), 183–208.
- Bianquis, Th., Autonomous Egypt from Ibn Ṭūlūn to Kāfūr, 868–969, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 86–120.
- Blacker, C., Introduction, in *Ancient Cosmologies*, ed. by C. Blacker et al., London: George Allen & Unwin Ltd 1975, 13–16.
- Blair, Sh., “Zāwiya,” *The Encyclopaedia of Islam*, ed. by P. Bearman et al., vol. 11, Leiden: Brill 2002, 466–467.
- Blumenberg, H., *Die Lesbarkeit der Welt*, Frankfurt am Main: Suhrkamp 1999.

Bodnar, I., “Aristotle’s Natural Philosophy,” *The Stanford Encyclopedia of Philosophy*, ed. by E. Zalta, Spring 2012,
<http://plato.stanford.edu/archives/spr2012/entries/aristotle-natphil/>.

Boilot, D., “al-Bīrūnī,” *The Encyclopaedia of Islam*, ed. by J. Kramers et al., vol. 1, Leiden: Brill 1954, 1236–1238.

Boll, F. “Codices Germanicos. Catalogus Codicum Astrologorum Graecorum.” In *Catalogus Codicum Astrologorum Graecorum*, vol. 7, Bruxellis: In Aedibus Henrici Lamertin 1908.

Bonebakker, S., “Gharīb,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 2, Leiden: Brill 1965, 1011.

Borsch, S., Environment and Population: The Collapse of Large Irrigation Systems Reconsidered, *Comparative Studies in Society and History* 46 (2004), 451–468.

-----, Nile Floods and the Irrigation System in Fifteenth-Century Egypt, *Mamlūk Studies Review* 4 (2000), 131–145.

-----, The Black Death and Human Impact on the Environment, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. by G. Schenk, Heidelberg: Springer forthcoming.

Bosworth, C., “al-Ķalkashandī,” *The Encyclopaedia of Islam*, ed. by E.

Donzel et al., vol. 4, Leiden: Brill 1973, 509–511.

-----, “al-Nuwayrī,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et

al., vol. 8, 1995, 155.

Bosworth, C. and Afshar, I., “Ajb’eb al-maklūqāt,” *Encyclopædia*

Iranica, vol. 1, ed. by E. Yarshater, London: Routledge 1985,

696–699.

Bosworth, C., Wensinck, A. et al., “Miṣr,” *The Encyclopaedia of Islam*,

vol. 7, ed. by C. Bosworth et al., Leiden: Brill 1997, 146–186.

Boudet, J.-P., “Astrology,” in *Medieval Science, Technology, and*

Medicine: an Encyclopedia, ed. by Th. Glick et al., London:

Routledge 2005, 61–64.

Bouyahia, Ch., “al-Ķazwīnī,” *The Encyclopaedia of Islam*, ed. by E.

Donzel et al., vol. 4, Leiden: Brill 1973, 865–867.

Brázdil, R. and Kundzewicz, Z., Historical Hydrology—Editorial,

Hydrological Sciences Journal 51/5 (2006), 733–738.

Brázdil, R., Kundzewicz, Z. et al., Historical Hydrology for Studying

Flood Risk in Europe, *Hydrological Sciences Journal* 51/5 (2006),

739–764.

- Brett, M., The Fatimids and the Counter-Crusade, 1099–1171, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. by U. Vermeulen et al., Leuven: Peeters 2007, 15–25.
- Brewer, D., The Archaeology of Ancient Egypt: Beyond Pharaohs, Cambridge: Cambridge University Press 2012.
- Brinner, W., “Ibn Iyās,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1971, 812–813.
- Broadbridge, A., Royal Authority, Justice, and Order in Society: The Influence of Ibn Khaldūn on the Writings of al-Maqrīzī and Ibn Taghrībirdī, *Mamlūk Studies Review* 7 (2003), 231–245.
- Brockelmann, C. „Geschichte der Arabischen Literatur,“ vol. 2, Berlin: Verlag von Emil Felber 1902.
- , “Geschichte der Arabischen Literatur. Erster Supplementband,” vol. 1, Leiden: Brill 1937.
- , “Geschichte der Arabischen Literatur. Zweiter Supplementband,” Leiden: Brill 1938.
- Brosch, N., *Sirius Matters*, Berlin: Springer 2008.
- Brunotte, U., Water Catastrophes—Catastrophic Water. From the Flood to the Maelstrom, *Daidalos: Architektur Kunst Kultur* 55 (März 1995), 100–111.

Burnett, Ch., The Legend of the Three Hermes and Abū Ma‘shar’s Kitāb al-Ulūf in the Latin Middle Ages, in *Magic and Divination in the Middle Ages. Texts and Techniques in the Islamic and Christian Worlds*, ed. by Ch. Burnett, Aldershot: Ashgate 1996, 231–234.

Büssow-Schmitz, S., Fanā’ and Fasād: Perceptions and Concepts of Crises and Disasters in Fourteenth-Century Egypt, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. by G. Schenk, Heidelberg: Springer forthcoming.

Bynum, C., Wonder, *The American Historical Review* 102/1 (February 1997), 1–26.

Cahen, Cl., “Ibn al-Furāt,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1971, 768–769.

Cahen, Cl., Lambton, A. et al., “Kharādj,” *The Encyclopaedia of Islam*, vol. 4, ed. by E. Donzel et al., Leiden: Brill 1973, 1030–1056.

“Caliph/Caliphate,” *The Oxford Dictionary of Islam*, ed. by J. Esposito, Oxford: Oxford University Press 2003.

Carnoy, A., Iranian Mythology, in *The Mythology of all Races*, ed. by L. Gray et al., Boston: Marshall Jones Company 1917, 253–348.

Carter, M., “Ṣahīḥ,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 8, Leiden: Brill 1995, 835–836.

Casanova, P., De quelques légendes astronomiques arabes considérées dans leurs rapports avec la mythologie égyptienne, *Bulletin de l'institut français d'archéologie orientale*. (BIFAO) 2 (1902), 1–39.

Chalyan-Daffner, K., *Vulnerability and Resilience in Development Context. The 5th KatNet-Conference on “Vulnerability and Resilience in Development Context,”* Disaster Research Centre of the Institute of Social Sciences of Christian-Albrecht University in Kiel, H-Soz-u-Kult (26.10.2009), www.hsozkult.geschichte.hu-berlin.de/tagungsberichte/id=2831.

Chalyan-Daffner, K. and Itin, J., *Cultures of Disaster. Concepts and Research. Workshop Organised in Karl Jaspers Centre for Advanced Transcultural Studies,* Heidelberg University, H-Soz-u-Kult (01.05.2009), <http://hsozkult.geschichte.hu-berlin.de/tagungsberichte/id=2591>.

Chalyan-Daffner, K. and Marcussen, E., *Hybridity of Historical Disasters. Nature, Society and Power.* Conference in Beirut, AHF-Information 084 (2010), 1–6.

Chalyan-Daffner, K., “Natural” Disasters in the Arabic Astro-meteorological *Malḥama* Handbooks, in *A Comparative and*

- Transcultural Survey between Asia and Europe*, ed. by G. Schenk, Heidelberg: Springer forthcoming.
- , Predictions of “Natural” Disasters in the Astro-meteorological Malḥamah Handbooks, in *Occult Sciences in Pre-Modern Islamic Culture*, N. El-Bizri, E. von Orthmann, S. Leder (ed.), Beiruter Texte und Studien, forthcoming 2015.
- Chapoutot-Remadi, M., “al-Nuwayrī,” *Encyclopaedic Historiography of the Muslim World*, ed. by N. Singh et al., vol. 3, Leiden: Brill 2003, 711–721.
- , “al-Nuwayrī,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 8, Leiden: Brill 1995, 156–160.
- Charpentier, J., A Treatise on Hindu Cosmography from the Seventeenth Century (Brit. Mus. MS. Sloane 2748 A), *Bulletin of the School of Oriental Studies* 3/2 (1924), 317–342.
- Cheneb, M., “Ibn al-Wardī,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1965, 966.
- Chester, D. and Duncan, A., Responding to Disasters within the Christian Tradition, with Reference to Volcanic Eruptions and Earthquakes, *Religion* 40/2 (2010), 85–95.

Colafrancesco, S., *Premessa—Foreword, in Cosmology through Time.*

Ancient and Modern Cosmologies in the Mediterranean Area.

Conference Proceedings, ed. by S. Colafrancesco et al., Milano:

Mimesis 2003, 7–11.

Collet, D., Storage and Starvation: Public Granaries as Agents of Food

Security in Early Modern Europe, in *The Production of Human*

Security in Premodern and Contemporary History, ed. by C.

Zwierlein et al. 2010, 234–253.

Collet, D., Lassen, Th. et al., *Einleitung—Eine Umweltgeschichte des*

Hungers, in Handeln in Hungerkrisen. Neue Perspektiven auf soziale

und klimatische Vulnerabilität, ed. by D. Collet et al., Göttingen:

Universitätsverlag Göttingen 2012, 3–13.

Collins, R., *The Waters of the Nile: an Annotated Bibliography*, London:

Zell 1991.

Conermann, S. and Saghbini, S., Awlād al-Nās as Founders of Pious

Endowments: The Waqfiyah of Yahyā ibn Ṭughān al-Hasanī of

the Year 870/1465, *Mamlūk Studies Review* 7 (2003), 21–50.

Conrad, L., Arabic Plague Chronologies and Treatises: Social and

Historical Factors in the Formation of a Literary Genre, *Studia*

Islamica 54 (1981), 51–93.

-----, Ṭā‘ūn and Wabā’. Conceptions of Plague and Pestilence in Early Islam, *Journal of the Economic and Social History of Orient* 25/3 (1982), 268–307.

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

“Cosmography,” *Webster’s New Encyclopedic Dictionary*, Cologne: Könemann, 1994, 227.

Coureas, N., Commerce between Mamluk Egypt and Hospitaler Rhodes in the Mid-Fifteenth Century: The Case of Sidi Galip Ripolli, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. by U. Vermeulen, Leuven: Peeters 2010, 207–218.

Cumont, F. et al. “Catalogus Codicum Astrologorum Graecorum,” Brusselis: Lamertin, 1889–1911.

Daiber, *Aetius Arabus. Die Vorsokratiker in arabischer Überlieferung*, Wiesbaden: Franz Steiner Verlag 1980.

