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Off the Edge of the Map: The Search for Portuguese Influence on the Piri Reis Map of 1513

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Abstract
Left tattered after centuries of ware, hidden in the walls of Topkapı Sarayı, the 1513 map of the Ottoman cartographer Hacı Ahmed Muhiddin Piri has not been properly contextualized in light of Portuguese cartography of the time. In the map’s colophon, Piri Reis indicated that he utilized Portuguese charts as his sources for cartographic depictions of India and China. Scholars have not inspected the full range of contemporaneous Portuguese charts that depict the Indian Ocean Basin in light of the Piri Reis map. My contribution is to examine several late 14th and early 15th century Portuguese cartographical sources and references to sources to suggest possible connections between the Piri Reis map and contemporary Portuguese mappa mundi.

Keywords
Piri Reis, Ottoman Cartography, Portuguese Cartography, 1513 World Map

Disciplines
Cultural History | History | Islamic World and Near East History

Comments
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ABSTRACT
Left tattered after centuries of ware, hidden in the walls of Topkapı Sarayı, the 1513 map of the Ottoman cartographer Hacı Ahmed Muhiddin Piri has not been properly contextualized in light of Portuguese cartography of the time. In the map’s colophon, Piri Reis indicated that he utilized Portuguese charts as his sources for cartographic depictions of India and China. Scholars have not inspected the full range of contemporaneous Portuguese charts that depict the Indian Ocean Basin in light of the Piri Reis map. My contribution is to examine several late 14th and early 15th Portuguese cartographical sources and references to sources to suggest possible connections between the Piri Reis map and contemporary Portuguese mappa mundi.
“One should read and understand the nature of the world and also of oneself. For the wise man is the one who knows himself and who takes a lesson from every single thing. The knowledgeable call such men adept: even sultans appreciate the value of this.”

– Pırı Reis, Kitab-ı Bahriye, 1526.

The Turkish cartographer Hacı Ahmed Muhiddin Piri’s (henceforth Piri Reis, d. 1554) was born in the town of Gallipoli on the northwest shore of the Dardanelles in the 1470s. Gallipoli was the most important naval base of the Ottoman Empire in the sixteenth century and a premier port for seafaring men who often participated in maritime trade or entered the sultan’s navy. Piri Reis was the nephew of gazi Kemal Reis (c. 1450-1510), a renowned Ottoman naval officer with whom he served as a privateer on several expeditions. In 1510, after finishing his travels with his uncle, Piri Reis returned to Gallipoli. There, scholars believe he presented his world map as a gift to Sultan Selim I in Cairo to obtain royal patronage as a court cartographer. The extant fragment of this map illustrates a realm that was unknown to Selim I and his subjects in the early sixteenth-century. What is left is only a small section of a much larger world map that depicted regions in the Indian Ocean Basin of pivotal strategic importance to the Sublime Porte.

The biblical scholar, Adolf Deismann, and his German Orientalist colleague, Paul Kahle, discovered the only remaining fragment of this 1513 map in the Topkapi Palace.

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1 Pırı Reis, Kitab-ı Bahriye (Istanbul: Historical Research Publishing Unit, Istanbul Research Center, 1988), 201.
3 Ibid.
4 Soucek compares the early exploits of Piri Reis and his uncle to the famous English corsair, Sir Francis Drake in the age of Queen Elizabeth I. - Ibid., 36-37.
5 Gregory C. McIntosh, The Piri Reis Map 1513, 6.
6 Ibid., 50.
Museum in 1929. The whole map was a *mappa mundi*, or world map, that depicted lands Piri Reis never visited, including the Far East and the Americas [Fig. 1]. Today, all that survives is an incomplete image of the Atlantic coastline and various Caribbean islands [Fig. 1]. The southern coast of Africa has been torn away with the rest of the map, and all that can be seen of Europe is most of the Iberian Peninsula and part of France. The most prominent features on the map fragment are on the continent of South America. Mythical beasts like the blemmyae (headless giants) and the cynocephali (dog-headed humanoids) are shown roaming the mountains of what is now Brazil [Fig. 1]. Fantastic illustrations of exotic parrots adorn the curiously shaped islands of the Caribbean Sea. Famous voyages to the New World are described in the text, accompanied by images of the ships sailing the Atlantic. It must have inspired as much conversation in the sixteenth-century as it does among today’s scholars.

When one looks at the map, it is difficult to imagine what kinds of sources were used to convey its fantastical imagery and geographical delineations. Scholars have posited that if Piri Reis used contemporary maps as templates, than there must be similarities between his map fragment and other world maps of the time. Luckily for researchers, the extant fragment contains clues about the types of sources that Piri Reis used to depict the entire chart. In this list, he described maps that depict several regions other than those on the extant fragment that shows the New World:

> From about twenty charts and Mappae Mundi – these are charts drawn in the days of Alexander, Lord of the Two Horns, the Arabs name these charts Jaferiye – from eight Jaferiyes of that kind and one Arabic map of Hind, and from the maps just drawn by four Portuguese which show the countries of Hind, Sind and China

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**geometrically drawn**, and also from a map drawn by Qulunbu in the western region I have extracted it. By comparing all these maps with one another, this final form was arrived at. So that the present map is as correct and reliable for the Seven Seas as the map of these this country is considered correct and reliable by mariners.¹

In addition to the *mappa mundi* (world maps) from Alexander’s time and the Arab map of Hind, Piri Reis mentions that he used Portuguese maps that depict India and China. Scholars have yet to definitively identify the latter because the part of the Piri Reis map showing India and China is missing. The inscriptions on the map revealed Portuguese influences on the extant fragment as well [Fig. 1]. His Portuguese sources for India and China would therefore have images and inscriptions similar to those on the fragment. Who were these elusive Portuguese cartographers that Piri Reis cited as his four chief sources for the depiction of China and the Indian Ocean [Fig. 1]?

