

A New Arabic Nautical Manuscript in Lisbon

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A previously unstudied Arabic nautical autograph manuscript has been recently brought to light in Lisbon. An early nineteenth-century bundle including at least three distinct works in almost one hundred leaves, it contains stellar route bearings and coastal descriptions, extensive astronomical, geographical, and traverse tables, in addition to a number of Islamic ethical sections and Sufi prayers. While the textual tradition remains inconclusive, authorship rests partly with an ‘Abd Allāh b. Aḥmad b. ‘Abd al-Razzāq, from Šūr. The main physical and textual features are given here to lay the ground for further study.

Preliminary work by the *RUTTER* project team in Lisbon¹ has brought to light a remarkable Arabic nautical manuscript,² which must count as one of the most valuable in the largely unexplored Orientalia collection of the Biblioteca Nacional de Portugal (BNP). It was acquired by the Library in the early twentieth century and shelf-marked Or. 2. Its content could be characterised as an intermediate stage between fifteenth and sixteenth-century nautical works (Aḥmad b. Māğid; Sulaymān al-Mahrī), and the later eighteenth and nineteenth-century Gujarati *mālam-nī pothīs* (‘books of the captain’).³ This manuscript stands out as a unique witness to the survival of the Arabic nautical tradition and its gradual incorporation of western techniques. The following pages introduce the manuscript, preparing the ground for further specialised work while drawing attention to passages of particular interest.

Physical description

MS Lisbon, BNP, Or. 2 is not a codex *stricto sensu* but rather a bundle consisting of an unbound stabbed-sewn⁴ stack of 89 paper folia numbered 1 to 94 (foliation skips from f. 24 to f. 26 and from f. 50 to f. 56; f. 82 is counted twice) plus six detached leaves. Of these latter, two are illustrations detached from the main block, two are what I call here ‘flyleaves’, and two are a bi-

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2 I am most grateful to our colleague Carlos Neves, who brought the manuscript to my attention and took a first set of pictures. I would also like to extend warm thanks to the staff of the Rare Book and Manuscript Reading Room at the Biblioteca Nacional, Lisbon, who have been unfailingly courteous and forthcoming at every step.

3 Sheikh 2009, 68. For a recent overview, see Acevedo and Bénard 2020.

4 On stabbed-sewn manuscripts, see Schepers 2015, 71.



Fig. 1. MS Lisbon, BNP, Or. 2: block on the left (f. 94v), first detached folium (f. 1r) at the centre, inset bifolium on the right.

folium which I call ‘the inset’ (fig. 1). That is, in total, 95 folia of text and illustrations.

The trim size of the textblock is 290 × 188 mm. The outer edges show signs of having been trimmed with a power cutter, damaging and making unreadable some of the fortunately infrequent marginalia. The inset bifolium page measures 310 × 210 mm and its edges are untrimmed.

In spite of the size differences, the paper used in the bundle is all equally watermarked with the *tre lune* motif (fig. 2), except for the flyleaves which use swan watermarked paper (fig. 3), and ff. 76r–82v, which have a coat of arms mark. The texture of the inset is slightly more felty, and the hand and the ink are different from the main textblock—it seems evident that it did not originally belong to the block.

The *tre lune* or ‘three crescents’ watermark (Arabic *waraq hilālī*),⁵ indicates broadly an origin after the sixteenth century.⁶ This particular design looks very similar to the production of an eighteenth-century Toscolano paper mill.⁷ I have not been able to identify the sharp-beak swan of the flyleaves.

The textblock written area is framed with double red lines about 10 mm off the paper edge. Pages have normally 26 lines of text, going down to 24 and up to 28 lines on occasion. The foliation looks modern, written with pencil in European numerals; I would assume it was added upon acquisition by the BNP.

5 See Bloom 2008, 50.

6 Lewincamp 2012, 99–100.

7 Information from the Bernstein Project portal, s.v. ‘tre lune’ (<www.memoryofpaper.eu/BernsteinPortal/>).



Fig. 2. MS Lisbon, BNP, Or. 2, f. 94r, ‘three crescents’ watermark.

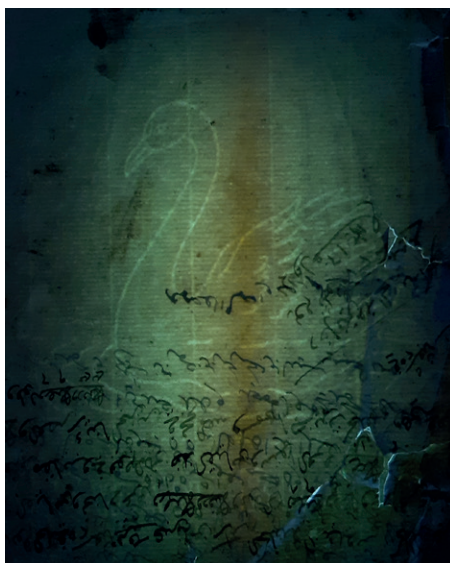


Fig. 3. MS Lisbon, BNP, Or. 2, flyleaf 1 watermark.

There are frequent smudges throughout the text, and occasionally stains of a greasy substance, but readability is seldom impaired.

Palaeography

Five different hands can be identified in the bundle: one in the textblock (including the two loose folia), one in the flyleaves, two in the inset, and one in an interpolated set of tables (76r–82v). The first four are in a somewhat coarse plain Naskh, with rubrication throughout, mostly for sectioning and to highlight tabulated information, but also haphazardly ornamental. The flyleaves are in a hurried and lighter Naskh hand, and I shall comment on them later.

Letters are occasionally lacking diacritical dots and only rarely display vocalization in red. *Tā maftūḥah* instead of *marbūṭah* is prevalent (e.g. *passim*, *ḡazīrat* for *ḡazīrah*), just as *alif ṭawīlah* is often found instead of modern spelling *maqṣūrah* (fig. 4).

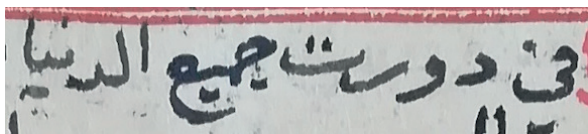


Fig. 4. MS Lisbon, BNP, Or. 2, f. 4r: *tā maftūḥah* example: *fi dawrat ḡamī' al-dunyā*.