-----, “Aetius,” *The Encyclopaedia of Islam*, ed. by G. Krämer et al., Leiden: Brill, Online 2013.

-----, *Die arabische Übersetzung der Placita Philosophorum*, Saarbrücken: Universität des Saarlands, 1968.

-----, “Pythagoras and Pythagoreanism [Addendum 2],” *Encyclopedia of Philosophy*, ed. by D. Borchert, vol. 8, Detroit: Thomson Gale 2006, 188–189.

Dalley, St., Gilgamesh in the Arabian Nights, *Journal of the Royal Asiatic Society* 1/1 (1991 April), 1–17.

-----, *Myths from Mesopotamia: Creation, the Flood, Gilgamesh and Others*, tr. by Stephanie Dalley, Oxford: Oxford University 1991.

Daston, L. and Park, K., *Wonders and the Order of Nature 1150–1750*, New York: Zone Books 1998.

de Blois, F., “Ta’rīkh,” *The Encyclopaedia of Islam*, ed. by P. Bearman et al., vol. 10, Leiden: Brill 2000, 257–264.

de Callataÿ, G., *World Cycles and Geological Changes according the Brethren of Purity, in In the Age of al-Farābī: Arabic Philosophy in the Fourth/Tenth Century*, ed. by P. Adamson, London: The Warburg Institute 2008, 179–193.

Degg, M., The 1992 “Cairo Earthquake:” Cause, Effect and Response, *Disasters* 17/3 (September 1993), 226–239.

Degg, M. and Doornkamp, J., Earthquake Hazard and Urban Development in Egypt, *Third World Planning Review* 14/4 (November 1992), 391–408.

Delort, R., *Avant-propos*, in *Les catastrophes naturelles dans l'Europe médiévale et moderne: actes des XVe journées internationales d'histoire de l'Abbaye de Flaran*, 10, 11 et 12 septembre 1993, ed. by B. Bennassar, Toulouse: Presses universitaires du Mirail 1996, 7–25.

den Heijer, J., “al-Mufaddal Ibn Abī al-Fadā'il,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 7, Leiden: Brill 1993, 305.

Dobson, M. and Ziemann, B. (eds.), *Reading Primary Sources. The Interpretation of Texts from Nineteenth- and Twentieth-Century History*, London: Routledge 2009.

Dols, M., Plague in Early Islamic History, *Journal of the American Oriental Society* 94/3 (July–September 1974), 371–383.

----, *The Black Death in the Middle East*, Princeton: Princeton University Press 1977.

----, The Comparative Communal Responses to the Black Death in Muslim and Christian Societies, in *Viator: Mediaeval and Renaissance Studies*, ed. by L. White, London: University of California Press 1974, 269–287.

Dowson, J., “A Classical Dictionary of Hindu Mythology and Religion, Geography, History, and Literature,” London: Kegan Paul, Trench, Trübner 1903.

Dubler, C., “*Adjā’ib*,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 203–204.

Dunlop, D., “al-Dimashkī,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 2, Leiden: Brill 1965, 291.

Edson, E. et al. (eds.), *Medieval Views of the Cosmos. Karten der christlichen und islamischen Welt*. Darmstadt: Wiss. Buchges. 2005.

El-Leithy, T., Living Documents, Dying Archives: Towards a Historical Anthropology of Medieval Arabic Archives, *al-Qantara* 32/2 (July–December 2011), 389–434.

El-Sayed, A. et al., Seismicity and Seismic Hazard in Alexandria (Egypt) and its Surroundings, in *Seismic Ground Motion in Large Urban Areas*, ed. by G. Panza et al., Basel: Birkhäuser Verlag 2004, 1003–1019.

El-Sayed, A. et al. (eds.), The Nile Valley of Egypt: A Major Active Graben that Magnifies Seismic Waves, in *Seismic Ground Motion*

in Large Urban Areas, G. Panza et al. (ed.), Basel: Birkhäuser Verlag 2004, 983–1002.

Eliade, M., *The Myth of the Eternal Return: or, Cosmos and History*. Translated from the French by W. Trask, New York: Princeton University Press 1974.

Ellenblum, R., *The Collapse of the Eastern Mediterranean: Climate Change and the Decline of the East, 950–1072*, Cambridge: Cambridge University Press 2012.

Engler, St., Hungersnot—Bekannte Theorien und neue Analysemodelle, in *Handeln in Hungerkrisen. Neue Perspektiven auf soziale und klimatische Vulnerabilität*, ed. by D. Collet et al., Göttingen: Universitätsverlag Göttingen 2012, 67–87.

Ensor, M., Learning from Disasters in Egypt: The Role of History, Oral Traditions, and Local Knowledge, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. by G. Schenk, Heidelberg: Springer forthcoming.

Erlich, H. and Israel, G., Introduction, in *The Nile. Histories, Cultures, Myths*, ed. by H. Erlich et al., Colorado: Lynne Rienner 2000, 1–17.

- Etman, A., Translation at the Intersection of Traditions: The Arab Reception of the Classics, in *A Companion to Classical Receptions*, ed. by L. Hardwick et al., Malden: Blackwell 2008, 141–152.
- Fagnan, E., Observations sur les coudées du Mekyas, in *The Cairo Nilometer: Texts and Studies*, ed. by F. Sezgin, Frankfurt am Main: Institute for the History of Arabic-Islamic Science 2001, 45–62.
- Fahd, T., *La divination Arabe. Études religieuses, sociologiques et folkloriques sur le milieu native de l'Islam*, Leiden: Brill 1966.
- , “Malḥama,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 6, Leiden: Brill 1991, 247.
- Fairbridge, Rh., The Nile Floods as a Global Climatic/Solar Proxy, in *Climatic Changes on a Yearly to Millennial Basis: Geological, Historical and Instrumental Records*, ed. by N. Mörner et al., Dordrecht: Reidel Publishing 1984, 181–190.
- Feeney, J., The Last Nile Flood, *Saudi Aramco World* 57/3 (May/June 2006), 24–33.
- Felgentreff, C., Glade, Th., *Naturrisiken und Sozialkatastrophen*, Berlin: Spektrum Akademischer Verlag 2008.

Firestone, R., Conceptions of Holy War in Biblical and Qur'ānic Tradition, *Journal of Religious Ethics*, 24/1 (Spring 1996), 99–123.

Fischel, W., *Ibn Khaldūn in Egypt. His Public Functions and His Historical Research, 1382–1406. A Study in Islamic Historiography*, Berkeley: University of California Press 1967.

Fodor, A., Malhamat Daniyal, in *The Muslim East. Studies in Honour of Julius Germanus*, ed. by G. Káldy-Nagy, Budapest: Loránd Eötvös University 1974, 85–161.

Fowden, G., *The Egyptian Hermes. A Historical Approach to the Late Pagan Mind*, Princeton: Princeton University Press 1986.

French, R., *The Natural History of the Nile, in Ancient Natural History. Histories of Nature*, London: Routledge 1994, 110–113.

Fück, J., “Ibn Duṣmāk,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1971, 756–757.

-----, “Ibn Manzūr,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill, 1965, 864.

Furlani, G., Astrologisches aus syrischen Handschriften, *Zeitschriften der Deutschen Morgenländischen Gesellschaft* 75 (1921), 122–128.

-----, Eine Sammlung astrologischer Abhandlungen in arabischer Sprache, *Zeitschrift für Assyriologie und Verwandte Gebiete* 33 (1921), 157–168.

Ganas, A. and Parsons, T. (eds.), Three-dimensional Model of Hellenic Arc Deformation and Origin of the Cretan Uplift, *Journal of Geophysical Research* 114 (2009), 1–14.

Garcia-Acosta, V., Risks and Disasters in the History of the Mexico Basin: Are they Climatic or Social? *The Medieval History Journal* 10/1&2 (2007), 127–142.

Garcin, J.-Cl., “Kūs,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 5, Leiden: Brill 1986, 514–515.

-----, The Regime of the Circassian Mamlūks, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. by C. Petry, Cambridge: Cambridge University Press 1998, 290–317.

Gardet, L., “Kiyāma,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 5, Leiden: Brill 1986, 235–238.

Gari, L., *Knowledge versus Natural Disasters from Arabic Sources*, <http://muslimheritage.com/topics/default.cfm?ArticleID=938>.

Gaston, W., Une restauration du nilomètre de l’île de Rawda sous Mutawakkil (247/861), in *The Cairo Nilometer: Texts and Studies*,

- ed. by F. Sezgin, Frankfurt am Main: Institute for the History of Arabic-Islamic Science 2001, 80–84.
- Geoffroy, E., “al-Suyūtī,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 9, Leiden: Brill 1997, 913–916.
- Ghaleb Bey and Kamel Osman, La coudée nilométrique, in *The Cairo Nilometer: Texts and Studies*, ed. by F. Sezgin, Frankfurt am Main: Institute for the History of Arabic-Islamic Science 2001, 89–113.
- al-Ghunaym, ‘A., *Sijill al-zalāzil al-‘arabī: ahdāth al-zalāzil wa-āthāruhā fī al-maṣādir al-‘arabiyyah*, Kuwayt: al-Jam‘iyah al-jughrāfiyah al-kuwaytiyah 2002.
- Gibb, H., “Abū'l-Fidā,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 118–119.
- Gies, F., al-Idrisi and Roger’s Book, *Saudi Aramco World* 28/4 (July/August 1977).
- Gilliot, Cl., “Yākūt,” *The Encyclopaedia of Islam*, ed. by P. Bearman et al., vol. 11, Leiden: Brill 2002, 264–266.
- Gimaret, D., “Shahāda,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 9, Leiden: Brill 2002, 201.

Glaser, R. (ed.), *Klimageschichte Mitteleuropas: 1000 Jahre Wetter, Klima, Katastrophen*, Darmstadt: Wissenschaftliche Buchgesellschaft 2001.

Glaser, R. and Stangl, H., Climate and Floods in Central Europe since AD 1000: Data, Methods, Results and Consequences, *Surveys in Geophysics* 25 (2004), 485–510.

Goeje, M., Kazwini's Cosmography (Book Review), *Academy* 1 (1869/1870), 111.

