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***Topoi* Supplément 15**

MÉDITERRANÉE ET OCÉAN INDIEN

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Édité par Didier Marcotte

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SEA ZONES : THE BALKHĪ SCHOOL'S CONCEPTUAL MAPPING OF THE INDIAN OCEAN

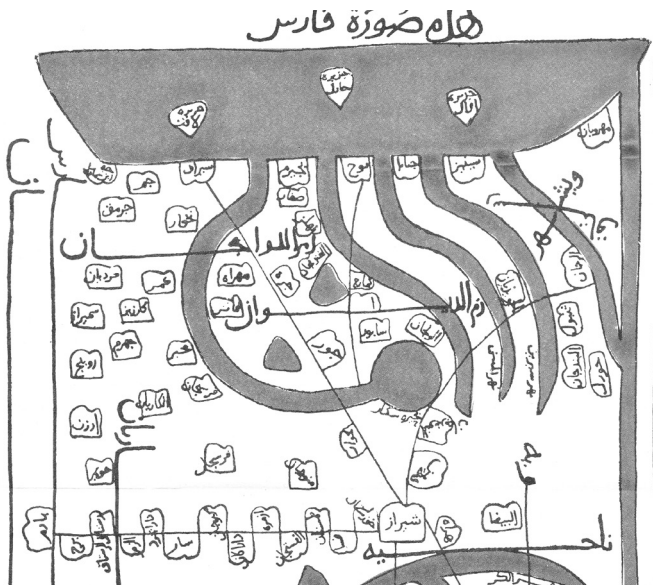
Introduction : The Classical School of Muslim Geography

The new genre of geographical treatises created in the 4th/10th century was based on Ibn Khurradādhbih's (d. c. 300/901) model¹ with the aim of surveying routes, towns and villages and providing information on the lands and seas of the Islamic Empire, but with one fundamental difference: the new geographies included maps. This genre forms part of four works, known to the west as the Classical School of Muslim Geography : the *Ṣuwar al-aqālīm* (The Figures of the Climes)² by al-Balkhī ([?] d. 322/934), the *Kitāb al-masālik wa l-mamālik* (The Book of Routes and Provinces) by al-Iṣṭakhrī (d. c. 350/961), the *Kitāb ṣūrat al-arḍ* (The Book of the Configuration of the Earth) by Ibn Ḥawqal (d. c. 380/990) and al-Maqdisī's (d. after 378/988) *Aḥsan al-taqāsīm fī ma'rifat al-aqālīm* (The Best Divisions for Knowledge of the Regions)³. The works of al-Iṣṭakhrī and Ibn Ḥawqal are known for their detail on Fārs, the rich land and province of Persia,

-
1. Ibn Khurradādhbih 1889. Ibn Khurradādhbeh was of Persian background ; born as a Zoroastrian and then converted to Islam. He became the Head of Posts and Intelligence and wrote diverse works of *adab* literature as well as a book on routes and provinces, the *Kitāb al-masālik wa l-mamālik*; see HADJ-SADOK 1971, p.839-840.
 2. Also known as *Taqwīm al-buldān*, but as Dunlop noted, both the first and second titles are not found in Yāqūt's list of al-Balkhī's works, see DUNLOP 1960, p.1003.
 3. Also known to western scholars as al-Muqaddasī from al-Bayt al-Muqaddas but for Muslim writers he is known as al-Maqdisī from Bayt al-Maqdis (see MIQUEL 1993, p.492).

which bordered on what was then called the Persian Gulf⁴ (*Map 1*). Both are credited with producing maps of the area, but in fact they were originally drawn by their predecessors and they were either copied wholesale or improved upon. For instance, through Ibn Ḥawqal's geographical text, we know that he must have travelled extensively, and when revising al-Iṣṭakhrī's work, he added much more material on economic matters.

The Balkhī School's world and regional mapping has been studied by K. Miller⁵, J.H. Kramers⁶, and recently, G.R. Tibbetts⁷; these scholarly works



Map 1 – Ibn Ḥawqal's provincial map of Fārs with the Persian Gulf in the north (Ibn Ḥawqal 1992, p. 48).

In this regional map Ibn Ḥawqal shows the coastal towns, one of which is Siraf to the left (known as 'the gate to China') but the importance of the map lies in the author pointing out that all coastal and inland towns lead to the city of Shiraz, a cross-roads for the distribution of goods. Such maps highlight socio-economic and political factors strategically significant to the ʿAbbāsīd caliphal power of the time.

4. The naming of the Persian Gulf goes back to pre-Islam: Eratosthenes (d. c. 194 BCE) and Strabo (d. after 21 CE) applied the name *Persikos kolpos* (Persian Gulf), while later historians used *Persicus sinus*, a name that was adopted by European languages until the 1970s (see AGIUS 2008, p. 5).
5. MILLER 1926-1931, vol. I, pt. 1.
6. KRAMERS 1932, p. 9-30.
7. TIBBETTS 1992b, p. 108-136.

have looked intensively at the conceptual thinking behind the School's mapping, but a discussion on the perceived sea zones and boundaries of the Indian Ocean, both globally and regionally, is still lacking. This article attempts to fill that gap.