Contents

There is no title page proper in the manuscript, but we have three ‘first’ pages where a title is given (1r, 31r which bears a little decoration, and 84r), and five colophons (10v, 11v, 28r, 90v, 94v). This discrepancy, as will be shown later, already alerts us to the fact that the manuscript bundle is far from being a coherent textual plurality. Breaks in the page sequence are apparent; it is obvious that to a certain extent there has been mispagination; and my preliminary attempts at reconstructing the page sequence make me strongly suspect that some pages are missing. It is in good part thanks to the well-sewn folia with their late-pencilled foliation, and thanks to the neatly trimmed edges that a unitary impression is conveyed; the other part of this impression is rightly owed to the mostly homogenous handwriting. My assumption is that we deal with a collection of three or more works of practical nautical, geographical, and religious use, which were copied together in the early nineteenth century. They must have been only bound together some time after they had been in use, certainly before their arrival at the BNP in the early twentieth century, which would explain the damage to the spine of the textblock. In contrast, the good state of the block edges seem to indicate that the trimming was done around the time of acquisition by the Library.

I have not tried to unravel the composition conundrums posed by the manuscript, since that would have demanded a study beyond my remit. What I shall do now is to give an overview of the contents in some detail, discussing some of the most interesting authorial and bibliographic issues raised.

Starting from the current arrangement of the material and staying close to it, while also introducing some expositional ordering, I will start with the detached folia, and then use as headings and sectioning references the three titles mentioned in the manuscript, namely (1) *Salwat al-mahmūm wa-al-‘iṭr al-mašmūm fī ‘ilm al-mubārak ‘alā al-‘alāmāt wa-al-mağārī wa-al-nuğūm* (‘The Solace of the Distressed, and the Fragrant Perfume on the Blessed Science of Seamarks, Routes and Stars’), ff. 1r–30v; (2) *Farağ al-sā’ilīn wa-qiblat al-muṣallīn* (‘The Relief of Those Who Ask and the Qiblah of Those Who Pray’), ff. 31r–83r; (3) *Ḍaw’ al-qamarīyah* (‘The Radiance of the Moon’), ff. 83v–90v.

Flyleaves

Both flyleaves have similar contents, yielding precious information about the manuscript. Because they are both similar, it is easy to imagine them as the two ends of what must have been a somewhat unitary bundle of sailing instructions, hence my calling them flyleaves. They have the same paper, as mentioned above, different to the sewn textblock, and they are by the same hurried hand (fig. 5).

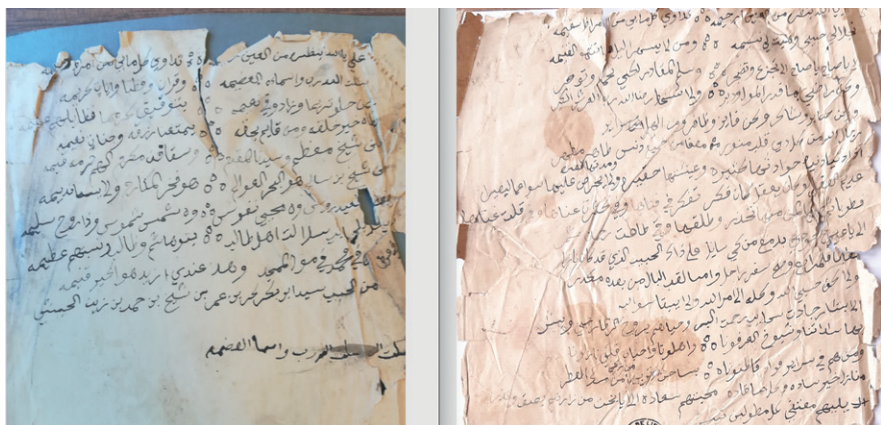


Fig. 5. MS Lisbon, BNP, Or. 2, flyleaves 1r and 2r: Sufi prayers.

Flyleaves are both badly creased on the edges, partly broken and stained. On the recto, each one has verses from a well known Yemeni Sufi prayer, *A-lā yā Allāh bi-nazrah min al-‘ayn al-rahīmah* (‘O dear God for a glance of your merciful eye’). This devotional qasida by the Yemeni Sufi master ‘Abd Allāh b. ‘Alawī al-Haddād (1634–1720) has been popular for centuries and it is still sung today throughout the Indian Ocean shores, from Aden to Indonesia.⁸ This very well attested authorship is one of several chronological indicators, setting a useful *terminus post quem* for the flyleaves.

One of the verso pages (flyleaf f. 2v) contains six lines of text mentioning a passage in the month of Šawwāl 1317 (c. February 1900),⁹ from Ras Madrakah, Oman, to Mumbai, with coordinate values given using Greenwich longitude, unlike all other longitudes in the manuscript, which use a westerly ‘Ptolemaic’ prime meridian. This date, c. 1900, is the latest of the several dates given in the manuscript. An unusual table of twelve rows and the following thirteen columns: 1–days of the week, starting on the first row with *yawm al-arba ‘ā* (Wednesday); 2–month (*šahr*, possibly lunar day); 3–*rūz* (‘day’ in Persian;¹⁰ values obtained by adding thirteen to the previous cells); 4–*nayrūz* (the values, around 180, would seem to be the count of days in relation to the beginning of the year); 5–inclination (*al-mayl*); 6–sextant (*kamāl*); 7–??

8 al-Haddād n.d., 258–261.

9 I shall be using henceforth the date converter created by J. Thomann and hosted at the University of Zurich (<<https://www.aoi.uzh.ch/de/islamwissenschaft/hilfsmittel/tools/kalenderumrechnung/hegira.html>>).

10 With thanks to Razieh-Sadat Mousavi (Humboldt-Universität zu Berlin) for various helpful suggestions reading this table.

Fig. 6. MS Lisbon, BNP, Or. 2, flyleaf f. 2v: table.

(*ṣāfiʿ*??); 8–divider/partition?? (*fāsil*??); 9–departure (*masāğ*);¹¹ 10–longitude (*tūl*);¹² 11–load?? (*himla*??); 12–?? (*naklī*??); 13–a formula is repeated in every cell of this column: *Allāh a‘alam bi-l-ṣawwāb* (‘God knows best with precision’; fig. 6). The impression is certainly not that of an astronomical or geographical table, but rather that of some type of captain’s or general shipping log.¹³

The other verso page (flyleaf-1v) mentions in the central text a trip from Koyilandy, just north of Kozhikode (Calicut), to the island of Kalpeni in the

11 Al-Hijji 2013, 38. See also below, under Traverse Tables.

12 The values given are not longitude values in our geographical understanding of the term, but they might refer more literally to the length of distance travelled, or the length overall of a vessel.

13 I am most grateful to José Manuel Malhão Pereira, Henrique Leitão and other colleagues from the RUTTER project, and to Joaquim Alves Gaspar of the Medea-Chart Project, who have generously offered their time to help me make sense of these and other intricacies of the manuscript which are beyond the knowledge of a landlubber.