Goetz, H.-W., *Vorstellungsgeschichte. Gesammelte Schriften zu Wahrnehmungen, Deutungen und Vorstellungen im Mittelalter*, Bochum: Winkler 2007, 3–19.

Goichon, A., “Ibn Sīnā,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1965, 941–947.

Goldstein, B., “Ibn Yūnus/Yūnis,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1965, 969–970.

Gombrich, R., Ancient Indian Cosmology, in *Ancient Cosmologies*, ed. by C. Blacker et al., London: George Allen & Unwin Ltd 1975, 100–142.

Graf, F., Zgoll, A. et al., "Myth," in *Brill's New Pauly. Encyclopaedia of the Ancient World*, ed. by H. Cancik et al., vol. 9, Leiden: Brill 2006.

Grandjean, D., Rendu, A. et al., The Wrath of the Gods: Appraising the Meaning of Disaster, *Social Science Information* 47/2 (2008), 187–204.

Gray, L., Jeremias, A. et al., "Ages of the World," *Encyclopædia of Religion and Ethics*, ed. by J. Hastings, vol. 1, Edinburgh: T. & T. Clark 1908, 183–210.

Gray, L., Sayce, A. et al., "Cosmogony and Cosmology," *Encyclopædia of Religion and Ethics*, ed. by J. Hastings, Edinburgh: T. & T. Clark 1911.

Green, N., The Religious and Cultural Roles of Dreams and Visions in Islam, *Journal of the Royal Asiatic Society of Great Britain & Ireland* 13/3 (November 2003), 287–313.

Greenfield, J. and Sokoloff, M., Astrological and Related Omen Texts in Jewish Palestinian Aramaic, in *Al Kanfei Jonah: Collected Studies of Jonas C. Greenfield on Semitic Philology*, ed. by Sh. Paul et al., Israel: Daatz 1995, 435–448.

Gregorios, B., “Pentacost,” *The Coptic Encyclopedia*, ed. by A. Atiya, vol. 4, New York: Macmillan Publishing Company 1991, 1105–1106.

Groh, D., Kempe, M. et al., *Einleitung. Naturkatastrophen—wahrgenommen, gedeutet, dargestellt, in Naturkatastrophen. Beiträge zu ihrer Deutung, Wahrnehmung und Darstellung in Text und Bild von der Antike bis ins 20. Jahrhundert*, ed. by D. Groh et al., Tübingen: Gunter Narr Verlag 2003, 11–33.

Grotzfeld, H., Klimgeschichte des Vorderen Orients 800–1800 A.D. nach arabischen Quellen, in *Historical Climatology in Different Climatic Zones = Historische Klimatologie in verschiedenen Klimazonen*, ed. by R. Glaser et al., Würzburg: Im Selbstverlag des Instituts für Geographie der Universität Würzburg 1991, 21–43.

Grove, R., “Ibn al-Dawādārī,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 823–824.

Grünthal, G. (ed.), *European Macroseismic Scale 1998*, vol. 15, Luxemburg: Européen de Géodynamique et de Séismologie 1998.

- Guest, A., XXV. The Delta in the Middle Ages: a Note on the Branches of the Nile and the Kurahs of Lower Egypt, with Map, *Journal of the Royal Asiatic Society* 44/04 (October 1912), 941–980.
- Guidoboni, E. and Comastri, A., *Catalogue of Earthquakes and Tsunamis in the Mediterranean Area from the 11th to the 15th Century*, Roma: Instituto Nazionale di Geofisica e Vulcanologia 2005.
- Guidoboni, E. and Ebel, J., *Earthquakes and Tsunamis in the Past. A Guide to Techniques in Historical Seismology*, Cambridge: Cambridge University Press 2009.
- Gundel, W. and Gundel, G., *Astrologumena. Die astrologische Literatur in der Antike und ihre Geschichte*, Wiesbaden: Franz Steiner Verlag 1966.
- Gunkel, H., *Creation and Chaos in the Primeval Era and the Eschaton: Religio-Historical Study of Genesis 1 and Revelation 12*, tr. by W. Whitney, Cambridge: Eedmans Publishing Co. 2006.
- Guo, L., *Early Mamluk Syrian Historiography. Al-Yūnīnī's Dhayl mir'āt al-zamān*, vol. 1, Leiden: Brill 1998.
- Gutas, D., *Greek Thought, Arabic Culture. The Graeco-Arabic Translation Movement in Baghdad and Early 'Abbāsid Society (2nd–4th/8th–10th Centuries)*, London: Routledge 1998.

Gutknecht, D. (ed.), Extreme Abflussereignisse. Dokumentation—Bedeutung—Bestimmungsmethoden, in *Wiener Mitteilungen. Wasser. Abwasser. Gewässer*, Wien: Institut für Wasserbau und Ingenieurhydrologie, vol. 206, Technische Universität Wien 2007.

Haarmann, U., Mamluk Studies—A Western Perspective, *Arab Journal for the Humanities* 13/51 (1995), 343–344.

-----, *Quellenstudien zur frühen Mamlukenzeit*, Freiburg: D. Robischon 1969.

Hanif, N., “al-Qadi al-Fadil,” *Encyclopaedic Historiography of the Muslim World*, vol. 3, Delhi: Global Vision Publishing House 2003, 783–784.

H. D., The Assuan Dam, *Journal of the Royal African Society* 12/46 (January 1913), 200–201.

Hill, D., “Kuṣṭā b. Lūkā,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 5, Leiden: Brill 1986, 529–530.

Hudson, D., *The Body of God: An Emperor’s Palace for Krishna in Eighth-Century Kanchipuram*, Oxford: Oxford University Press 2008.

Halm, H., Die Zeremonien der Salbung des Nilometers und der Kanalöffnung in Fatimidischer Zeit, in *Egypt and Syria in the*

- Fatimid, Ayyubid and Mamluk Eras*, ed. by U. Vermeulen et al., Leuven: Uitgeverij Peeters 1995, 111–123.
- Harris, A., *Flood Myths in the Religions of the Ancient World*, 1–14, 2013, <http://www.academia.edu>.
- Hassan, F., A River Runs Through Egypt: Nile Floods and Civilization, *Geotimes* (April 2005), 22–25.
- , Environmental Perception and Human Responses in History and Prehistory, in *The Way Wind Blows: Climate, History and Human Action*, ed. by R. McIntosh et al., New York: Columbia University Press 2000, 121–140.
- , Extreme Nile Floods and Famines in Medieval Egypt (AD 930–1500) and their Climatic Implications, *Science Direct. Quaternary International* 173–174 (2007), 101–112.
- , Historical Nile Floods and their Implications for Climatic Change, *Science* 212 (June 1981), 1142–1145.
- , Nile flood Discharge during the Medieval Climate Anomaly, *Science Highlights: Medieval Climate* 19/1 (March 2011), 30–31.
- , The Dynamics of a Riverine Civilization: A Geoarchaeological Perspective on the Nile Valley, Egypt, *World Archaeology* 29/1 (1997), 51–74.

- Heinen, A., *Islamic Cosmology. A Study of as-Suyūṭī's al-hay'a as-saniya fī al-hay'a as-sunnīya with Critical Edition, Translation, and Commentary*, vol. 27, Beirut: Beiruter Texte und Studien, 1982.
- Helbling, J., Coping with “Natural” Disasters in Pre-industrial Societies: Some Comments, *The Medieval History Journal* 10/1/2 (2006), 429–446.
- Herren-Oesch, M., Rüesch, M. et al. (eds.), *Transcultural History: Theories, Methods, Sources*, Heidelberg: Springer 2012.
- Hill, R., The Research for the White Nile’s Source: Two Explorers who Failed, *Geographical Journal* 122 (1956), 237–250.
- Hinchman, L. and Hinchman, S., Introduction: Toward a Definition of Narrative, in *Memory, Identity, Community: The Idea of Narrative in the Human Sciences*, ed. by L. Hinchman et al., New York: State University of New York 2001.
- Hinnells, J., *Persian Mythology*, London: Chancellor Press 1985.
- Hirschler, K., “Earthquakes,” *Medieval Islamic Civilization: an Encyclopedia*, ed. by J. Meri, vol. 1, London: Routledge 2006, 219–220.
- , Erdbebenberichte und Diskurse der Kontinuität in der postformativen Periode, *Der Islam* 84 (2008), 103–139.

- Hirschberg, Z., Ginsberg, H. et al., “Daniel,” *Encyclopaedia Judaica*, ed. by F. Skolnik et al., Detroit: Thomson Gale 2007, 417–425.
- Horowitz, W., *Mesopotamian Cosmic Geography*, Winona Lake: Eisenbrauns 1998.
- Hübner, W. and Hunger, H., “Astrology,” *Brill’s New Pauly. Encyclopaedia of the Ancient World*, ed. by H. Cancik et al., vol. 1, Leiden: Brill 2002.
- Hughes, G., A Demotic Astrological Text, *Journal of Near Eastern Studies* 10/4 (October 1951), 256–264.
- Humphreys, S., Egypt in the World System of the Late Middle Ages, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. by C. Petry, Cambridge: Cambridge University Press 1998, 445–461.
- Hunsberger, A., “Marvels,” *Encyclopaedia of the Qur’ān*, ed. by J. McAuliffe, vol. 3, Leiden: Brill 2003, 287–288.
- Hurst, H., *The Nile: a General Account of the River and the Utilization of its Waters*, London: Constable 1952.
- Irwin, R., Ibn Zunbul and the Romance of History, in *Writing and Representation in Medieval Islam. Muslim Horizons*, ed. by Julia Bray, London: Routledge 2006, 3–15.

- , Mamluk Literature, *Mamlūk Studies Review* 7 (2003), 1–29.
- , *The Middle East in the Middle Ages. The Early Mamluk Sultanate 1250–1382*, London & Sydney: Croom Helm 1986.
- Iversen, E., *Egyptian and Hermetic Doctrine*, Copenhagen: Museum Tusculanum Press 1984.
- Jachimowicz, E., Islamic Cosmology, in *Ancient Cosmologies*, ed. by C. Blacker et al., London: George Allen & Unwin Ltd 1975, 143–172.
- James, E., Preface, in *Creation and Cosmology. A Historical and Comparative Inquiry*, ed. by E. James, Leiden: Brill 1969.
- Janku, A., Schenk, G. and Mauelshagen, F. (eds.), *Historical Disasters in Context. Science, Religion, and Politics*, New York: Routledge 2012.
- Jansen, J., “Mu’min,” The Encyclopaedia of Islam, ed. by C. Bosworth et al., vol. 7, Leiden: Brill 1993, 554–555.
- Jenks, S., Astrometeorology in the Middle Ages, *Isis* 74/2 (June 1983), 185–210.
- Johns, A., “Air and Wind,” *Encyclopaedia of the Qur’ān*, ed. by J. McAuliffe, vol. 1, Leiden: Brill 2001, 51–55.