The question of reading and understanding maps can be overwhelmingly difficult if one is not familiar with the area, and even if one is, there are always difficulties in understanding their conception and perception. A text accompanying a map may be helpful but if it is not, then one is left with a lot of guess work. Al-Maḡdisī is a case in point. As Tibbetts noted, the text that al-Maḡdisī wrote does not necessarily reflect the maps he drew and vice-versa⁸, and this could be a criticism against him. It could be argued, however, that maps should be self-explanatory and the reader, then and now, is free to interpret the space as portrayed by the cartographer. The present inquiry, however, does not focus on al-Maḡdisī's portrayal of his maps but rather an attempt is made to discuss his approach, together with that of the Balkhī School, with the following questions: What was the thinking behind the School's perception of the sea zones and boundaries with particular reference to the Indian Ocean? And in what way did the School's concept of sea zones and boundaries reflect the political, cultural and religious realities of the 4th/10th century?

The Al-Balkhī School's mapping

Al-Balkhī compiled twenty maps and we know of them because al-Iṣṭakhrī based his work on these maps providing a text for each map; while Ibn Ḥawqal also copied al-Iṣṭakhrī but made several improvements on his predecessors' maps and texts⁹. These maps are a great contribution to the world of physical geography and our understanding of how the Classical School of Muslim geographers perceived regional (political and religious) maps and mapped the land and sea boundaries. But al-Maḡdisī's maps are strikingly different: while the text and the map do to some extent reflect each other, the map is not dependent on the text. It can stand alone. Regarding the text, he made it clear that he had no intention of reiterating what his predecessors had said, 'nor to relate any matter that they mentioned, except where it is necessary to do so'¹⁰.

Of the early set of maps, only those of al-Iṣṭakhrī, Ibn Ḥawqal and al-Maḡdisī have survived. No trace of al-Balkhī's maps. It is also not known for certain whether al-Balkhī produced a text with his set of maps though al-Maḡdisī claims

8. TIBBETTS 1992b, p. 122.

9. HOPKINS 1990, p. 312.

10. Al-Muḡaddasī 1906, p. 6; *idem* 2001, p. 5.

to have consulted his work at Naysābūr¹¹. We know very little about al-Balkhī but we know of him through his fellow geographers; however, his work was cited by a wider Arabic literary circle¹². Ibn Ḥawqal's geographical treatise became known to scholars through his revision of his predecessor's text and maps, al-Iṣṭakhrī. Not only did he revise it, he added detailed notes based on his own observations from talking with people after spending 30 years travelling and exploring from Persia to Sicily in the Mediterranean. About al-Maqdisī's background no information exists except for what he himself recounts in his own text.

The common theme of the Balkhī School is that their maps and texts covered the Mediterranean, the Caspian Sea and the Indian Ocean, although their attention was focused on regional maps of the 4th/10th century Islamic Empire. All the maps have been drawn with the south oriented at the top. A convention in drawing these maps was that world maps were circular compared to regional maps that were rectangular. Drawings were done in geometric forms of curves, arcs, straight, square and circular lines¹³ and, influenced by the Greek tradition, adopted the *klimata* or 'latitudinal zones'. Moulding morphologically the Greek *klimata* into the Arabic word, *iqḷīm*; this term represented a new concept to subsume the Persian and Indian model of dividing the world into provinces. Ptolemy (d. 168 CE) had formed the concept of the *klimata* system which actually included 'seven' astronomical-terrestrial climates¹⁴ while Islamic geography developed the seven Greek climates into a more physical system (after the Iranian-Indian model) – seven provinces, giving data on the lands, seas and rivers as well as detailed information on the capital towns, the population, the imports and exports etc.

World maps in the Graeco-Roman tradition

At the time of the compilation of the Balkhī School geographies, their world-view was limited to what was known to Muslim authors as the Dār al-Islām (Terrain of Islam). Lands outside of the Islamic Empire were barely represented. Consider those on the periphery of the Islamic world such as the areas conquered from Byzantium: they were, as Tibbetts observed, treated less systematically. India and China were hardly described even though Arabian and Persian seafarers had been familiar with the Indian and South Asian coasts before the advent of Islam. Within the Islamic Empire itself there are surprising omissions; for instance, the Arabian

11. Al-Muqaddasī 1906, p.5.

12. TIBBETTS, 1992b, p. 109.

13. BROTTON 2012, p. 64.

14. Ptolemy, *Almagest* 2.12.

Peninsula, so strategically important for its pilgrim routes, is poorly represented¹⁵. In general, it must be said that these geographers were not particularly interested in the world outside of Islam, the so-called Dār al-Ḥarb (Terrain of War), possibly, with some exceptions, because of their lack of familiarity with these regions and because they were unfamiliar with languages other than Arabic or Persian. These factors would have rendered their work difficult. It needs to be said that a number of them were not native Arabic speakers but were able to speak and write Arabic, as it was the *lingua franca* of administration, religious and literary circles. One pioneer in the study of lands outside the Dār al-Islām was al-Bīrūnī (d. 440/1048-9), who knew Sanskrit, and was thus able to access the physical and human geography of India.

Islamic world maps were perceived in the form and shape of objects or animals. Such concepts are for example noted by al-Maḡdisī¹⁶ who tells us that the Indian Ocean has ‘many gulfs and numerous inlets’, which, to some scholars, were shaped like a *ṭaylasān*¹⁷, having the land of China on one far end and the land of the Blacks on the other¹⁸. Abū Zayd al-Balkhī, we are informed, described the Indian Ocean in the shape of a bird ‘with its beak in al-Qulzum (the Red Sea) ... its neck in al-ʿIrāq, its tail between Abyssinia and China’¹⁹. The bird feature figures iconographically on a 10th century East Persian earthenware bowl whose head is interpreted as representing the Arabian Peninsula, with possibly Mecca as its eye, the wings being Asia and Africa while the tail appears to be Europe²⁰ (*Fig. 1*).