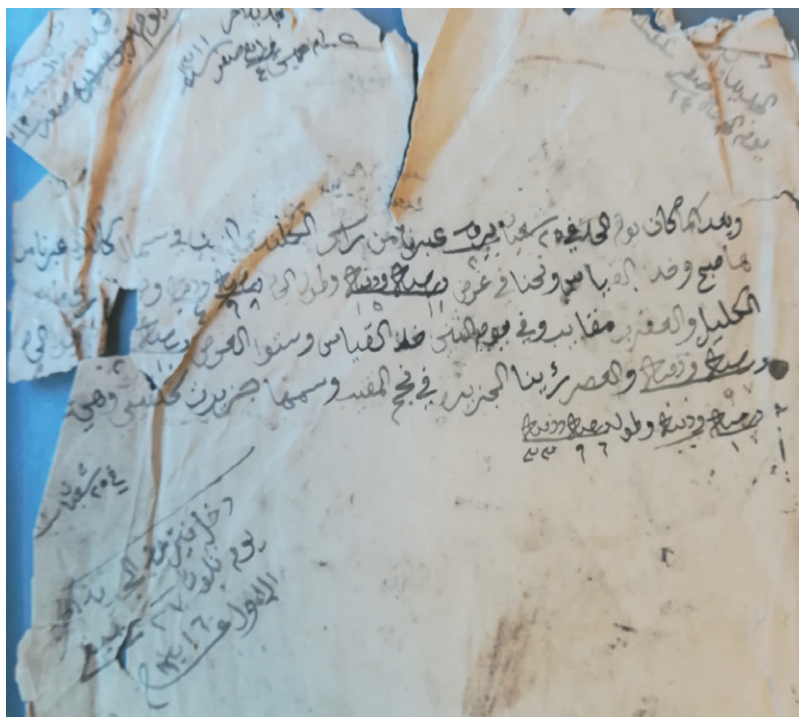


Fig. 7. MS Lisbon, BNP, Or. 2, flyleaf f. 1v before restoration.

Lakshadweep archipel, taking ‘the route between Iklīl and Scorpio’, i.e. between SW and SbSW according to the Arabic stellar compass rhumbs;¹⁴ the year is illegible. Notes on the corners give some more dates of interest: 1–‘the new Nayrūz¹⁵ entered for the next year on 4 Safar 1311’ (24 August 1893); 2–‘on 25 Ša‘bān 1311’ (3 March 1894); and 3–‘the new Nayrūz entered on Tuesday 27 Rabī‘ al-Awwal 1316’ (15 August 1898).

My current assumption, given the state of the paper, the quality of the handwriting, and the contents, is that these two ‘flyleaves’ were at some point used as wrappers or soft covers for the textblock. If such were the case, they would be a testimony, and indeed a dated testimony, to the practical nautical use of the manuscript over a period of time, from 1893 to 1900 (fig. 7).

Inset

This bifolium contains in the inner spread (ff. 1v–2r) a remarkable set of colour illustrations of the relative positions of the boat and the sun, giving the

14 Staples and Al Salimi 2019, 400.

15 About these and similar Nayrūz dates, see my notes below under End Matters.



Fig. 8. MS Lisbon, BNP, Or. 2, bifolium illustrations: solar altitude guidelines.

basics of a ‘regiment of the sun’—solar altitude guidelines. There are four frames on each page, with two panes each and a central dividing line, and varying possible positions. Each frame has an explanatory headline. On the outer margin there are some calculations or values labelled *al-kamān* (a sextant)¹⁶ with columns for degrees and seconds (fig. 8).

The first frame, by way of example, reads: ‘When the sun is north of the line and the boat south of the line from you, you have to deduct the inclination from the sextant (*kamān*), and the remainder is the latitude you want’.

The first recto of the bifolium presents us with what appears to be a modern-day traverse table and instructions for its calculation, with the heading: ‘Knowledge of the usage of the constants (*qawā'id*), made clear by the table for the calculation of the advance (*mašāt*)’.

The last verso is a full running text page commenting on the solar positions as per the illustrations above.

Salwat al-mahmūm

The full title of this treatise presents us with a conundrum. Brockelmann registers a suggestively similar title in Mosul, *Fikrat al-humūm wa-al-ḡumūm wa-al-’iṭr...* (‘The Reflection on Sorrows and Afflictions, and the Fragrant Perfume...’), listing it among the works of Aḥmad b. Māḡid, the doyen of pre-

16 For this instrument, and its identification with the *kamāl*, see De Hilster 2018, 129–134.

modern Arabic nautical literature,¹⁷ but I have been unable to find any mention of it anywhere else, even though there is a sizeable body of Ibn Māğid related literature by now. More remarkable still is that the most likely source for Brockelmann in this case, the Iraqi scholar Dāwūd Çelebī, mentions what must be a copy of our *Salwah* in a 1931 article titled *Abnā' Māğid al-nağđīyūn* ('The Two Nağđi Ibn Māğids').¹⁸ Çelebī describes a manuscript collection of nautical writings, observing that 'it seems to be an important work'; moreover, he quotes a few lines of the text which match the contents of our manuscript¹⁹ and which parallel the contents of chapter 9 of Ibn Māğid's *Fawā'id fi uşūl 'ilm al-baħr* ('Useful Notes on the Principles of Maritime Science'). The text described by Çelebī matches the description and excerpts of a manuscript he had mentioned earlier in his comprehensive survey of manuscripts in the region.²⁰ Unfortunately, I have not been able to confirm the existence of this manuscript in Mosul after the ravages of 2015. If the identity between our text and that of the Mosul manuscript seems warranted by Çelebī's description, the attribution to Ibn Māğid seems much more difficult to establish with certainty, but I shall leave further authorship considerations for my conclusion, once I have presented in more detail the contents of the manuscript.

Apart from this Mosul witness, and as I shall mention below, there seems to be a second closely related manuscript in Cairo, for which we have a catalogue entry without title. Finally, as a fourth witness to a similar text, Ḥasan Şāliħ Şihāb published in 1984 a small book on a Kuwaiti manuscript with a very similar title, *Furğat al-humūm wa-al-ğumūm fī al-'alāmāt wa-al-masāfāt wa-al-nuğūm* ('The Relief of Sorrows and Anxieties by the Seemarks, Distances and Stars').²¹ Şihāb explains that only 35 leaves are extant and he gives a summary of the contents, which parallel the contents of our manuscript closely, even in the fact that they include sketches and tables. Unfortunately, I have not been able to identify, in the pages reproduced by Şihāb, any passage in MS Lisbon, BNP, Or. 2. I wonder if the differences in the title wording, and perhaps also in the contents, might not indicate that both Arabic texts are translations of an original in another language. This would be an extremely interesting case—unlikely when we remember that the formal and thematic precedents for this literature in this region are precisely Arabic-language precedents—but I would not discard this possibility without first examining at least the Cairo manuscript.