- Jolivet, J. and Rashed, R., “al-Kindī,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 5, Leiden: Brill, 1986, 122–123.
- Jomier, J., “al-Fustāṭ,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 2, Leiden: Brill 1965, 957–959.
- , “Būlāk,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 1299.
- Jones, A. (ed.), *Weltende. Beiträge zur Kultur- und Religionswissenschaft*, Wiesbaden: Harrassowitz Verlag 1999.
- Jones, E., *The European Miracle: Environments, Economies and Geopolitics in the History of Europe and Asia*, Cambridge: Cambridge University Press 2003.
- Juneja, M. and Mauelshagen, F., Disasters and Pre-Industrial Societies: Historiographic Trends and Comparative Perspective, *The Medieval History Journal* 10/1 (2007), 1–31.
- Juynboll, G., “al-Tirmidhī,” *The Encyclopaedia of Islam*, ed. by P. Bearman et al., vol. 10, Leiden: Brill, 2000, 546.
- Kaegi, W., Egypt on the Eve of the Muslim Conquest, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 34–62.

Kak, S., Greek and Indian Cosmology: Review of Early History, *History of Physics* (2003), 1–38.

Kakosy, L., The Nile, Euthenia, and the Myths, *The Journal of Egyptian Archaeology* 68 (1982), 290–298.

Keith, A., Indian Mythology, in *The Mythology of all Races*, ed. by L. Gray et al., Boston: Marshall Jones Company 1917, 5–230.

Kennedy-Day, K., “Aristotelianism in Islamic Philosophy,” in *Routledge Encyclopedia of Philosophy*, ed. by E. Craig, vol. 1, London: Routledge 1998, 382–386.

Kennedy, H., Egypt as a Province in the Islamic Caliphate, 641–868, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 62–86.

Kettermann, G. (ed.), *Atlas zur Geschichte des Islam*, Darmstadt: Primus Verlag 2001.

Kheirandish, E., Organizing Scientific Knowledge: The “Mixed” Sciences in Early Classifications, in *Organising Knowledge. Encyclopædic Activities in the Pre-Eighteenth Century Islamic World*, ed. by D. Pingree et al., Brill: Leiden 2006, 135–155.

- Khoury, R., Un Fragment astrologique inédit attribué à Wahb b. Munabbi (110 ou 114/728 ou 732), *Arabica. Revue d'études arabes* 19 (1972), 139–144.
- , “Wahb Ibn Munabbih,” *The Encyclopaedia of Islam*, ed. by P. Bearman et al., vol. 11, Leiden: Brill 2002, 34–36.
- Kia, M. and Glick, T., “Ibn Khaldūn,” *Encyclopaedic Historiography of the Muslim World*, ed. by N. Singh et al., vol. 2, Delhi: Global Vision Publishing House 2003, 400–403.
- Kilpatrick, H., The “Genuine” Ash‘ab. The Relativity of Fact and Fiction in Early Adab Texts, in *Story-telling in the Framework of Non-fictional Arabic Literature*, ed. S. Leder, Wiesbaden: Harrassowitz Verlag 1998, 94–118.
- King, D., *A Survey of the Scientific Manuscripts in the Egyptian National Library*, ed. by The American Research Centre in Egypt, vol. 5, Winona Lake: Eisenbrauns 1986.
- , *Fihris al-makhtūṭāt al-‘ilmīyah al-mahfūzah bi-dār al-kutub al-miṣriyah*, vol. 2, al-Qāhirah: al-Hay’ah al-miṣriyah al-‘āmmah lil-kitāb: bi-al-ta‘āwun ma‘a markaz al-buhūth al-amrīkī bi-Miṣr wa-mu’assasat Smīthsūniyān 1986.

-----, The Astronomy of the Mamluks: A Brief Overview, *Muqarnas* 2 (1984), 73–84.

-----, The Astronomy of the Mamluks, *Isis* 74/4 (1983 December), 531–555.

Kirk, G., *Myth: Its Meaning and Functions in Ancient and Other Cultures*, London: Cambridge University Press 1970.

Knost, S., Living with Disaster: Aleppo and the Earthquake of 1822, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. by G. Schenk, Heidelberg: Springer forthcoming.

Koch-Westenholz, U., *Mesopotamian Astrology. An introduction to Babylonian and Assyrian Celestial Divination*, Copenhagen: University of Copenhagen 1995.

Kohlberg, E., “Shahīd,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 9, Leiden: Brill 1997, 205–207.

Kramers, J., “al-Mahalla al-Kubrā,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 5, Leiden: Brill 1986, 1221.

-----, “Nil,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 8, Brill: Leiden 1995, 37–43.

Krauss-Sánchez, H., “al-Suyūṭī,” *The Encyclopedia of the Medieval Chronicle*, vol. 2, Leiden: Brill 2010, 1402–1403.

-----, “Ibn Iyās,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 834–835.

-----, “Ibn Zunbul,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 842–843.

Krauss-Sánchez, H. and López, P., “Islamic Historiography,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 883–888.

Kremer, A., Ueber die grossen Seuchen des Orients nach arabischen Quellen, in *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften* 1880, 69–156.

Kreps, G., Disaster and the Social Order, *Sociological Theory* 3/1 (1985), 49–64.

Kreutz, M., Sulaymān al-Bustānīs Arabische Ilias: Ein Beispiel für arabischen Philhellenismus im ausgehenden Osmanischen Reich, *Die Welt des Islams* 44/2 (2004), 155–194.

Kreyenbroek, P., “Cosmogony and Cosmology in Zoroastrianism/Mazdaism,” *Encyclopædia Iranica*, ed. by E. Yarshater, vol. 6, California: Mazda Publishers 1993, 303–307.

Kunitzsch, P., “al-Shi‘rā,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 9, Leiden: Brill 1997, 471–472.

- Labib, S., “al-Iskandariyya,” *The Encyclopaedia of Islam*, ed. by E. Donzel et al., vol. 4, Leiden: Brill 1978, 132–137.
- Lambert, W., The Cosmology of Sumer and Babylon, in *Ancient Cosmologies*, ed. by C. Blacker et al., London: George Allen & Unwin Ltd 1975, 42–65.
- Lane, W. “An Arabic-English Lexicon,” vols. 1–8, Beirut: Librairie du Liban 1968.
- , *Arabian Society in the Middle Ages. Studies from the Thousand and one Nights*, ed. by S. Lane-Poole, London: Curzon Press 1987.
- , *The Manners and Customs of the Modern Egyptians*, London: J.M. Dent & Sons Ltd. 1923.
- Langner, B., *Untersuchungen zur historischen Volkskunde Ägyptens nach mamlukischen Quellen*, Islamkundliche Untersuchungen, Berlin: Klaus Schwartz 1983.
- Laouli, A., The Greek Myth of Pleiades in the Archaeology of Natural Disasters. Decoding, Dating and Environmental Interpretation, *Mediterranean Archaeology and Archaeometry* 6/2 (2006), 5–22.
- Laoust, H., “Ibn Kathīr,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., Leiden: Brill 1965, 817–818.

- , “Ibn Ḳayyim al-Djawziyya,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1965, 821–822.
- , “Ibn Taymiyya,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1965, 951–955.
- Larsen, T., The Nature of the Nile, *Saudi Aramco World* 38/6 (November/December 1987), 20–27.
- Leemhuis, F., “Apocalypse,” *Encyclopaedia of Qur’ān*, ed. by J. McAuliffe, vol. 1, Leiden: Brill 2005, 111–114.
- Leicht, R., *Astrologumena Judaica. Untersuchungen zur Geschichte der astrologischen Literatur der Juden*, Tübingen: Mohr Siebeck 1968.
- Lellouch, B., *Ibn Zunbul Ahmad b. ‘Alī (d. 1574), Historians of the Ottoman Empire*, ed. C. Kafadar, H. Karateke and C. Fleischer, 1–10.
- , Ibn Zunbul, un Égyptien face à l’universalism Ottoman (seizième siècle), *Studia Islamica* 79 (1994), 143–155.
- Lettinck, P., *Aristotle’s Meteorology and its Reception in the Arab World. With an Edition and Translation of Ibn Suwār’s and Ibn Bājja’s Commentary on the Meteorology*, Leiden: Brill 1999.
- Leunissen, M. *Explanation and Teleology in Aristotle’s Science of Nature*, Cambridge: Cambridge University Press 2010.

Lev, Y., The Regime and the Urban Wheat Market: The Famine of 662/1263–64 in Cairo, *Mamlūk Studies Review* 8 (2004), 149–161.

Levanoni, A., *Şağar ad-Durr: A Case of Female Sultanate in Medieval Islam*, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. by U. Vermeulen et al., Leuven: Peeters 2001, 209–219.
----, The Mamluks' Ascent to Power in Egypt, *Studia Islamica* 72 (1990), 121–144.

----, “Ustādār,” *The Encyclopaedia of Islam*, ed. by P. Bearman et al., vol. 10, Leiden: Brill, 2000, 925.

Levi Dalla Vida, G., “‘Umar b. al-Khaṭṭāb,” *The Encyclopaedia of Islam*, ed. by P. Bearman et al., vol. 10, Leiden: Brill, 2000, 818–821.

Levtzion, N., Arab Geographers, the Nile, and the History of Bilad al-Sudan, in *The Nile. Histories, Cultures, Myths*, ed. by H. Erlich et al., Colorado: Lynne Rienner 2000, 71–75.

Lewicki, T., “al-Ķazwīnī,” *The Encyclopaedia of Islam*, ed. by E. Donzel et al., vol. 4, Leiden: Brill 1973, 865–867.

Lewis, B., “Ibn al-Dawādārī,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1971, 744.

Lind, M., *Yahweh is a Warrior. The Theology of Warfare in Ancient Israel*, Scottdale: Herald Press 1980.