There is a record of an Islamic world map being drawn during the ʿAbbāsīd caliphal years of al-Maʾmūn (r. 198-201/813-17) which al-Masʿūdī (d. 345/956-7) claims was an improved version of the geographies of Ptolemy (d. 168 CE) and Marinus of Tyre (d. 130 CE)²¹. But not much is known of this world map as it was lost. We know, however, that the author or authors followed Ptolemy’s model of *klīmata* (‘climates’) but revised it applying the Persian concept of ‘seven’ *kishvars* (regions)²². This traditional model of the ‘seven zones’ division, referred to above,

15. TIBBETTS 1992b, p. 115, 117.

16. Al-Muqaddasī 2001, p. 9-10; KRAMERS 1932, p. 23.

17. A *ṭaylasān* was a kind of hooded cloak or a scarf round the turban, see AGIUS 1984, p. 219-220.

18. Al-Muqaddasī 2001, p. 9.

19. Al-Muqaddasī 2001, p. 9.

20. VIRGA *et al.* 2008, p. 28.

21. TIBBETTS 1992a, volume II, book 1, p. 95; see also BROTON 2012, p. 60.

22. TIBBETTS 1992a, volume II, book 1, p. 94-95; BROTON 2012, p. 61.



Fig. 1 – A 10th-century bird world map on a Persian ceramic bowl, Nishapur, Iran (Los Angeles County Museum of Art, The Nasli M. Heeramanek Collection).

goes back to Babylonian and Indian conceptual thinking of the image of ‘the world as a lotus with regions surrounding a primary zone’²³.

Mapping of regions and provinces for the Balkhī School of geographers was based on trade routes and religious places, and by doing so, they established borders (Ar. *ḥadd*; pl. *ḥudūd*) to delineate where one boundary starts or ends²⁴.

It has been argued that the Persian conceptual model is heavily dependent on Persian information, and may be based on ancient Persian maps. There is a possibility, however, as I showed earlier, that they were drafted on Early Islamic postal routes²⁵, pioneered by Ibn Khurradādhbeh. It is interesting that in spite of the suspected bias towards everything that is Persian, there is an absence of such Ancient Iranian maps, and, if such maps ever existed, why were geographers not explicit about this fact²⁶? It is difficult to say; similar questions have been raised

23. TIBBETTS 1992a, 94-5; BROTTON 2012, p. 61.

24. BROTTON 2012, p. 65.

25. KRAMERS 1932, p. 24; TIBBETTS 1992b, volume II, book 1, p. 114-115.

26. It has to be said that many were the Persians who contributed significantly to the intellectual life at a time when Arabic literature was at its highest peak in the 3rd-4th/9th-10th centuries. Some geographical treatises were written by Persians and, as B. Spuler (1970, p. 145) pointed out, ‘The number of Persians writing Arabic in those

regarding the absence of Persian maritime manuals (the *rāhnāma*), containing information about coastlines, currents etc., on which Arabians could have based their works²⁷. Interestingly, as I have shown in two earlier works, that although these nautical manuals disappeared, the terminology in later Arabic maritime works and modern usage on the coasts of the Arabian Gulf and Oman is still predominantly Persian²⁸.

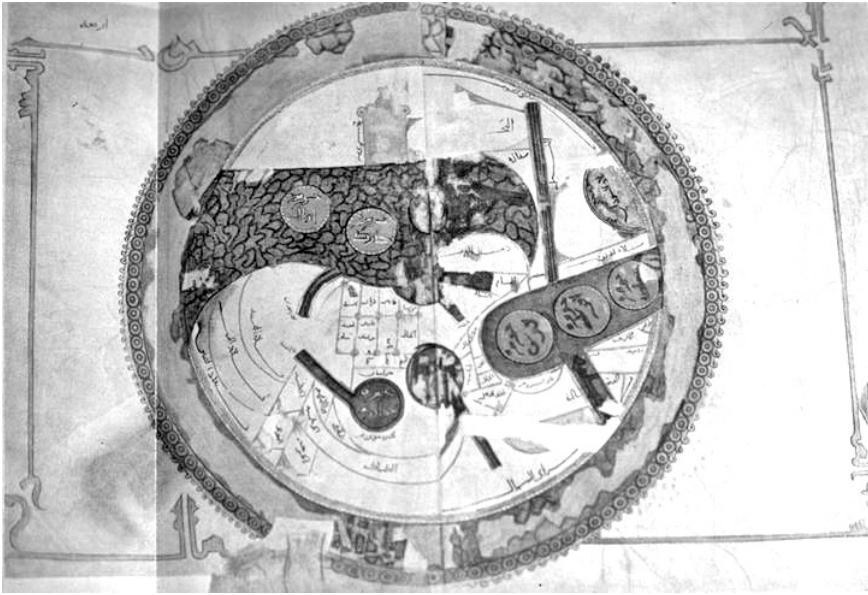
Maritime charting

The method applied in charting the sea zones of the ‘Indian Ocean’ deserves some consideration: Al-Iṣṭakhṛī’s world map shows a circle around which lies the ocean; two seas: east and west are sketched meeting at a narrow strip of land (*Map 2*²⁹).