17 Brockelmann 2012, 239.

18 Çelebī 1931, 1–5.

19 Digital edition of the journal at <<https://al-maktaba.org/book/32106/5829>>.

20 Çelebī 1927, 280, par. 67.

21 Şihāb 1984. I am grateful to the Library of the Oxford Centre for Islamic Studies, who granted me digital access to this title in the middle of the Covid pandemic.

The text on f. 1 starts abruptly in the middle of what seems prefatory material, speaking about the wonders of the natural world and tracing the origins of nautical sciences and geography to Noah. Worthy of note, as one of the spelling oddities found in the text, is the mention of Gog and Magog as *Ġāḡūḡ wa-Māḡū* (initial *ḡīm* and final *‘ayn*). On line 18 the title of the work is given, and then the topics to be treated are mentioned in more detail:

... the science of seamarks, of stars, routes; the calculation of the famous lunar stations; the zodiac signs mentioned in the book of God; the months and days and hours, and the increase of night and day and the movement of the sun in the tropic; the calculation of the four seasons; knowledge of the four cardinal directions, and the apportioning of latitude and longitude for all countries.

This synoptic introduction is wrapped up at the end of f. 1v with a Qur’ānic citation and a hadith, then eleven verses beginning *Ammā al-manāzil wa-al-burūḡ qad dukirat* (‘The lunar stations and the zodiac signs have been mentioned’), and a request for prayers from the reader.

The first pages give, in brief sections (*abwāb*), basic astronomical information, such as the sequence of the zodiac signs, their correspondence with the seasons, and an enumeration of the 32 rhumbs of the stellar compass used by the Arab sailors. On f. 4r there is an obvious break, evidence of either lost folia or mispagination which I have not been able to rectify. The following pages start listing sailing routes ‘throughout the world’, and in this, as mentioned above, they follow very closely Chapter 9 of Ibn Māḡid’s *Fawā’id*;²² this means they start from Ras al-Hadd on the Omani coast, go down the Yemeni coast to Bab el-Mandeb and along the Red Sea coast, even mentioning Suez as the northern limit. The East African coast down to Ethiopia, with an excursus on the African peoples, and another on the general boundaries of the Mediterranean. Then the ports around the Persian Gulf are mentioned. On f. 7r, routes are described in some more detail, e.g. from Ṣūr (Oman) to Basra, giving indications regarding the stellar rhumbs. From f. 8r indications for routes to the Swahili Coast are given, then towards Madagascar and the Khambayat coast (Madhavpur, Surat) and down to Mumbai. On f. 10r we have again a sort of ‘sun regiment’, instructions to determine the ship’s position by using a sextant (*kamān*) to measure the solar altitude. Very interestingly, right after these instructions we find a reference to Abū ’l-Fidā’ (d.1331) and to al-Mas’ūdī (d.956), who certainly did not possess the same kind of instrument.²³ On f. 7v, we have finger (*banān*) measures of the Polar Star altitude for vari-

22 See Ibn Māḡid 1971, 265–288; Tibbetts 1981, 204–207.

23 There is some historical conflation between a wooden quadrant and the modern sextant proper, both called *kamāl/kamān* in Indian and Arabic sources; see De Hilster 2018, 134.

ous locations; starting with Basra and ending with Hirab on the Somali coast, near Mogadishu. It should probably be considered relevant in terms of dating that the Hirab Imamate had its heyday between late seventeenth and late nineteenth century.

The end of this folium (f. 10r) is important in relation to the authorship of the manuscript. We have here the first of several ‘colophons’ (or some sort of colophonical material) mentioning the name which comes up repeatedly as the copyist or compiler or even author of the text, ‘‘Abd Allāh ibn Aḥmad ibn ‘Abd al-Razzāq ibn al-Šayḥ Muḥammad ‘Abd al-Malik ibn ‘Abd al-Ḥaqq Abā Raġā’, Ġaḥfalī by family name, Šafi‘īte, dwelling in Sur, the pilot (*al-mu‘al-lim*)’. The only record I have found for a person with this name comes from an encyclopedia of Shiite scholars, where ‘Abd Allāh ibn Aḥmad ibn ‘Abd al-Razzāq, characterised as in our manuscript, is mentioned as the author of *al-Mawlidīyah*, a collection of songs for the Prophet composed in AH 1254 (c. AD 1838).²⁴ This year tallies, as will be seen, with the different dates given through MS Lisbon, BNP, Or. 2, and it is the most direct historical reference we have. In fact, on f. 10r he appears as a copyist, his name introduced by the customary *bi-ḥatt*, ‘by the writing of’, and a date is given at the end: Šawwāl 1239 (c. June 1824). An almost identical ‘colophon’ ending is given on f. 11v, after a section on anchorages. These two final-looking pages include some advice for pilots:

to be successful on a boat trip, the first thing is to consider the bad and the good traits of the people on board... the destination star upon which you calculate your rhumb... precaution and attention to trouble with the cargo... Some ships were lost because they did not have judgment, like an undiscerning child... then fear comes and shakes the heart like a leaf under the wind.

From f. 12r to f. 27r we have an uninterrupted series of geographical tables, under the heading, ‘Name, latitude and longitude of the locations of the Arabs and East Africa’. There is no f. 25, but it looks like a simple foliation mistake. The first entry is Ra‘ṣ Ḥawr al-Bašrah, ‘the head of the bay of Basra’, and the last one is Šiḥr, on the southern coast of Yemen. Latitudes are usually off modern values by only 10–20 minutes, but longitudes are off by 22°–23°, i.e. they use some sort of Ptolemaic prime meridian; the values above would indicate Cape Verde.²⁵ I have done a preliminary and very partial collation of latitude and longitude values, and the coordinates given in general are not Ptolemaic, and they also are not in agreement with any of the astronomical manuscript sources gathered by Edward Stewart Kennedy and Mary Helen

24 Tehrani n.d., 104–105.

25 Regarding generally this question of the meridian used by Arab navigators, see Mercier 2020.

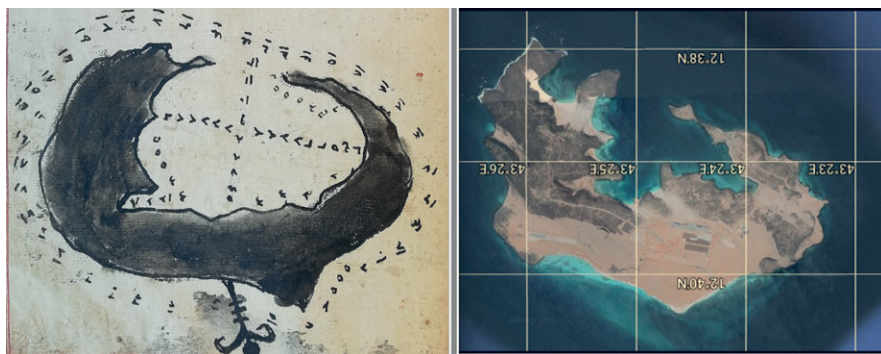


Fig. 11. MS Lisbon, BNP, Or. 2, f. 30r, perim contours vs. Google Earth image (N is down).