Little, D., A Comparison of al-Maqrīzī and al-‘Aynī as Historians of Contemporary Events, *Mamlūk Studies Review* 7/2 (2002), 205–215.

-----, An Analysis of the Relationship between Four Mamluk Chronicles for 734–45, *Journal of Semitic Studies* 19/2 (1974), 252–268.

-----, *An Introduction to Mamlūk Historiography. An Analysis of Arabic Annalistic and Biographical Sources for the Reign of al-Malik an-Nāṣir Muḥammad Ibn Qalā’ūn*, Wiesbaden: Steiner 1970.

-----, *Coptic Conversion to Islam under the Bahri Mamlūks, 692–755/1293–1354*, in *History and Historiography of the Mamlūks*, London: Variorum Reprints 1986, 552–569.

-----, Data on Earthquakes Recorded by Mamluk Historians: An Historiographical Essay, in *Natural Disasters in the Ottoman Empire. Halcyon Days in Crete III. A Symposium Held in Rethymnon 10–12 January 1997*, ed. by E. Zachariadou, Rethymnon: Crete University Press 1999, 137–144.

- , Historiography of the Ayyūbid and Mamlūk Epochs, in *The Cambridge History of Egypt (640–1517)*, ed. by C. Petry et al., Cambridge: Cambridge University Press 1998, 412–445.
- , The Nature of Khānqāhs, Ribāṭs, and Zāwiyas under the Mamlūks, in *Islamic Studies Presented to Charles J. Adams*, ed. by W. Hallaq et al., Leiden: Brill 1991, 91–107.
- Livingston, J., Science and the Occult in the Thinking of Ibn Qayyim al-Jawziyya, *Journal of the American Oriental Study* 112/4 (1992 October–December), 598–610.
- Ludwin, R. and Smits, G., Folklore and Earthquakes: Native American Oral Traditions from Cascadia Compared with Written Traditions from Japan, in *Myth and Geology*, ed. by L. Piccardi et al., London: Cromwell Press 2007, 67–94.
- Lutfi, H., Coptic Festivals of the Nile: Aberrations of the Past? in *The Mamluks in Egyptian Politics and Society*, ed. by Th. Philipp et al., Cambridge: Cambridge University Press 1998, 254–282.
- Mabbett, I., The Symbolism of Mount Meru, *History of Religions* 23/1 (August 1983), 64–83.
- Macdonald, D., Job and Muslim Cosmography, *The American Journal of Semitic Languages and Literatures* 15/3 (1899 April), 168–169.

MacKenzie, D., “Bundahišn,” *Encyclopædia Iranica*, ed. by E. Yarshater, vol. 4, London: Routledge 1990, 547–551.

-----, *Indian Myth and Legend*, London: Adamant Media Corporation 2005.

Madelung, W., “al-Mahdī,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 5, Leiden: Brill 1986, 1230–1238.

Madhari, A. and Elberier, M., Trends and Fatality of Natural Disasters in the Arab World, *Disaster Prevention and Management* 5/1 (1996), 27–35.

Mahmoud Bey, Le système métrique actuel d’Égypte. Les nilomètres anciens et modernes et les antiques coudées d’Égypte, in *The Cairo Nilometer: Texts and Studies*, ed. by F. Sezgin, Frankfurt am Main: Institute for the History of Arabic-Islamic Science 2001, 1–45.

Marçais, W., “al-‘Aynī,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 790–791.

March, M. et al. (ed.), *Cultural Atlas of Mesopotamia and the Ancient Near East*, Oxford: Equinox 1990.

Marquet, Y., “Ikhwān al-Ṣafā,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1965, 1071–1076.

- Marshall, D., “Punishment Stories,” *Encyclopaedia of the Qur’ān*, vol. 4, ed. by J. McAuliffe, Leiden: Brill 2003, 318–322.
- Marzolph, U., “Cosmos,” *The Arabian Nights Encyclopedia*, ed. by U. Marzolph et al., vol. 1, Santa Barbara 2004, 530–531.
- , “Qāf,” *The Arabian Nights Encyclopedia*, ed. by U. Marzolph et al., vol. 2, Santa Barbara: ABC CLIO 2004, 682–683.
- Massé, H., *Croyances et coutumes persanes suivies de contes et chansons populaires*, vol. 1, Paris: Librairie Orientale et Américaine 1938.
- Massoud, S., “Ibn al-Furāt,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 824–825.
- , *The Chronicles and Annalistic Sources of the Early Mamluk Circassian Period*, Leiden: Brill 2007.
- , “Ibn Hajar al-‘Asqalānī,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 831–832.
- Maul, S., “Enūma eliš,” *Brill’s New Pauly*, Brill Online 2013.
- Meinardus, O., Nilometer Readings according to a 13th Century Coptic Source, *Oriens Christianus* 62 (1978), 169–195.
- Meital, Y., The Aswan High Dam and Revolutionary Symbolism in Egypt, in *The Nile: Histories, Conflicts, Myths*, ed. by H. Erlich et al., London: Lynne Rienner 2000, 219–227.

Melville, C., “Zalzala,” *The Encyclopaedia of Islam*, vol. 11, Leiden: Brill 2002, 428–432.

Mendia-Landa, P., *Myths and Legends on Natural Disasters: Making Sense of our World*.
<http://www.yale.edu/ynhti/curriculum/units/2007/4/07.04.13.x.html>.

Menn, St., “Aristotle (384BCE–322 BCE),” *Encyclopedia of Philosophy*, ed. by D. Borchert, vol. 1, Detroit: Thomson Gale 2006, 263–282.

Michot, Y., Ibn Taymiyya on Astrology Annotated Translation of Three Fatwas, *Journal of Islamic Studies* 11/2 (2000), 147–208.

Middelbeck-Varwick, A., *Die Grenze zwischen Gott und Mensch*, Kapitel III Die Gerechtigkeit Gottes und das menschliche Leid im Islam, Münster: Aschendorff 2009.

Millás, J., “Abū Ma‘shar,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 139–140.

Miller P., *The Divine Warrior in Early Israel*. Harvard Semitic Monographs 5, Cambridge: Mass Harvard University Press 1973.

Miquel, A., “al-Muqaddasī,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 7, Leiden: Brill 1993, 492–493.

-----, “Ibn Ḥawkal,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1965, 786–788.

Mittwoch, E., “Īd,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1971, 1007.

Moberg, A., “Nasī’,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 7, Leiden: Brill 1993, 977.

Mortel, R., Prices in Mecca during the Mamlūk Period, *Journal of the Economic and Social History of the Orient* 32 (1989), 279–334.

Muhammad, *The Message of the Qur’ān*. Translated and Explained by Muhammad Asad, Gibraltar: Dar al-Andalus 1980.

Mulsow, M and Assmann, J. (eds.), *Sintflut und Gedächtnis: Erinnern und Vergessen des Ursprungs*, Tübingen: Max Niemeyer Verlag 1990.

Nasr, S., *An Introduction to Islamic Cosmological Doctrines. Conceptions of Nature and Methods used for its Study by the Ikhwān al-Ṣafā’, al-Bīrūnī, and Ibn Sīnā*, London: Oxford University Press 1964.

Nazmi, A., The Nile River in Muslim Geographical Sources, *Studia Arabistyczne i Islamistyczne* 12/2004 (2006), 28–54.

Netton, I., “Nature as Signs,” *Encyclopaedia of the Qur’ān*, ed. by J. McAuliffe, vol. 3, Leiden: Brill 2003, 528–536.

Neugebauer, O., *A History of Ancient Mathematical Astronomy*, Heidelberg: Springer-Verlag Berlin 1975.

Neumauer, M., “Astral Phenomena,” *The Encyclopedia of the Medieval Chronicle*, vol. 1, Leiden: Brill 2010, 119–123.

Neustadt, D., The Plague and its Effects upon the Mamlūk Army, *Journal of the Royal Asiatic Society of Great Britain and Ireland* 1 (April 1946), 67–73.

Nicolle, D., *Acre 1291: Bloody Sunset of the Crusader States*, Oxford: Osprey Publishing 2005.

Nissen, H., “Temple,” *Brill’s New Pauly. Encyclopaedia of the Ancient World*, ed. by H. Cancik et al., vol. 14, Leiden: Brill 2009.

----, “Yahweh,” *Brill’s New Pauly. Encyclopaedia of the Ancient World*, ed. by H. Cancik et al., vol. 15, Leiden: Brill 2010.

----, “Ziggurat,” *Brill’s New Pauly. Encyclopaedia of the Ancient World*, ed. by H. Cancik et al., vol. 15, Leiden: Brill 2010.

Northrup, L., The Bahri Mamlūk Sultanate 1250–1390, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. by C. Petry, Cambridge: Cambridge University Press 1998, 242–288.

Nünning, A., Krise als Erzählung und Metapher: Literaturwissenschaftliche Bausteine für eine Metaphorologie

- und Narratologie von Krisen, in *Krisengeschichte(n)*. „Krise‘ als Leitbegriff und Erzählmuster in kulturwissenschaftlicher Perspektive, ed. by C. Meyer et al., Stuttgart: Steiner 2013, 117–145.
- Oestigaard, T., *Water, Culture and Identity: Comparing Past and Present Traditions in the Nile Basin Region*, Bergen BRIC Press 2009.
- Oliver, J., “Climate Zones,” *The Encyclopedia of World Climatology*, ed. by J. Oliver, Cornwall: Springer 2005, 270–273.
- Oliver-Smith, A., Theorizing Disasters: Nature, Power, and Culture, in *Catastrophe & Culture: the Anthropology of Disaster*, ed. by S. Hoffman et al., Santa Fe: School of American Research Press 2002, 23–47.
- Oman, G., “al-Idrīsī,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1965, 1032–1035.
- Ortlieb, L., Historical Chronology of ENSO and the Nile Flood Record, in *Past Climate Variability through Europe and Africa*, ed. by R. Batterbee et al., Dordrecht: Springer 2004, 257–278.
- Ostrom, E., *Crafting Institutions for Self-Governing Irrigation Systems*, California Institute for Contemporary Studies San Francisco 1992.

Palmieri, P., Re-examining Galileo's Theory of Tides, *Archive for History of Exact Sciences* 53 (1998), 223–375.