Both seas are divided by a ‘barrier’, referred to as the *barzakh* in the Qur’ān: it divides sea and sweet water³⁰ but unites the two great seas of the time – the Roman Sea (i.e. the Mediterranean) and the Sea of Persia (i.e. the Indian Ocean). Although in the Qur’ān, the *barzakh* has been interpreted as alluding to the Nile meeting the Red Sea, in my opinion it also could refer to the Tigris and Euphrates joining the Persian Gulf; both Red Sea and Persian Gulf corridors form part of the greater sea, the ‘Sea of Persia’, which stretches from East Africa to China (i.e. the Indian Ocean). The reason for thinking it could be a reference to these two sea corridors is that in both instances the Qur’ānic verse says that ‘out of

centuries was extraordinarily large, and the so-called “Arabic literature” was largely the work of Persians’. But the point to stress here is not the ethnic identity that made Arabic literature great but the fact that Arabic was a vehicle for communication by all Muslims in intellectual circles who used it as a *lingua franca* to convey their ideas.

27. Al-Maqdisī claims to have seen pilot manuals in mariners’ hands; it cannot be said with absolute certainty, but as the technical language of nautical information has always been Persian, Red Sea navigators would have also used Persian manuals. Moreover, it needs pointing out that a number of Red Sea navigators might have been Persian, a ‘predominant class’, stated al-Maqdisī, who lived in Jeddah; see al-Muqaddasī 1906, p. 11, 79; 2001, p. 9, 72; see also AGIUS 2008, p. 193-196.
28. AGIUS 2008, p. 361-380, and 2009, p. 165-167.
29. World, 977 <http://www.columbia.edu/itc/mea/ac/pritchett/00maplinks/medieval/alistakhri/alistakhri.html> and http://en.wikipedia.org/wiki/Image:Stylized_Persian_Gulf (accessed 2 January 2013).
30. Al-Qur’ān, Sūrat al-Raḥmān LV.20, and the *Holy Qur-an* 1946, II: 1474, footnote 5185.



Map 2—Al-Iṣṭakhṛī's world map dividing east and west by a narrow canal.

them come pearls and coral'³¹. It is a fact that several coastal areas of the Arabian and African Red Sea are known for pearling activity and coral reefs but also, the northern Arabian-Persian Gulf littorals are well known for their pearling beds though compared to the Red Sea they have less coral reefs.

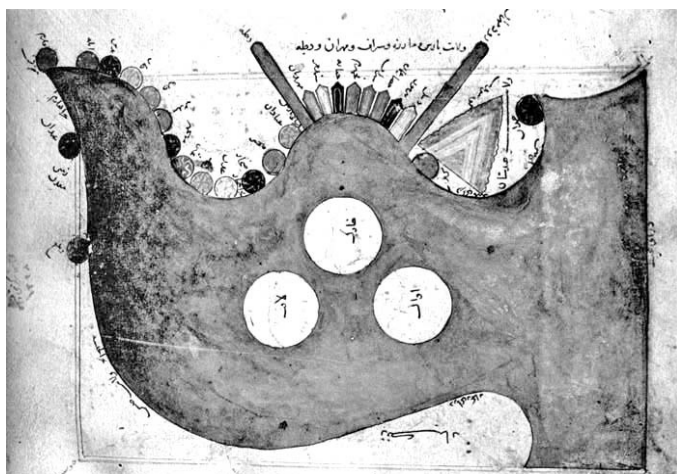
Al-Iṣṭakhṛī shows the 'Sea of Persia' containing three islands: Kharak (Ar. Khārak), Bahrain (Ar. Awāl) and Qishm (Ar. Lāft) (*Map 3*). They lie in what we call today the Arabian Sea. His map depicts two straight canals: the River Tigris on the left and the Indus on the right. India and China are joined as one peninsula with Arabia opposite³² (*Map 3*³³).

On the other hand Ibn Ḥawqal's map of the 'Sea of Persia' is different: The Red Sea and the Sea of Persia are clearly located precisely in the sea corridors as they are known to us today, and the three islands mentioned above are properly located in what we know now as the Arabian-Persian Gulf (*Map 4*).

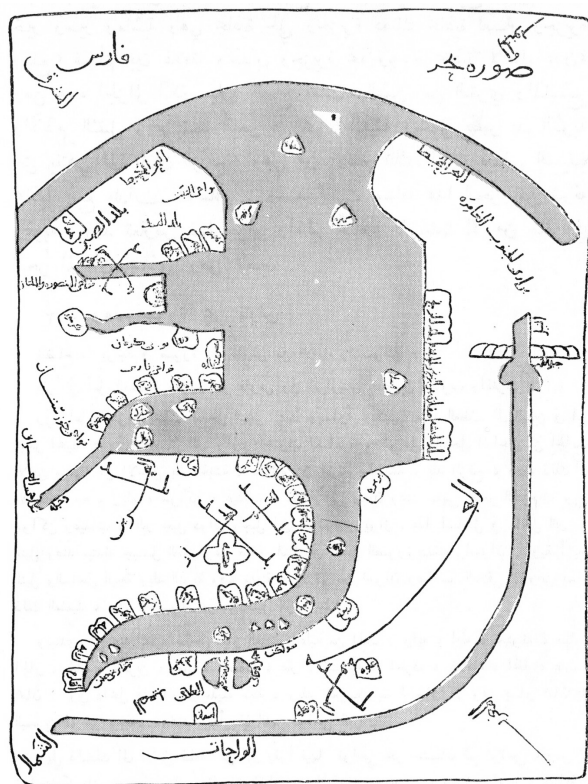
31. *Ibid.*, LV. 19 and 22, and the *Holy Qur-an* 1946, II: 1475, footnote 5186.