F. 21v is notable for the enigmatic signs found in several cells next to the location names (fig. 10). They are in red ink and look like variants of Indo-Arabic numerals.²⁷ The question raised is why use them in this way, right next to the fully functional set of numerals used for all the coordinate values? Nothing in the cell contents seems to warrant the difference.

After the geographical tables, from f. 27v, we have seven pages with mixed contents: determination of anchorages on the Malabar Coast, a section on seamarks near Goa, astronomical indications for routes involving Mumbai and other locations on the Konkan Coast. On f. 30r there is a description of a trip near Aden, with a sketch of Perim Island including depth soundings (fig. 11).

Finally, f. 30v presents us with a truly remarkable glimpse into the transmission of scientific knowledge through Indian Ocean cultures. This page has the heading *Şifat kitāb al-anqrīz hisāb wa-‘adaduhum* (‘Description of the English writing, its reckoning and its numerals’)²⁸ and it is a basic introduction to the shapes of European Indo-Arabic numerals and to the names of months and weekdays, not only comparing them with Arabic but also with Gujarati (fig. 12).

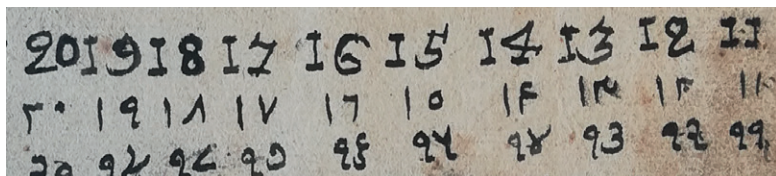


Fig. 12. MS Lisbon, BNP, Or. 2, f. 30v, ‘English’, Arabic, and Gujarati numerals from 11 to 20.

27 I am grateful to Charles Burnett of the Warburg Institute for his help with this particular set of symbols.

28 Regarding the highly unusual *anqrīz* or *anqarīz* for ‘English’, possibly influenced by Gujarati and Hindi, see ‘Ubūdī 2005, II, 319–320.

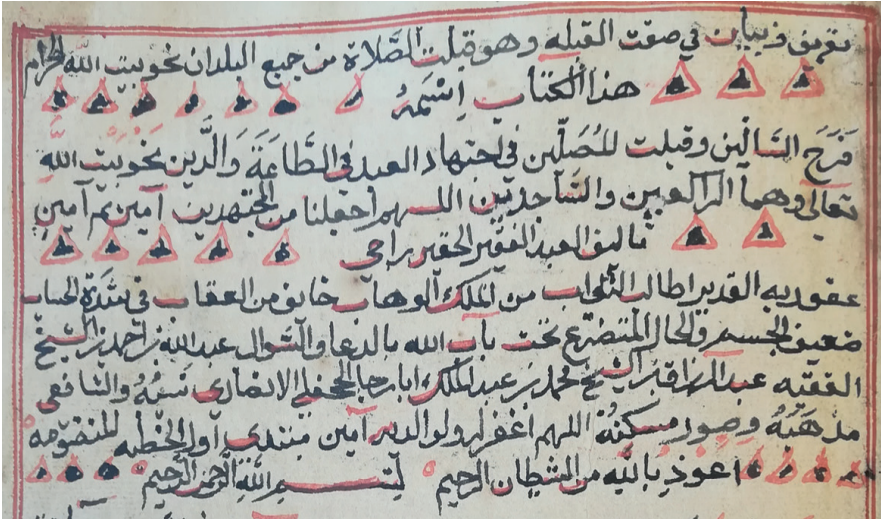


Fig. 13. MS Lisbon, BNP, Or. 2, f. 31r, *Faraḡ al-sā' ilīn*, title page.

Standing alone within the manuscript, this page contents is barely related to the remaining folia other than as a key to reading the data. However, it is a striking testimony to the particular historical period of authorship and also to the geographical sphere of activity. The now mildly amusing fact of calling European numerals ‘English’ would indicate a period of redaction around the major British expansion in the region; we may remember that the rule of the East India Company on the Indian subcontinent dates from *c.* 1757, and that the Persian Gulf Residency began in 1763. Bringing into focus Gujarati numerals, months and weekdays testifies, much more than other general hints found in the manuscript, to the intensity of relations of every kind between the Arabian Peninsula and Gujarat. I expect that detailed comparative work shall bring to light numerous commonalities between our manuscript and the as yet little studied traditions of Gujarati *mālam-nī pothīs*,²⁹ or pilot manuals, and others such as Malayalam nautical literature.³⁰

Faraḡ al-sā' ilīn

This is the only title page proper in the bundle, and the only work of clearly explicit authorship by ‘Abd Allāh ibn Aḥmad ibn ‘Abd al-Razzāq (fig. 13).

‘Some of my brothers have asked me to explain what would provide ease and solace from among beneficial writings, and the answer to that is the knowledge of the direction (*qiblah*) of the House of God, the sacred Kaabah,

29 Goswamy 2006.

30 Varadarajan 2004.

which is the direction of the canonical prayer'. In tune with these opening lines, the treatise is a gazetteer of geographical coordinates and qiblah bearings for a long list of locations, starting with the coordinates of Mecca, going down the Red Sea coast and then turning to the Persian Gulf shores. Being part of a genre which exceeds the geographical boundaries of the Indian Ocean pilots and their nautical gazetteers, our listing then reaches as far north and inland as Cairo and Jerusalem. Locations on the southern Yemeni coast are also included, then as far south as Zanzibar and Madagascar, and finally Indian locations: Rajapur, Kozhikode, Sri Lanka. And so this small and specific work, 'by the pen of the author himself 'Abd Allāh ibn Aḥmad ibn 'Abd al-Razzāq', comes to a close with a colophon on f. 35r, dated in Ramadan AH 1243 (around AD April 1827).

The next page contains what might be seen as an end-poem by the author; nineteen verses praising God and admonishing against unbridled passion. It begins, *A 'uḍu bi-llāh min al-šayṭān * min al-'ayn akbar al-'udwānī...* ('I take refuge in God from Satan, from the evil eye, greatest enemy...'), and ending: *fa-dhammahā al-khāliq huwa al-gharad al-qalā * fa-innahā dār al-hānah wa-al-balā* ('The creator has reproved it [vice], and he [the devil] is the aim of loathing * for it is the abode of degradation and affliction').