Pankhurst, R., Ethiopia's Alleged Control of the Nile, in *The Nile. Histories, Cultures, Myths*, ed. by H. Erlich et al., Colorado: Lynne Rienner 2000, 25–35.

Pedersen, J., “Abū Nu‘aym al-Isfahānī,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1954, 142–143.

-----, “Masdjid,” *E. J. Brill’s First Encyclopaedia of Islam*, 1913–1936, Brill: Leiden 1987, 376.

Pellat, Ch., “al-Djāhīz,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 2, Leiden: Brill 1965, 385–387.

-----, “al-Mahallī,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 5, Leiden: Brill 1986, 1223.

-----, “al-Mas‘ūdī,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 6, Leiden: Brill 1991, 784–789.

-----, “Anwā’,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 523–524.

-----, “Baybars II,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 1126.

-----, “Kāṣṣ,” *The Encyclopaedia of Islam*, ed. by E. Donzel et al., vol. 4, Leiden: Brill 1978, 733–735.

-----, “Maḥalla,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 5, Leiden: Brill 1986, 1220–1221.

-----, “Maskh,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 6, Leiden: Brill 1991, 736–738.

-----, “Nādira,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 7, Leiden: Brill 1993, 856–858.

Petermann, H., *Reisen im Orient*, vol. 2, Leipzig: Verlag von Veit & Comp 1861.

Petersen, A., “Cairo,” *Medieval Islamic Civilization: an Encyclopedia*, ed. by J. Meri et al., vol. 1, London: Routledge 2006, 129–130.

Peters, F., Hermes and Harran: The Roots of Arabic-Islamic Occultism, in *Magic and Divination in Early Islam. Published in the Series the Formation of the Classical Islamic World*, ed. by L. Conrad Aldershot: Ashgate 2004, 55–85.

Peters, R., Behrens-Abouseif, D. et al., “Wakf,” *The Encyclopaedia of Islam*, ed. by P. Bearman et al., Leiden: Brill 2002, 59–99.

Petry, C. (ed.), *The Cambridge History of Egypt. Islamic Egypt*, 640–1517, vol. 1, Cambridge: Cambridge University Press 1998.

Petry, C., “al-Sakhāwī,” *The Encyclopaedia of Islam*, vol. 8, ed. by C. Bosworth et al., Leiden: Brill 1995, 881–882.

Pines, S., The Semantic Distinction between the Terms Astronomy and Astrology according to al-Biruni, *Isis* 55/3 (1964), 343–349.

Pingree, D., From Alexandria to Baghdad to Byzantium. The Transmission of Astrology, *International Journal of the Classical Tradition* 8/1 (2001), 3–37.

-----, *Jyotiḥśāstra. Astral and Mathematical Literature*, ed. by J. Gonda, Wiesbaden: Otto Harrassowitz 1981.

-----, *The Thousands of Abū Maṣhar*, London: The Warburg Institute of University of London 1968.

Planhol, X., “Earthquakes (In Persia),” *Encyclopædia Iranica*, ed. by E. Yarshater, vol. 7, California: Mazda Publishers 1996, 633–635.

Plessner, M., Hermes Trismegistus and Arab Science, *Studia Islamica* 2 (1954), 45–59.

Plumley, J., The Cosmology of Ancient Egypt, in *Ancient Cosmologies*, ed. by C. Blacker et al., London: George Allen & Unwin Ltd 1975, 17–41.

- Polonsky, A., Basharin, D. et al., Relationship between the North Atlantic Oscillation, Euro-Asian Climate Anomalies and Pacific Variability, *Pacific Oceanography* 2/1–2 (2004), 52–66.
- Popper, W., “Abū al-Mahāsin Ibn Taghrībirdī,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 138–139.
- Popper, W., *The Cairo Nilometer. Studies in Ibn Taghrī Birdī’s Chronicles of Egypt: I*, Berkeley: University of California Press 1951.
- Poussin, L., “Cosmogony and Cosmology (Buddhist),” *Encyclopædia of Religion and Ethics*, ed. by J. Hastings, vol. 4, Edinburgh: T. & T. Clark 1911, 129–138.
- Preiss, R., “al-‘Aynī,” *Encyclopaedic Historiography of the Muslim World*, vol. 1, Leiden: Brill 2003, 115–116.
- , “Ibn Taghrī Birdī, Abū al-Mahāsin,” *Encyclopaedic Historiography of the Muslim World*, vol. 2, Leiden: Brill 2003, 424.
- Qāsim, ‘A., *al-Nil wa-al-mujtama‘ fī ‘aṣr salāṭīn al-mamālik*, al-Qāhirah: Dār al-ma‘ārif 1978.
- , *‘Aṣr salāṭīn al-mamālik*, al-Qāhirah: Dār al-shurūq 1415/1994.
- Quarantelli, E., Statistical and Conceptual Problems in the Study of Disasters, *Disaster Prevention and Management* 10/5 (2001), 325–338.

Quarantelli, E. and Perry, R. (eds.), *What is a Disaster? New Answers to Old Questions*, Philadelphia, Pa.: Xlibris 2005.

Quinn, Q., A study of Souther Oscillation-Related Climatic Activity for A.D. 622–1900 Incorporating Nile River Flood Data, in *El Niño: Historical and Palaeoclimatic Aspects of the Southern Oscillation*, ed. by H. Diaz et al., Cambridge: Cambridge University Press 1992, 119–149.

Rabbat, N., ‘Ajīb and Ghariib: Artistic Perception in Medieval Arabic Sources, *The Medieval History Journal* 9/1 (2006), 99–112.

-----, *The Citadel of Cairo: A New Interpretation of Royal Mamluk Architecture*, Leiden: Brill 1995.

Radtke, B., Das Wirklichkeitsverständnis islamischer Universalhistoriker, *Islam* 62 (1985), 59–70.

-----, Die älteste islamische Kosmographie Muḥammad-i Ṭūsīs ‘Aḡā’ib ul-mahlūqāt, *Islam* 64 (1987), 278–288.

Randall K. Barry (ed.), *ALA-LC Romanization Tables: Transliteration Schemes for non-Roman Scripts; Approved by the Library of Congress and the American Library Association*, Washington: Library of Congress 1997.

Ranft, A. and Selzer, S., *Städte aus Trümmern. Einleitende Überlegungen, in Städte aus Trümmern. Katastrophenbewältigung zwischen Antike und Moderne*, ed. by A. Ranft et al., Göttingen: Vandenhoeck & Ruprecht 2004, 9–25.

Rassi, J., Several Natural Disasters in the East (at the Beginning of the Eleventh Century) and their Consequences, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. by G. Schenk et al., Heidelberg: Springer forthcoming.

al-Rawi, M., The Contribution of Ibn Sīnā (Avicenna) to the Development of Earth Sciences, *Foundation for Science, Technology and Civilisation* (November 2002), 1–12.

Raymond, A., *Cairo*, tr. by W. Wood, Cambridge: Harvard University Press 2000.

-----, Cairo's Area and Population in the Early Fifteenth Century, *Muqarnas* 2 (1984), 21–31.

Rebiger, B., “Leviathan,” *Religion Past and Present*, Brill Online 2013.

Reidegeld, A., *Handbuch Islam: Die Glaubens- und Rechtslehre der Muslime*, Kandern im Schwarzwald: Spohr 2005, 459.

Reiss, W., *Der Nilometer bei Cairo*, in *The Cairo Nilometer: Texts and Studies*, ed. by F. Sezgin, Frankfurt am Main: Institute for the History of Arabic-Islamic Science 2001, 73–79.

Renger, J., “Tiamat,” *Brill’s New Pauly*, Brill Online 2013.

Richards, D., “al-Ṣāliḥ Nadjm al-Dīn Ayyūb,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 8, Leiden: Brill 1995, 988–989.

-----, “Baybars al-Manṣūrī,” *The Encyclopedia of the Medieval Chronicle*, vol. 2, Leiden: Brill 2010, 149.

-----, “Ṣalāḥ al-Dīn,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 8, Leiden: Brill 1995, 910–914.

Richards, F., Nilometer on Roda Island, in *The Cairo Nilometer: Texts and Studies*, ed. by F. Sezgin, Frankfurt am Main: Institute for the History of Arabic-Islamic Science 2001, 80–88.

Ritner, R., Egypt under Roman Rule: the Legacy of Ancient Egypt, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 1–34.

Robinson, A., *Earth Shock. Climate, Complexity and the Forces of Nature*, London: Thames and Hudson 1989.

Robinson, Ch., *Islamic Historiography*, Cambridge: Cambridge University Press 2003.

Robinson, J., Chapter 1: The Historical Point of View, in *Readings in European History, A Collection of Extracts from the Sources Chosen with the Purpose of Illustrating the Progress of Culture in Western Europe since the German Invasions*, vol. 1: From the Breaking up of the Roman Empire to the Protestant Revolt, Boston: Ginn and Company 1906.

Robson, J., “Abū Hurayra,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 129.

Rochberg-Halton, F., *Aspects of Babylonian Celestial Divination: the Lunar Eclipse Tablets of Enūma Anu Enlil*, Archiv für Orientforschung, Horn: Verlag Ferdinand Berger 1988.

Rogers, J. and Jomier, J., “al-Ḳāhira,” *The Encyclopaedia of Islam*, ed. by E. Donzel et al., vol. 4, Leiden: Brill 1978, 424–444.

Rosenthal, F., “al-Maqrīzī,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 6, Leiden: Brill 1991, 193–194.

-----, “Ibn Hadjar al-‘Askalānī,” *Encyclopaedic Historiography of the Muslim World*, ed. by N. Singh et al., vol. 2, Leiden: Brill 2003, 377–381.

-----, “Ibn Ḥadjar al-‘Asḳalānī,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1971, 776–778.

-----, *The Classical Heritage in Islam*. Translated from German by E. and J. Marmorstein, London: Routledge and Kegan Paul 1975.

Rüppel, E., *Reise in Abyssinien*, vol. 1, Frankfurt am Main: Schmerber in Comm. 1838.

Rushdi, S., *The River Nile: Geology, Hydrology, and Utilization*, Oxford: Pergamon Press 1993.

Ruska, J. and Kahl, O., “al-Tifāshī,” *The Encyclopaedia of Islam*, ed. by P. Bearman et al., vol. 10, Leiden: Brill 2000, 476.