32. Al-Iṣṭakhṛī 1927, p.28-29.

33. World, 977 <http://www.columbia.edu/itc/mealc/pritchett/00maplinks/medieval/alistakhri/alistakhri.html> and http://commons.wikimedia.org/wiki/Category:Al-Istakhri_maps (accessed 2 January 2013).



Map 3—A rendering of al-Iṣṭakhṛī's map of the Sea of Persia (Ar. Baḥr Fārs), made in the 1300's-1400's.



Map 4—Ibn Ḥawqal's Sea of Persia (1992, p. 50).

The Great Sea

Known to Greek and Roman historians and geographers as the Erythraean Sea³⁴, what is today called the Indian Ocean was referred to by some Muslim geographers as the ‘Great Sea’ or the ‘Green Sea’³⁵; both name tags were borrowed from Persian and Indian conceptual thinking. The Arabo-Muslim geographers improved on Ptolemy’s world map³⁶. Ptolemy perceived this Great Sea as ‘landlocked’, whereas the Muslim cartographers clearly understood it to be an open sea³⁷. It stretched from the land of the Zanj (East Africa) to the coasts of China, hence al-Maqdisī called it the Sea of China (Ar. Baḥr al-Šīn) (*Map 5*). This open sea, however, was seen in the centuries to follow as something frightening and dangerous for Muslims. A new spiritscape was to be created: the cartographers Ibn al-Wardī (d. 749/1348) and later, °Alī al-Sharafī l-Šafāqūsī (d. after 979/1571-2), found a way to protect the faithful from evil on this open sea by drawing the mythical Mountains of Qāf³⁸ encircling a round world: These ‘may represent’, as V. Virga *et al.* said, ‘the Islamic creation myth’s mountains intended as a rampart against the Demonic powers, and the means to unify earth with heaven’³⁹. Thus the Ptolemaic conception of a ‘landlocked’ sea was taken a stage further and given a spiritual dimension. In the Sea Atlas drawn or adopted by these cartographers, the world is no longer manifested as a physical reality but has become a spiritual realm⁴⁰.

Following the Ancient Iranian cartography, al-Balkhī’s world map portrays specific sea boundaries, naming the northern Red Sea as Baḥr al-Qulzum (the Qulzum Sea, the Roman equivalent to ‘Clysma’) while the southern region includes the Horn of Africa, referred to as the Baḥr al-Ḥabasha (the Ethiopian Sea). It also refers to Baḥr al-Zanj (the Sea of the Blacks), positioned along the coasts of North-

34. For example Strabo Bk 16.3.11; *Periplus* 1912, p. 50.

35. Al-Mas’ūdī 1983, volume I, p. 167-168; see also al-Maqdisī’s map in al-Muqaddasi 2001, p. 65 Map IV.

36. Ptolemaic Map – Nicholas Germanus and Johannes de Armsheim -1482.

37. LYONS 2009, p. 89-90, citing SEZGIN 2005, p. 99.

38. An Islamic belief that Mount Qāf belongs to a circle of mountains which encompass the world; they are reputedly inhabited by demons and jinn and that the mountain range is of emerald which gives an azure hue to the sky. Hence in Persian *az qāf tā qāf* which translates as ‘the whole world’. Also the name is applied to Mount Caucasus, see HUGHES 1885, p. 478; see also M. STRECK-[A. Miquel] 1990, p. 401.

39. VIRGA *et al.* 2008, p. 28.

40. BRICE 1981, inside cover; VIRGA *et al.* 2008, p. 27.



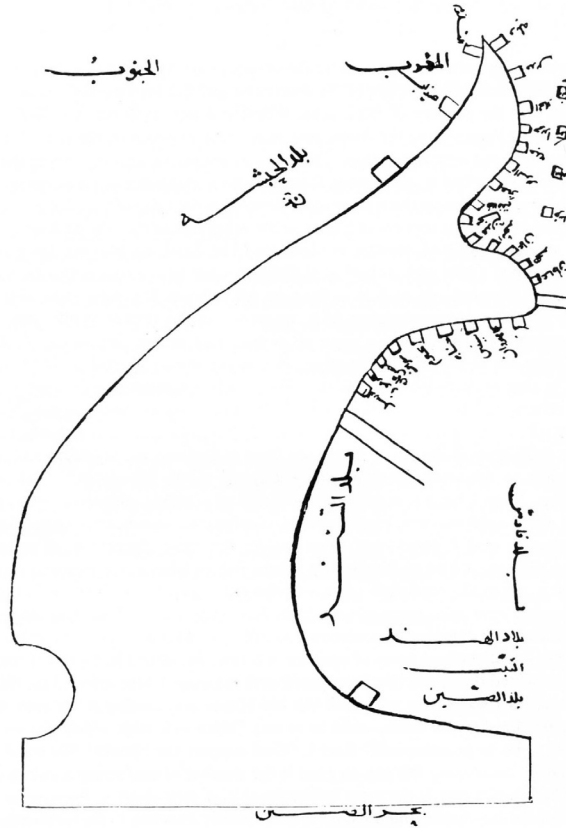
Map 5 – Al-Balkhī's World Map (after MOJTAHED-ZADEH 2006, p. 16).