F. 36 is likely misbound, or else something is missing before it. It contains some paragraphs on Socotra, with a sketch, followed by a description of Persian Gulf islands and locations from Bushehr to the bay of Basra, and anchorages in Persia.

Traverse tables

Ff. 37r to 64r contain 43 three-column traverse tables,³¹ showing the relations between the values of *masāğ* (departure, in nautical miles, probably), *'arḍ* (difference in latitude, given in arc minutes, probably) and *tūl* (distance or longitude, also in arc minutes; fig. 14). In this context, departure means the distance travelled in EW or WE direction, and it is put in relation with changes in latitude and a knowledge of course angle or the distance travelled.³² Departure values go from 1 to 100, then in hundreds to 400, so every table has 103 rows. The 45 tables correspond to the 45 degrees (*nukat ḥann*, rhumb notches) of one single quadrant of the compass, and so they would be used for all four quadrants, switching as needed the column values and the 'sign' of the degrees. Each of the main divisions is under the heading of the star corresponding to the traditional rhumb, e.g. Polaris for due north, Capella for

31 I am particularly grateful to Eric Staples and Samuel Gessner for their help with these tables. As mentioned above, there is a pagination jump from f. 50v to f. 56r, with no loss—a likely pagination error.

32 Al-Hiğgi 2013 passim.

The image shows a manuscript page with three columns of tables. The page is titled 'شبابش اولجاه و قطب' (Shabash al-Uluja' wa Qutub) and 'نكتن' (Nakhtan). The page number '37' is written in the top left corner. The tables are organized into three main sections, each with its own header and data rows. The first section on the left has a header 'طول' (Tawil) and 'نقطه' (Nuqtah). The middle section has a header 'طول' (Tawil) and 'نقطه' (Nuqtah). The right section has a header 'طول' (Tawil) and 'نقطه' (Nuqtah). The data rows contain numerical values in Arabic script, representing traverse tables.

Fig. 14. MS Lisbon, BNP, Or. 2, f. 37r, first page of the traverse tables.

NE, and so on. In this usage of modern trigonometrical calculations, which imply the use of a sextant while retaining the stellar names of rhumbs, we find a remarkable hybrid technique, still with one foot in the ancient tracks of the early modern nautical masters of the Arabian Sea.

Quite notably, these tables are practically identical to the tables found decades ago by David A. King in MS Cairo, Dab al-Kutub al-Misraya (DM), 570, ‘an Ottoman compendium of unknown provenance, apparently compiled in the nineteenth century’.³³ A detailed comparison between these two compendia is promising and it would be of high priority towards answering at least some of the textual questions raised by our manuscript.

Quadrennial sun declination tables

From f. 64r to f. 72r we have a set of four solar tables with degrees and minutes columns for each zodiac sign. Worth noting, because of its uniqueness among other comparable tables found in medieval and early modern astronomical texts, is that the highest solstitial value recorded is 23° 32’.³⁴

33 King 1986, 194, 214, 317.

34 The degree of the solstice in astronomical tables is often used to establish relations of interdependence between documents of different provenances.

Fig. 15. MS Lisbon, BNP, Or. 2, f. 82v, declination tables.

More traverse tables

Ff. 72v to 75v contain an additional set of traverse tables with minor variations from the previous set. Each of these is assigned to a pair of rhumbs between *al-Farqadān-al-Sunbār* (The Guards–Achernar, i.e. N by E–S by W) and *al-Turayyā-al-Ġawzā'* (Pleides–Orion, i.e. E by N–W by S), thus covering one quadrant and applicable by adaptation to all directions. The titles of the three columns are more explicit in these tables: 1) *haḍā al-masāğ al-līk*, ‘This is the departure in leagues’ (*līk*, or rather *līg*, is once again a Persian borrowing); 2) *haḍā al-‘arḍ daqīqī*, ‘This is the latitude in minutes’; 3) *haḍā al-ṭūl daqīqī* ‘This is the distance³⁵ in minutes’. The departure values only go up to 90 in these tables.

More quadrennial tables

This second set of solar declination tables from f. 76r to f. 82bis-v³⁶ is remarkable for being written in a different hand, on a different paper, more felty with a coat of arms watermark, and also for its decoration (fig. 15). However, the solstitial maximum values are the same as above, 23° 32', indicating a shared technoscientific background for both sets of tables. Another notable feature

35 In this context I do not think ‘longitude’ is the right translation.

36 ‘82bis’ because two consecutive folia are numbered 82.

is that the headings of the first columns on the left, for the day of the solar month, sometimes read the anomalous *yām*, for *yawm*, day, and sometimes the Persian equivalent, *rūz*. I shall have occasion to mention the issue of Persian influence in my conclusion below.

Rather unexpectedly, f. 83r contains a description of ‘harbours in the lands of India, every city...’, starting with Ḥawr Miyān, on Kathiawar west coast, just north of Porbandar. This contents ties in well with some of the previous pages, and I suspect the tables of the preceding folia are more or less independent of the surrounding material. This is where a comparison with the Cairo manuscript might shed some light. The page ends with a squashed *tammāt*—‘it is complete’, signalling that something else is coming.

Ḍaw’ al-qamarīyah

On f. 83v, a series of prefatory invocations and the declaration of authorship, again by ‘Abd Allāh ibn Aḥmad ibn ‘Abd al-Razzāq, lay the ground for the new title on f. 84r, ‘The Radiance of the Moon’, ‘on the calculation of the celestial stations’. Five verses follow, praising God for the lunar stations, and then starts a brief description of the asterisms of the lunar stations, starting with Šaraṭān, and ending next page with ‘and this description of the stations has been completed on Šawwāl 1239’ (c. February 1824). This and the next page, f. 85r, explain the correspondences between lunar stations and zodiac constellations, dwelling also briefly on the virtues of stations and stars, and closing with a *ḥamdala*.

F. 85v opens consequently with the customary opening *ta’awwud* and *basmala*: ‘This is an explanation, precis, indications and descriptions of locations, for the increase of the sea-traveller in the knowledge and the evidence of the experiences (*tağārib*)... and this is a relief for the soul from the anxieties (*humūm*) of the traverses (*‘ubūr*)’. The reference to the anxieties, and the odd organization of the material, make it possible to think that all these pages might find a better place near the beginning of the manuscript. In any case, now the author turns to an unexpected matter: marriage counselling and, suitably, character traits (*aḥlāq*), both major topics of Islamic ethics literature.