Ruska, J., *Kazwīnistudien*, *Islam* 4 (1913), 14–66; 236–262.

-----, *Tabula Smaragdina: Ein Beitrag zur Geschichte der Hermetischen Literatur*, Heidelberg: Carl Winter’s Universitätsbuchhandlung 1926.

Rypka, J., *Iranische Literaturgeschichte*, Leipzig: Otto Harrassowitz 1959.

Sabra, A., *Poverty and Charity in Medieval Islam. Mamluk Egypt, 1250–1517*, Cambridge: Cambridge University Press 2000.

- Saliba, G., The Role of the Astrologer in Medieval Islamic Society, in *Magic and Divination in Early Islam*, ed. by L. Conrad, Aldershot: Ashgate 2004, 340–370.
- Salibi, K., “Ibn Faḍl Allāh al-‘Umari,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1965, 758–759.
- Sāmī, A., *Taqwīm al-Nīl*, vol. 2, al-Qāhirah: Matba‘at al-amīriyah 1334/1916.
- Sandouby, A., *The Ahl al-Bayt in Cairo and Damascus: The Dynamics of Making Shrines for the Family of the Prophet*, University of California 2008.
- Sanders, P., The Fāṭimid State, 969–1171, in *The Cambridge History of Egypt*, ed. by C. Petry, vol. 1, Cambridge: University Press 1998, 151–174.
- Savage-Smith, E., Introduction, in *Magic and Divination in Early Islam*, ed. by L. Conrad, Aldershot Variorum 2004, xiii–li.
- , 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*, ed. by K. Raaflaub et al., London: Wiley-Blackwell 2010, 291–310.

Sayili, A., al-Khwarizmi, Abdu'l-Hamid Ibn Turk and the Place of Central Asia in the History of Science and Culture, *Foundation for Science, Technology and Civilisation* (December 2006), 1–68.

Schacht, J., “Ahkām,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 257.

Scheck, F. and Odenthal, J., *Syrien: Hochkulturen zwischen Mittelmeer und Arabischer Wüste*, Köln: Dumont 2006.

Schenk, G., Disastro, Catastrophe, and Divine Judgement—Words, Terms, Concepts and Images for Threats to Social Order in the long Middle Ages, in *Disaster, Death and the Emotions in the Shadow of the Apocalypse*, ed. Ch. Zika and J. Spinks forthcoming.

Schenk, G., ‘... prima ci fu la cagione de la mala prodenza de’ Fiorentini...’ Disaster and ‘Life World’—Reactions in the Commune of Florence to the Flood of November 1333, *The Medieval History Journal* 10/1&2 (2007), 355–386.

-----, Ein Unstern bedroht Europa. Das Erdbeben von Neapel im Dezember 1456, in *Katastrophen. Vom Untergang Pompejis bis zum Klimawandel*, ed. by G. Schenk, Ostfildern: Thorbecke 2009, 67–81.

-----, Lektüren im Buch der Natur. Wahrnehmung, Beschreibung und Deutung von Naturkatastrophen, in *Geschichte schreiben. Ein Quellen- und Studienhandbuch zur Historiografie (ca. 1350–1750)*, ed. by S. Rau et al., Berlin: Akademie Verlag GmbH 2010, 507–521.

Schenk, G. and Engels, J., Historical Disaster Research. Concepts, Methods and Case Studies, *Historical Social Research* 121 = 32.3/Special Issue (2007).

Schmitz, M., “Ka‘b al-Aḥbār,” *The Encyclopaedia of Islam*, ed. by E. Donzel et al., vol. 4, Leiden: Brill 1978, 316–317.

Schoeler, G., “al-Tha‘labī,” *The Encyclopaedia of Islam*, vol. 10, ed. by P. Bearman et al., Leiden: Brill 2000, 434.

Schulze, R., Islamische Deutungen von Erdbeben und anderen Naturkatastrophen, in *Katastrophen und ihre Bewältigung. Perspektiven und Positionen. Referate einer Vorlesungsreihe des Collegium generale der Universität Bern im Sommersemester 2003*, ed. by C. Pfister et al., Bern 2004, 104–119.

Severt, H., “Ibn Taghrībirdī,” *The Encyclopedia of the Medieval Chronicle*, vol. 2, Leiden: Brill 2010, 840–841.

Sezgin, F. „Geschichte des Arabischen Schriftums,“ vol. 7, Leiden: Brill 1970.

Shavit, Y., Up the River or Down the River? An Afrocentrist Dilemma, in *The Nile. Histories, Cultures, Myths*, ed. by H. Erlich et al., Colorado: Lynne Rienner 2000, 79–105.

Shoshan, B., Grain Riots and the “Moral Economy:” Cairo, 1350–1517, *The Journal of Interdisciplinary History* 10/3 (1980), 459–478.

-----, “Nile,” *Medieval Islamic Civilization: an Encyclopedia*, ed. by J. Meri et al., vol. 1, London: Routledge 2006, 561–562.

Shoshan, B. and Panzac, B., “Wabā’,” *The Encyclopaedia of Islam*, vol. 11, Leiden: Brill 2002, 2–4.

Simpson, J. and Weiner, E. “Catastrophe,” *The Oxford English Dictionary*, vol. 2, Oxford: Clarendon Press, 1989, 971–972.

-----, “Charity,” *The Oxford English Dictionary*, vol. 3, Oxford: Clarendon Press 1989, 42.

Singh, N. and Samiuddin, A., “Ibn al-Dawādārī,” *Encyclopaedic Historiography of the Muslim World*, ed. by N. Singh et al., vol. 2, Delhi: Global Vision Publishing House 2003, 363–364.

Smend, R., *Yahweh War and Tribal Confederation. Reflections on Israel's Earliest History*, Nashville: Tenn Abingdon 1970.

Smith, G., *The Chaldean Account of Genesis: Containing the Description of the Creation, the Fall of Man, the Deluge, the Tower of Babel, the Times of the Patriarchs and Nimrod; Babylonian Fables, and Legends of the Gods; From the Cuneiform Inscriptions*, Minneapolis Wizard, Nachdr. d. Ausg. 1876, 1977.

Smith, J., “Eschatology,” *Encyclopaedia of Qur’ān*, ed. by J. McAuliffe, vol. 1, Leiden: Brill 2005, 44–54.

Sonnabend, H. and Schenk, G., *Initiativen zur historischen Katastrophengeschichte. Untersuchung von Naturkatastrophen mit Stuttgarter Historikern*, Stuttgart: Universität Stuttgart 2006, 78–88.

Spiegelberg, W. „Die demotischen Papyrus,“ *Catalogue Général des Antiquités Égyptiennes du Musée du Caire*, vol. 2, Strassburg: Dumont Schauberg 1908.

Spinage, C., *African Ecology—Benchmarks and Historical Perspectives*, Heidelberg: Springer 2012, 57–141.

Stolz, F., *Jawhes and Israels Krieg. Abhandlungen zur Theologie des Alten und Neuen Testaments*, 60 Zürich Theologischer Verlag 1972.

St. Paul Brotherhood, *The Feast of the Cross*, Southern California:

Coptic Orthodox Diocese of Los Angeles 2010.

Streck, M. and Miquel, A., “Kāf,” *The Encyclopaedia of Islam*, ed. by C.

Bosworth et al., vol. 4, Leiden: Brill 1978, 400–402.

Strohmaier, G., Avicenna und al-Bīrūnī im Dialog über aristotelische

Naturphilosophie, in *Von Demokrit bis Dante: die Bewahrung*

antiken Erbes in der arabischen Kultur, ed. by G. Strohmaier,

Hildesheim: Olms 1996, 342–357.

Sturm, K., Glaser, R. et al., Hochwasser in Mitteleuropa seit 1500 und

ihre Beziehung zur atmosphärischen Zirkulation, *Petermanns*

Geographische Mitteilungen 145/6 (2001), 14–23.

Sublèt, J., “al-Yūnīnī,” *The Encyclopaedia of Islam*, ed. by P. Bearman

et al., vol. 11, Leiden: Brill 2002, 345–346.

Sutcliffe, J. and Parks, J., *The Hydrology of the Nile*, Oxfordshire:

International Association of Hydrological Sciences Press 1999.

Ṭāhir, M., Les grandes zones sismiques du monde musulman à travers

l’histoire—I.L’Orient musulman, *Annales Islamologiques* 30

(1996), 79–104.

-----, *Nuṣūṣ ‘arabiyah ta’rīkhīyah ‘an al-zalāzil wa-al-barākīn fī al-‘ālam*

al-‘arabī wa-al-islāmī: min bidāyat al-ta’rīkh al-islāmī ilā al-qarn al-

thānī ‘ashar al-hijrī (min al-qarn al-sādis ilā al-thāmin ‘ashar al-milādīyayn), al-Qāhirah: al-Ma‘had al-‘ilmī al-faransi lil-āthār al-sharqīyah 2011.

Talbi, M., “Ibn Khaldūn,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1965, 825–831.

Talkenberger, H., *Sintflut: Prophetie und Zeitgeschehen in Texten und Holzschnitten astrologischer Flugschriften 1488–1528*, Tübingen: Max Niemeyer Verlag 1990.

The Chicago Manual of Style: the Essential Guide for Writers, Editors, and Publishers, 16. ed., Chicago: University of Chicago Press 2010.

“The Flood,” *Religion Past and Present: Encyclopedia of Theology and Religion*, Brill Online, 2013.

Theuerkauf, G., *Einführung in die interpretation historischer Quellen. Schwerpunkt Mittelalter*, Paderborn: Schöningh 1991.

Thompson, R., *Vedic Cosmography and Astronomy*, Delhi: Motilal Banarsi Dass Publishers 1989.

Tsugitaka, S., *State and Rural Society in Medieval Islam. Sultans, Muqta’s and Fallahun*, Leiden: Brill 1997.