East and East Africa, stretching to the Arabian-Persian Gulf corridor and opening to a wider sea zone which we now call the Indian Ocean (*Map 6*).

When describing the Sea of Persia, al-Iṣṭakhī starts with al-Qulzum (Suez) and, circumnavigating the Arabian Peninsula ends at Ubulla (near Basra today) (see *Map 3*); while Ibn Ḥawqal's global concept of the Sea of Persia stretches from Qulzum (the Red Sea) to India and China (see *Map 4*). For al-Maqdisī, the Sea of Persia included the Arabian Sea, the Gulf of Oman and the Arabian-Persian Gulf⁴¹, while the gulfs (the Red Sea and the Arabian-Persian Gulf) of this ocean were drawn by him in the shape of tongues, calling them the “two arms” of the Sea of China⁴².

41. Al-Muqaddasī 1906, p. 11.

42. Al-Muqaddasī 1906, p. 11. A well-known sheikh merchant described it to al-Maqdisī as having two tongues one being the Red Sea and the other is the Sea of Persia (al-Muqaddasī 2001, p. 9-11).



Map 6– Al-Maqdisi’s sea of two tongues and the Sea of China (courtesy of Ms Sprenger 5– Ahlwardt 6034 Staatsbibliothek Preussischer Kulturbesitz, Berlin, Orientabteilung).

The maritime mapping pattern

The evolutionary process of maritime perceptions clearly shows a transition from the old cartographic concept of the ‘two seas’ and their borders covering wider areas, some as far as China. But as Dejanirah Couto *et al.* pointed out, ‘cartographical evolution’ is not a ‘single line of unidirectional evolution or progress that goes from “primitive” initial trials to the ultimately “perfect” representations of our days’⁴³. The early maps had followed the Ptolemaic model as well as the Persian-Indian concept of the seven climes but we do not see a straight development from this 10th century al-Balkhī charting to the later maps of the 16th century. They still followed the Ptolemaic model with toponymical

43. Couto *et al.* 2006, p.34.

information stuck in the past; this, in spite of the fact that the Portuguese had entered the Indian Ocean, changing the political and economic conditions, at a time when cartography had ‘made very significant progress in the representation of Asia’⁴⁴.

While it is true that the Balkhī School of maps originates from Ptolemaic thinking, the Persian and Indian model of dividing the world into ‘seven regions’ was to have a significant influence on them and beyond up to the 16th century. Importantly, following this model, the Balkhī maps contain boundaries and coastal lines, the perception of which explains how the world of Islam was understood by the geographers of Early Medieval Islam. The concept of a set of maps – an atlas of the world of Islam, is remarkable for the 4th/10th century and one to which later Muslim cartographers adhered.

These maps are meaningless without the text although al-Maqdisī stands alone in that his maps are not dependant on the text. What is fundamental to the Balkhī School of thought is the geographies they presented. Whereas Ibn Ḥawqal’s work contains rich physical, economic, political and religious data, it cannot be compared to al-Maqdisī’s geography. Indeed, like his predecessor, al-Maqdisī’s work contains a wealth of information on climate, waters, sea and maritime routes of the Islamic Empire. The difference, however, between them is not so much about the content – the material they both provide is indeed rich, but rather that al-Maqdisī’s geography is pioneering in organization and method⁴⁵; the scientific rigour that he brought to his descriptions of seascapes and landscapes was novel and ahead of his time: al-Maqdisī, states Chaudhuri, ‘shows all the signs of an accurate and scientific mind and he was careful enough to qualify his statements’⁴⁶. His geographical treatise, *The Best Divisions for Knowledge of the Regions*, was written to aid mariners and merchants as well as the caliphal civil servants. His work and that of his predecessor, Ibn Ḥawqal, is as informative as the 1st-century Greek *Periplus* which was aimed at state officials and people of similar occupations. Al-Maqdisī’s organization of the subject matter and the method he used in his book show it to be an example of the true ‘original science’ of geography, as it was known at the time and for a number of centuries later. Yet, for the modern reader, the physical features provided in his geography and, for that matter, other geographies of Early Medieval Islam, could be difficult to interpret.

The medieval mapping of the Balkhī School scholars, as seen in their respective geographies, is drawn in geometrical forms as noted earlier. Their

44. COUTO *et al.* 2006, p.18.

45. MIQUEL 1993, p.493.

46. CHAUDHURI 1985, p.190. In this respect citing al-Maqdisī: ‘it occurred to me to direct my attention to a science which they [his predecessors] had neglected, and to specialize in a branch of learning they had not dealt with, except defectively’ (al-Muqaddasī 2001, p. 1).

conceptual understanding of the sea and land boundaries is confined to the socio-political and religious realities or non-realities of the time. If we take the spiritual reality, the concept is an old one: the Greek traveller Cosmas Indicopleustes (fl. 6th century CE), on his world map, presented, in addition to the three known seas, the Mediterranean, Caspian and the Eastern (Erythraean), a fourth one, the spiritual Oceanus i.e. Heaven⁴⁷. This spiritual dimension exists among all Muslim cartographers, Mecca being always in the centre of all 'spatial references'⁴⁸. Certain maps like the world map of Ibn al-Wardī, probably copied from an earlier source some 500 years old⁴⁹, depict the earth, as we have seen, surrounded by an ocean enclosed by mountains. At first glance this seems to be a very odd concept, a closed world, but the map maker's intention was, it appears, to create a device to repel 'demonic powers' and as such bring the safely enclosed planet earth to heaven⁵⁰ (*Map 7*⁵¹).