These conjugal themes run until f. 90v, with prose and verse on choosing a good wife, and a poem touching on conjugal bed pleasures and kissing (f. 87r). Naturally, there are some verses too on the calamities brought about by evil women (f. 87v) and then, wrapping the matter, ‘the best of people are those who are friends with their spouse, children and servants, their parents, closest of kin, the orphan, the neighbour, and Muslim brethren’ (f. 89r). This is followed by a list of the hundred ‘Beautiful Names of God’ (*asmā’ Allāh al-ḥusnā*) as often recited in Sufi orders, in a different hand and irregular and lighter ink, and then by some apotropaic lines, ‘By the truth of these names,

Fig. 16. MS Lisbon, BNP, Or. 2, f. 90v colophon.



oh God, protect the carrier of my book...’ with some magical repetitions of the Qur’ānic ‘detached’ letters *Hā-Mīm*.

After several successive closing *tammāt*, f. 90v has a proper colophon with a rather confusing attribution, ‘Thus is completed the speech of Ibn al-Wardī, and God the Answerer spoke through the words of the poor in God, ‘Abd Allāh ibn Aḥmad ibn ‘Abd al-Razzāq’ (fig. 16). After the repeated mention of Ibn ‘Abd al-Razzāq as author, what shall we make of this unexpected mention of Ibn al-Wardī, a name which might refer to a famous geographer? Once again, the evidence gathered so far seems inconclusive.

The following page has ten verses of a famous poem by Abū Nuwās (c. AD 756–814), *Labbayka inna al-ḥamdu laka*.

End matters

From f. 91v to f. 94v we find a number of practical observations related to navigations presumably undertaken with the manuscript in hand. There are sketches of the Ras al-Hadd coast, the Kathiawar Peninsula, and one of the



Fig. 17. MS Lisbon, BNP, Or. 2, f. 92r, Kathiawar peninsula (N is left) vs Google Earth.

Gulf of Khambhat (Cambay), all with depth measures and a grid of coordinates. It is remarkable that in spite of the relatively late date of our manuscript, and though it is known that European maps with bathymetric curves were circulating around the Indian Ocean from around the eighteenth century (in Dutch maps particularly), the sketches, occasional rhumb lines and coast-line profiles we find here have a visual affinity with earlier European maps and charts of the sixteenth century.³⁷

The handwriting of the following pages is generally more cursive, and some pages look like notes scribbled hurriedly, or perhaps simply with exclusively practical recording purposes, as in a logbook of departures and destinations. I copy below some examples of great calendrical interest.

‘When we were on Friday, 15 of Raġab, 1254 (4 October 1838), 36 Nayrūz on Libra at the start of the deep sea (*al-luġġah*), aiming for Mumbai...’

‘And we left from Šūr on 23 Ša‘bān 1257 (10 October 1841), year of the famous drought.’

‘... on the New Nayrūz, Thursday 14 Ša‘bān 1260 (29 August 1844).’

‘... on the New Nayrūz, Friday 25 Ša‘bān 1261 (29 August 1845).’

‘... 6 Ramaḏān 1262 (28 August 1846).’

‘Date of the day of return 26 Rabī‘ al-Ṭānī 1265 (18 March 1849).’

We have here another witness of an established route between Oman and north-west India, and above all we have an important specification of the elusive concept of *Nayrūz*, as used since at least the times of Ibn Māġīd (late fifteenth century) by Arab pilots.

37 See a 1580 example in Moreno Madrid and Leitão 2021, 134–137.

The Persian-origin word *Nayrūz* crops up frequently as a basic term in classical Arabic nautical literature. It is used to mean the solar new year, and it was essential knowledge for pilots, as it would complement the Hijri lunar calendar, giving them a much needed seasonal reference—to sail with the monsoon winds, for instance. When speaking of lunar stations, a basic time reference is to give the number of days after *Nayrūz* when a certain asterism would be seen rising at dawn; you would say, ‘The Pleiades rise at dawn on the 182nd day from *Nayrūz*’. It is quite evident that the word is a borrowing from Persian *Nowruz*, precisely the vernal equinox celebration of the Persian solar calendar, and this is clear in the Arabic sources, which speak of the ‘Persian year’. However, the historical development of a number of more or less different Persian calendars complicates this simple initial picture. Since some of the Persian calendar variants allowed for a gradual shift of the new year date, it is at first unclear, based only on the fifteenth-century nautical literature, which *Nayrūz* date exactly they were using. Now, if we know at what date the Pleiades, for example, were rising at dawn in the Arabia of the fifteenth century, we can work backwards the *Nayrūz* date, and corroborate it with many other observations. This is partly how, with the aid of astronomical software, Eric Staples has determined the ‘classical’ nautical *Nayrūz* to have been around 11 November, and to correspond to the Sassanian Yezdegird calendar.³⁸ All this to say that the term *Nayrūz* is decidedly a thorny question in Indian Ocean nautical studies.

Now, back to our folia and leaving aside the log entries, our manuscript is giving us several Hijri dates corresponding to the same solar calendar date, 28/29 August. This is important because 29 August is, in the Julian Calendar, the 1st of Thouth, or first day of the Coptic calendar, called *Nayrūz* in Egypt since about the seventh century (Boles 2015). The oddly differing dates for *Nayrūz* given on flyleaf-f. 1v, namely 15 and 24 August, would still need to be accounted for. In any case, how and why these Arab pilots, travelling the immemorial routes of their ancestors, would end up using as solar reference the Coptic New Year is nothing short of enigmatic, and certainly a fascinating subject which exceeds the scope of this article.

Detached gems

I have left for the end the two most visually appealing folia of the whole bundle, one of which is in fact used as the ‘cover’ of the pack preserved in Lisbon.

F. 95 has become detached of the main textblock. The recto contains ten verses followed by an authorship line, again ‘Abd Allāh ibn Aḥmad ibn ‘Abd al-Razzāq, and a sketch of a boat at the bottom. The verso page is remarkable

38 Staples and Al Salimi 2019, 488.

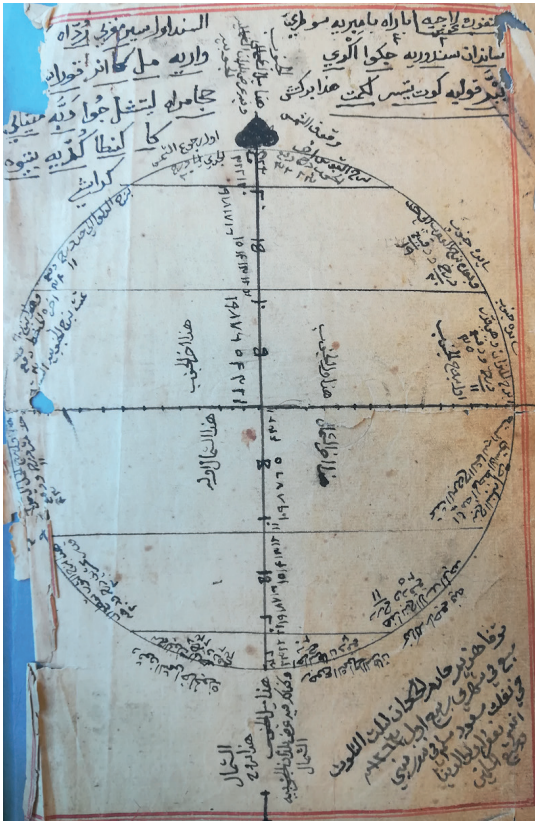


Fig. 18. MS Lisbon, BNP, Or. 2, f. 95v – projection of the ecliptic.

for a stereographic depiction of the ecliptic, with S on top and N at the bottom, divided in six zones with the equator at the middle and marks along the central axis at 10, 20, and 23° 32' (fig. 18)—note that this latter figure agrees with the solstitial values in the declination tables, and is thus useful to verify the unity of the manuscript bundle, or at least some of it.