- Tucker, W., Environmental Hazards, Natural Disasters, Economic Loss, and Mortality in Mamluk Syria, *Mamlūk Studies Review* 3 (1999), 109–128.
- , “Floods,” *Medieval Islamic Civilization: an Encyclopedia*, vol. 1, ed. by J. Meri et al., London: Routledge 2006, 258–259.
- , Natural Disasters and the Peasantry in Mamlūk Egypt, *Journal of the Economic and Social History of the Orient* 24/2 (1981), 215–224.
- , “Weather,” *Medieval Islamic Civilization: an Encyclopedia*, ed. by J. Meri et al., vol. 1, London: Routledge 2006, 859–860.
- Ṭusūn, ḤU., *Mémoire sur l'histoire du Nil*, vol. 1–3, Le Caire: Institut d’Egypte 1925.
- Tvedt, T., *A Bibliography on the River Nile. The River Nile and its Economic, Political, Social and Cultural Role. An Annotated Bibliography*, vol. 1, Bergen: University of Bergen 2000.
- Ullmann, M., *Die Natur- und Geheimwissenschaften im Islam*, Leiden: Brill 1970.
- Vadet, J.-C., “Ibn Mas‘ūd,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 3, Leiden: Brill 1971, 873–875.

- Vagliari, L., “‘Abd Allāh b. al-‘Abbās,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 40–41.
- Vajda, G., “Ahl al-Kitāb,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 264–266.
- , “Dāniyāl,” *The Encyclopaedia of Islam*, ed. by B. Lewis et al., vol. 2, Leiden: Brill 1965, 112–113.
- van Donzel, E., The Legend of the Blue Nile in Europe, in *The Nile. Histories, Cultures, Myths*, ed. by H. Erlich et al., Colorado: Lynne Rienner 2000, 121–131.
- van Esbroeck, M., “Michael the Archangel, Saint,” *The Coptic Encyclopedia*, ed. by A. Atiya, vol. 5, New York: Macmillan Publishing Company 1991, 1616–1620.
- van Steenbergen, J., The Alexandrian Crusade (1365) and the Mamlūk Sources: Reassessment of the Kitāb al-Ilmām of an-Nuwayrī al-Iskandarānī, in *East and West in the Crusader States: Context—Contacts—Confrontations*, ed. by K. Ciggaar et al., Leuven: A. A. Bredius Foundation 2000.
- Varenius, B., *Cosmography and Geography*, ed. by N. Sanson et al., London: S. Roycroft 1683.

Varisco, D., A Rasulid Agricultural Almanac for 808/1405–6, *New Arabian Studies* 1 (1993), 108–123.

-----, The Origin of the *anwā'* in Arab Tradition, *Studia Islamica* 74 (1991), 5–28.

Varlik, N., “Islamic Disease Theory and Medicine,” *Encyclopedia of Pestilence, Pandemics, and Plagues*, ed. by J. Byrne, vol. 1, The United States of America: Greenwood Press 2008.

-----, “Plague in the Islamic World, 1500–1850,” *Encyclopedia of Pestilence, Pandemics, and Plagues*, ed. by J. Byrne, vol. 1, The United States of America: Greenwood Press 2008, 519–522.

Vermeulen, U., Timur Lang en Syrie: la correspondance entre le mamluk Farağ et le mérinide Abū Sa‘īd, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. by U. Vermeulen et al., Leuven: Peeters 1998, 303–311.

Vitaliano, D., Geomythology: Geological Origins of Myths and Legends, in *Myth and Geology*, ed. by L. Piccardi et al., London: Cromwell Press 2007, 1–7.

Vogt, St., Glaser, R. et al., Assessing the Medieval Climate Anomaly in the Middle East: The Potential of Arabic Documentary Sources, *Science Highlights: Medieval Climate* 19/1 (March 2011), 28–29.

von Hees, S., “The Great Fire in Cairo of 1321”—Interactions between Nature and Society, in *A Comparative and Transcultural Survey between Asia and Europe*, ed. by G. Schenk, Heidelberg: Springer forthcoming.

-----, al-Qazwīni’s ‘ajā’ib al-makhlūqāt: An Encyclopædia of Natural History? in *Organising Knowledge. Encyclopædic Activities in the Pre-Eighteenth Century Islamic World*, ed. by D. Pingree et al., Brill: Leiden 2006, 171–186.

-----, Neues zum Verhältnis von Qazwīni’s Āṭār al-bilād zu Yāqūt’s Mu‘ğam al-buldān. Zwei geographische Texte des 13. Jahrhunderts im Vergleich. Qazwīni’s Geographie—ein Plagiat?, in *Akten des 27. Deutschen Orientalistentages. Norm und Abweichung*, ed. by S. Wild et al., Würzburg: Ergon Verlag 2001, 425–435.

-----, The Astonishing: a Critique and Re-reading of ‘Aḡā’ib Literature, *Middle Eastern Literatures* 8/2 (July 2005), 101–120.

von Orthmann, E., Astrologie und Propaganda. Iranische Weltzyklusmodelle im Dienst der Fātimiden, *Die Welt des Orients* 36 (2006), 131–142.

Voss, M., The Vulnerable can't Speak. An Integrative Vulnerability Approach to Disaster and Climate Change Research, Behemoth.

A Journal on Civilization 3 (2008), 39–56.

Waldherr, G., *Erdbeben: das außergewöhnliche Normale; zur Rezeption seismischer Aktivitäten in literarischen Quellen vom 4. Jahrhundert v. Chr. bis zum 4. Jahrhundert n. Chr.*, Stuttgart: Steiner 1997.

Walker, P., The Isma‘ili Da‘wa and the Fātimid Caliphate, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. C. Petry, Cambridge: Cambridge University Press 1998, 120–151.

Walzer, M., The Idea of Holy War in Ancient Israel, *Journal of Religious Ethics* 22/2 (1992), 215–227.

Warner, N., *The Monuments of Historic Cairo. A Map and Descriptive Catalogue*, Cairo: the American University in Cairo Press 2005.

Wassef, C., “Months of Coptic Calendar,” *Claremont Coptic Encyclopedia*, ed. by A. Atiya, vol. 2, New York: Macmillan Publishing Company 1991, 438–440.

Watson, J., Gayer, M. et al., Epidemics after Natural Disasters, *Emerging Infectious Diseases* 13/1 (January 2007), 1–5.

Wehr, H. “A Dictionary of Modern Written Arabic,” ed. by J. Cowan, Wiesbaden: Otto Harrassowitz, 1980.

Weinfeld, M., Divine Intervention in War in Ancient Israel and in the Ancient Near East, in *History, Historiography and Interpretation Studies in Biblical and Cuneiform Literatures*, ed. by M. Weinfeld and H. Tadmor, Jerusalem: Magnes 1983.

Weintritt, O., “Rawda,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 8, Leiden: Brill 1995, 463.

-----, The Floods of Baghdad. Cultural and Technological Responses, in *Natural Disasters, Cultural Responses. Case Studies toward a Global Environmental History*, ed. by Ch. Mauch et al., Lanham: The Rowman & Littlefield Publishing Group 2009, 165–182.

Weippert, M., ‚Heiliger Krieg‘ in Israel und Assyrien. Kritische Anmerkungen zu Gerhard von Rads Konzept des ‚Heiligen Krieges im alten Israel‘, *Zeitschrift für die alttestamentliche Wissenschaft* 82 (1972), 460–493.

Welsch, W., Transculturality—the Puzzling Form of Cultures Today, in *Spaces of Culture: City, Nation, World*, ed. by M. Featherstone et al., London: Sage 1999, 194–213.

Wensinck, A., “Amr b. al-‘Āṣ,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1960, 451.

-----, “*Khuṭba*,” *The Encyclopaedia of Islam*, ed. by C. Bosworth et al., vol. 5, Leiden: Brill 1986, 74–75.

-----, “*Munkar wa-Nakīr*,” *Encyclopaedia of the Islam*, ed. by C. Bosworth et al, vol. 7, Leiden: Brill 1993, 576–577.

Wheeler, B., *Moses in the Quran and Islamic Exegesis*, London: Routledge Curzon 2002.

Whetton, P. et al., Historical ENSO Teleconnections in the Eastern Hemisphere, *Climatic Change* 28/3 (1994) 221–253.

Whetton, P. et al., Historical ENSO Teleconnections in the Eastern Hemisphere: Comparison with Latest El Niño Series of Quinn, *Climatic Change* 32/1 (1996), 103–109.

White, H., *The Content of the Form: Narrative Discourse and Historical Representation*, Baltimore: Johns Hopkins UP 1987.

Wiet, C., “Baybars I,” *The Encyclopaedia of Islam*, ed. by H. Gibb et al., vol. 1, Leiden: Brill 1954, 1124–1126.

Wijntjes, Th., Sultan al-Zāhir Barqūq as Seen by his Contemporaries Ibn Khaldūn and Bertrando de Mignanelli, in *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras*, ed. by U. Vermeulen, Leuven: Peeters 2010, 383–394.

Wilcke, Claus, Weltuntergang als Anfang. Theologische, anthropologische, politisch-historische und ästhetische Ebenen der Interpretationen der Sintflutgeschichte im babylonischen Atram-hasīs-Epos, in *Weltende. Beiträge zur Kultur- und Religionswissenschaft*, ed. by A. Jones, Wiesbaden: Harrassowitz Verlag 1999, 63–105.

Wilfong, T., The non-Muslim Communities: Christian Communities, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. by C. Petry, Cambridge: Cambridge University Press 1998, 175–197.

Willcocks, W., *Egyptian Irrigation*, vol. 1–2, London: Spon & Chamberlain 1913.

Winter, M., *Egyptian Society Under Ottoman Rule, 1517–1798*, London: Routledge 1992.

-----, The Ottoman Occupation, in *The Cambridge History of Egypt. Islamic Egypt, 640–1517*, ed. by C. Petry, Cambridge: Cambridge University Press 1998, 490–517.

Wittfogel, K., *Oriental Despotism: A Comparative Study of Total Power*, New Haven: Yale University Press 1957.

Wright, W., *A Grammar of the Arabic Language*, Cambridge: Cambridge University Press 2004.

Young, D. (ed.), *The Search for the Source of the Nile: Correspondence between Captain Richard Burton, Captain John Speke and others, from Burton's unpublished East African Letter Book*, London: Roxburghe Club 1999.

Ziemech, S., The Mamluks in History, *Foundation for Science, Technology and Civilisation* (June 2004), 1–9.

Zinner, E., Die Sternbilder der alten Aegypter, *Isis* 16 (Juli 1931), 92–101.

Zysow, A., “Zakāt,” *The Encyclopaedia of Islam*, ed. by P. Bearman et al., vol. 11, Leiden: Brill 2002, 406–422.