If the concept of sacredness as depicted by Ibn al-Wardī and others was borrowed from earlier maps then it could not have been from the Balkhī School maps as their intention seemingly was to depict the political and the physical. This 'sacredness of space' is portrayed with a 'qualitative geometry', and marks the relation between the earth, water and air, and the creator – God⁵². Ibn al-Wardī's map specifically portrays a spiritual space represented by Mecca in the middle of Arabia while the Persian Gulf and the Red Sea form a crescent, thus unifying 'the celestial and terrestrial worlds'. Such unity, as Virga *et al.* understand it, 'posits a middle reality between sensory perception and divine perception'⁵³.

It is a fact that Muslim cartography made no significant progress until the 20th century. The question is why did it not develop further? The early maps, as T. Power has rightly claimed when discussing the mapping of the Red Sea, are 'indicative not just of physical boundaries but of human geography'⁵⁴. This is true

47. Sixth-century World Map, Cosmas Indicopleustes (source Les Sciences au Moyen-Âge, *Pour la Science*), see <http://www.google.co.uk/imgres?imgurl=http://> and [http://en.wikipedia.org/wiki/File: WorldMapCosmasIndicopleustes](http://en.wikipedia.org/wiki/File:WorldMapCosmasIndicopleustes) (accessed 21 December 2012 and 2 January 2013).

48. VIRGA *et al.* 2008, p. 28.

49. VIRGA *et al.* 2008, p. 28.

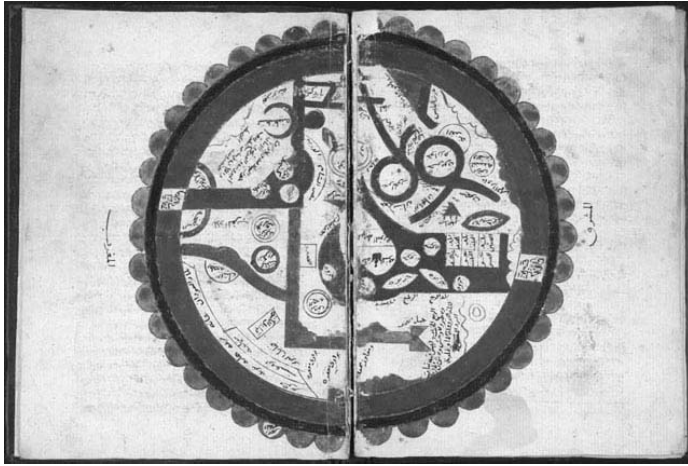
50. VIRGA *et al.* 2008, p. 28.

51. http://cartographic-images.net/Cartographic_Images/214.1_al-Wardi.html (accessed 21 March 2013).

52. VIRGA *et al.* 2008, p. 27.

53. VIRGA *et al.* 2008, p. 28.

54. POWER 2012, p. 148.



Map 7 – Ibn al-Wardī's world map with the south oriented top –
1481 Turkish Ms (courtesy of Library of Congress).

because the maps were drawn to emphasize the political and economic scenario of the time. However, maps became more and more focused on the spiritual. In doing so, Islamic mapping became increasingly static, turned in on itself, perhaps as a reaction to the growing dominance of western cartography and reflecting the gradual decline of Islamic scholarship from the late 13th century.

A model of cartographic thinking : conclusions

Although it is not totally clear where the information collated by al-Iṣṭakhrī came from, it may be safely conjectured that it was copied from al-Balkhī's data. Both these geographers were 'armchair scholars' while Ibn Ḥawqal, as mentioned earlier, was a great traveller and an avid reader of geographical works. He met al-Iṣṭakhrī in person, exchanged information with him and added new material to what was already known through al-Balkhī's and al-Iṣṭakhrī's texts. Like Ibn Ḥawqal, al-Maqdisī travelled widely in the Arabian Peninsula and Mesopotamia, talking to people, observing day-to-day interactions, and undertaking all kinds of occupations. His descriptions of the physical geography of the regions he knew and visited follow 'a fixed format'⁵⁵, and, as Tibbetts observed, the maps he produced are an aid to the text but do not necessarily help to comprehend them⁵⁶. However, much merit is given to the wide-ranging descriptions he gives for each region, providing much more detail than the rest of the school on the socio-economic

55. HOPKINS 1990, p.315.

56. TIBBETTS 1992b, p.122.

makeup of larger towns and for his contribution to the physical description of the mountains, rivers, and seas.

So what model or models can we use to reconstruct the historical past of Islamic cartography and the conceptual thinking of sea zones or boundaries? The parameters of unity or disunity, continuity or discontinuity, raptures and thresholds discussed in the rigorous Braudelian and Chaudhurian theoretical thinking models may answer issues; they may give us insights on the diverse complexities of coastal and inland communities, cultural and social practices, sea and land relationships but they do not necessarily answer questions raised about the Balkhī School maps and the language of the texts used to communicate with the early medieval world.