To add to the linguistic tapestry of the manuscript, on top of the page there are two columns in what seems to be Balochi with some elements of Sindhi, including mention of ‘belonging to Sindh’. This brief text is awaiting a specialist who is able to unravel its relation to the accompanying diagram.

Finally, the unnumbered titular folium of the manuscript, which contains on the verso a list of places along the eastern Red Sea shores, south of Jeddah (fig. 19). The recto contains a sidereal compass rose of 32 divisions in four concentric circles or rings, shown here.

North is at the top, marked on the outermost circle by a fleur-de-lis with a black and white top petal. At the centre, inside the innermost circle, is a

Fig. 19. MS Lisbon, BNP, Or. 2, f. 1 (?), sidereal compass rose.



representation of the Kaaba, showing its actual orientation, roughly along the NW–SE axis. The second circle looks like a decorative layer with a serrated pattern in black. The first and second circles have radial lines of 16 directions, but on the outermost circle there are triangular arrowheads for all the 32 divisions. On the inner side of the outermost edge, every direction has a little empty black rectangle touching on the left the corresponding radius. The eight principal winds are marked with thick arrowheads: black for the cardinal directions, with individual cut-out patterns each (inviting further iconographic study), and the four ordinal directions in red, with a repeated cut-out rhomboid pattern. The eight half-winds are marked by thinner blue arrowheads. Inside the third ring there are diametrically oriented numerical labels for half- and quarter-winds; the corresponding values for principal winds are outside the rings along with the usual names of the stellar rhumbs: al-Farqad, al-Na'ṣ, al-Nāqah, etc. The little texts on the four external corners simply summarize the progression of the rhumbs for each quadrant. This diagram is yet another

example of the cultural interactions embodied by the content of MS Lisbon, BNP, Or. 2: it has the characteristic fleur-de-lis of Mediterranean wind-roses, but the Kaaba at its centre, and the intriguing cut-outs which resemble geometric motifs found in the handicrafts around the Persian Gulf and Sind.

Conclusions

One surely cannot disagree with David A. King in that ‘mixed manuscripts containing more than the standard single treatise can be a royal pain in the neck for cataloguers and researchers, but they frequently offer unexpected rewards’.³⁹ Our present document is far from a standard collection and all the richer and fascinating precisely because of this heterogenous nature. By way of conclusion, I shall comment briefly on those points which seem to be of major interest for future research, and on possible ways forward.

After this preliminary study, and taking into consideration all the different factors, I feel we may confidently accept the dates given in ff. 10r and 83v as those of both the composition and the copying, meaning that the author was at work in 1824; I see no reason to not consider this manuscript an autograph of ‘Abd Allāh ibn Aḥmad ibn ‘Abd al-Razzāq, a Shafi‘ite pilot from Ṣūr, in Oman. At the same time it is evident that some leaves present a separate codicological layer. There is the question of ascribing part of their content to Aḥmad ibn Māğid, since a good part of the *Salwah* follows chapter 9 of his famous *Fawā'id*, but given Ibn Māğid’s pre-eminence in Arabic nautical literature, and also given the general structure of what we have here, I feel inclined to attribute the similarity to a simple borrowing from such an authoritative source as Ibn Māğid.

In attempting to pin down a specific origin for this complex manuscript, we must come to terms with the irrelevance and the inadequacy of applying contemporary boundaries to the traditional Indian Ocean cultural continuum. That Persian influence is rife in Arabic nautical literature since very early times is well known,⁴⁰ though not yet studied in detail, and it is known that commercial routes have been criss-crossing the Arabian Sea since antiquity, from Malabar to Zanzibar, from Jeddah to Basra, to Sri Lanka and to China and back to Yemen and Somalia.⁴¹ In this historical context, MS Lisbon, BNP, Or. 2 is simply a representative of a pre-modern culture which has become a rarity in our days. As we have seen, MS Lisbon, BNP, Or. 2 entices us with a range of languages and even iconographic pointers, almost as an invitation to open up to a truly interconnected history. Speaking of Persian influence,

39 King 2018, 2. I am grateful to Prof. King for directing me to several important sources in his generous online library.

40 Hourani 1995.

41 See *in extenso* Sheriff and Ho 2014.

therefore, acquires a different meaning, as does also speaking of Yemeni Sufi or of Gujarati influences. Some aesthetic features of the manuscript, like the colour palette used for the decoration of some pages (notably the second set of quadrennial tables), would surely yield precious insights into its origins and originalities.

Naturally, one concrete pending question is how the manuscript ended up in Lisbon, and in what ways its dating may be related to a period of waning Portuguese influence in the Indian Ocean. This is a bibliographical enquiry which may also open up new avenues of research.

The condition of the manuscript is relatively good in spite of the damage suffered prior to acquisition, and now very stable. A desirable step forward in the study of the text would be to produce a digital surrogate. Based on a close reading, this would make it possible to reconstruct the original order of the text and to determine—also by comparison with the Cairo, Kuwait, and ideally Mosul, manuscripts—how much is missing. Such a digital reproduction would be a firm basis for any future work.

A separate study of the values in the extensive tables of the manuscript would be a great contribution both to geographical and nautical studies. A first necessary step would be to transcribe the geographical data, and eventually to feed it to existing initiatives of georeferencing and related disciplines.

Finally, some consideration should be given to the possibility that this bundle was really a handbook, and that it may have been in use for a period of about 70 years, doing the rounds of the Indian Ocean routes it describes. If such were the case, then this would be one of the earliest witnesses we may ever have of the legendary Arab nautical manuals, the *rahmanağ* mentioned from medieval times and by the classical authors.⁴² It is the conveyor of a centuries-old tradition of technoscientific achievements, fully integrated into the lives of its creators and users, and fully in tune with the multicultural ambience from where it came.

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42 Acevedo and Bénard 2020.

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