Consider the 'mapping pattern' for a mariner and merchant and their relationship with the landscape and seascape: the isomorphism of this relationship and how the sailor and the merchant visualize both landscape and seascape is influenced by the climate, the monsoonal winds and the environmental hazards of the sea⁵⁷. Al-Maqdisī's information on water availability was vital to the seafarers; also water is essential for the understanding of the coastal landscape; it dictates the development of a harbour and anchorage for both the land and sea people.

Moreover, consider the geographers' concepts of zones and boundaries; they were limited. Where they did recognize a boundary it was understood to be the result of warfare⁵⁸ and/or perhaps natural phenomena. As a result of this lack of awareness of boundary areas, misconceptions have found their way into secondary geographical and historical works to the detriment of researchers who follow them blindly and often cite them as authorities but never go back and consult the primary Arabic sources⁵⁹.

The concept of sea boundary needs a better definition. The sea boundary as understood by geographers of Early Medieval Islam is not to be confused with political boundaries of the time. Consider the sea boundary of Oman: it covered a much wider territory – it stretched from the coastal boundaries of Hadhramaut to those of Qatar. Likewise, Bahrain is often associated with today's island or islands

57. CHAUDHURI 1992, p.29-30.

58. BRAUER 1995, p.53.

59. We then have to look at the source of the problem by examining primary edited Arabic works and their translations. The geographical treatises edited by the Dutch scholar Michael Jan De Goeje (d. 1909), some of which were translated in parts or as a whole are a good case in point. The time has now come for a revision of these texts, both in the editing of the original manuscripts and the translations thereof. It is only by pausing to reflect and remedy the mistakes of the past that historians, geographers and archaeologists can understand the maritime past. But none of this would be possible unless a multi and cross-disciplinary team of Arabic and non-Arabic speaking scholars work together. It is time therefore to examine the language of these geographies and how they impart technical information. Some are so densely worded as to be almost cryptic and there is the question of their mutual dependence on each other so that the same information was copied and re-copied.

but Classical and Early Medieval Muslim geographers and historians were writing about a much larger sea zone called Al-Bahrayn and that covered the islands of Failaka and Bahrain, Qatif, Hasa, Tarut Island on the Saudi coast and Qatar⁶⁰. The sea zone beyond that was the larger Oman as mentioned earlier.

It is interesting to look at how this geographical concept of a sea boundary was understood by later writers such as the travellers, Ibn Jubayr (d. 614/1217) and Ibn Baṭṭūṭa (d. 779/1377). For them, the sea boundary was dictated by the ports the merchants and pilgrims visited: they had to carry passes, certifying that they had paid taxes at the point at which they boarded ship and had presented them to the customs whose governor had jurisdiction over the visitors and subjects of the port⁶¹. These governors acted independently from the rulers inland. For them the port and the sea immediately around it constituted a sea boundary and allowed them to tax with impunity. This was one way to control ports such as Siraf, Sohar, Aden, Jeddah, Aidhab, al-Jar and Yanbu al-Bahr and keep the revenues separate from the rest of the province. Furthermore, in his survey on boundaries and frontiers, R.W. Brauer clearly states that Medieval Muslim geographers 'did not conceive of the margins of adjoining individual states as sharp borderlines'⁶². A medieval traveller in the Islamic caliphal territories, when crossing the desert by caravan, would not have travelled from one zone to another knowing that he is crossing a political boundary, as generally, they did not exist⁶³. In any case much of the territory was hitherto unused by the Bedouin Arabs. David Holden, in his *Farewell to Arabia* published in 1966, wrote of coastal Aden, 'until only thirty years ago much of Aden could still be described in all seriousness as "unknown"'⁶⁴, and that is true of much of the whole Arabian Peninsula which was largely unknown to the coastal people.

The final stage of my inquiry is the concept of the Sea of Persia and the Sea of China as used by the medieval cartographers. These name labels correspond to the modern Indian Ocean. The latter term is a reflection of western thinking, a colonial labelling which was applied for many centuries by the Portuguese and the Dutch and English East India Companies. Of course this political concept was thought by the colonial politicians and historians to represent a reality: that India was the centre of all commercial voyages, west and east of the ocean. Similarly, in Medieval Islam, the Sea of Persia was a political reality, because, for caliphal administrators as well as geographers and historians, Persia had been since antiquity a commercial focal point for the whole ocean. Al-Maḳḍisī's concept of

60. AGIUS 2008, p. 39.

61. BRAUER 1995, p. 33-34, see footnote 62, 63, 64.

62. BRAUER 1995, p. 65.

63. BRAUER 1995, p. 65.

64. HOLDEN 1966, p. 38.

this sea zone in the 10th century was the Sea of China: Suez, Aidhab, Sohar, Siraf and Calicut were gateways to China. Ultimately, these conceptual images of the sea and land zones are more complex than the written word and the deconstruction of these images as a 'distinct unit of space' does pose problems of 'logical reasoning' in the methodology of reconstructing the historical past⁶⁵.

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65. CHAUDHURI 1992, p. 23-24. I refer the reader to Chaudhuri's chapter on the 'unities of discourse', p. 19-41.

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