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¹(Emphasis is my own). – Fig. 1. Pıırı Reis, “Map Of Turkish Admiral Pıırı Reis” (1513), Topkapı Palace Museum.
Figure 1. – An in-text translated version of the Piri Reis map fragment (1513): Piri Reis, “Map Of Turkish Admiral Piri Reis” (1513), Topkapı Palace Museum.
I was hooked, but research on this map was already extensive, and I needed an original thesis. Luckily for me, Professor Pinto had a unique suggestion. During our meeting about the topic, she recruited me in a mission to hunt for these Portuguese maps by examining the history of Portuguese exploration in the Pacific and its influence on European cartography. Historians have not yet determined whether Piri Reis utilized charts of the Indian Ocean procured by Portuguese explorers or maps produced by Portuguese cartographers. Professor Pinto steered me around her office, pointing at large books on her shelves, urging me to “troll” through their bibliographies and get started. I searched (feeling as doubtful as a sailor in uncharted waters) for cartographic similarities between sections of the Piri Reis map that are no longer extant and unknown Portuguese maps. The adventure seemed folly; after all, how could I possibly see what lay beyond the edge of the map?

Unlike previous historians, I did not restrict my study to Portuguese maps up to the date 1513; rather I extended my search to include charts produced up until Piri Reis’ death in 1554. I identified the earliest maps produced by Portuguese cartographers with depictions of China that were based on information brought to Lisbon from expeditions to the Far East in the first years of the sixteenth century. I also probed Piri Reis’s magnum opus the Kitab-ı Bahriye (Book of Navigation) to determine whether or not Piri

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9 The only recorded Portuguese depictions of the Far East from before 1513 appear either in 1512 or 1513 in the Francisco Rodrigues charts which are suggested as a Portuguese source for the Piri Reis map by Sollewijn Gelpke in 1995. The argument against this conclusion will be discussed in the Debate to Date section (historiography) of this paper, J.H.F. Sollewijn Gelpke, “Afonso de Albuquerque’s Pre-Portuguese ‘Javanese’ Map. Partially Reconstructed from Francisco Rodrigues’ Book” (Bijdragen tot de Taal-, Land- En Volkenkunde 151, no. 1, 1995), 77. In addition, the date of the charts creation is in question, and to hear more of this debate see the both Gelpke’s article and the introduction to Armando Cortesão ed. The Suma Oriental of Tomé Pires: an Account of the East, from the Red Sea to China, Written in Malacca and India in 1512-1515; And, The Book of Francisco Rodrigues: Pilot-Major of the Armada That Discovered Banda and the Moluccas: Rutter of a Voyage in the Red Sea, Nautical Rules, Almanack, and Maps, Written and Drawn in the East Before 1515 (New Delhi: Laurier Books Ltd., 2005), xcv.
Reis utilized cartographic material from Portuguese charts in public circulation, salvaged from naval ships, or procured by other means. After I determined that Portuguese cartographical material that show China and the Indian Ocean Basin does not appear in the historical record prior to 1512, I concluded my research by analyzing a collection of Portuguese charts, dubbed the Atlas Miller, which I argue bear distinct similarities to what might have been Piri Reis’s Portuguese sources.

The Debate to Date: A Historiography of the Search for the Sources

Until now, scholars have searched for the sources that Piri Reis used to create the extant portion of his famous map, ignoring its missing section. Some hypotheses were more unrealistic than others, belonging more to the realm of fantasy than academia. For instance, one entertaining theory popularized by the eccentric Erich von Däniken illustrated that the Piri Reis map used sources produced by alien technology. While this aspect of the debate was certainly interesting, it is not, for all intents and purposes, pertinent to this study. Recent scholarship on the Piri Reis map has focused on a more empirical analysis of the work. Scholars searched for clues on the map that indicate influences from other source maps. In his 1992 book, *Piri Reis and Turkish Mapmaking After Columbus*, Svat Soucek identified several of the references in the various inscriptions on the Piri Reis map, such as the following that describes the Treaty of Tordesillas in 1494 between Spain and Portugal:

The Portuguese Infidel cannot pass beyond this point westwards, for that side belongs to Spain. They have made an agreement that

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the dividing line would lie 2,000 miles to the west of the Strait of Gibraltar. The Portuguese cannot proceed further west, but the direction towards India and the south is all theirs.\textsuperscript{12}

Soucek identified this inscription as a reference to the 1494 agreement between Spain and Portugal to divide their territorial claims by the meridian 370 leagues to the west of the Cape Verde Islands.\textsuperscript{13} He also pointed out similarities between the planisphere of Alberto Cantino (1502) [Fig. 2] and Piri Reis’s map as a contemporary example of a world map prior to 1513.\textsuperscript{14} The similarities between the two maps were based on the positioning of the inscriptions more so than their respective geographical features.\textsuperscript{15} Likewise, the Cantino map transmits cartographic information primarily from the Ptolemaic tradition, not information conveyed in Portuguese explorers’ accounts of the Far East.

\begin{itemize}
\item\textsuperscript{12} Svat Soucek, \textit{Piri Reis and Turkish Mapmaking}, 60.
\item\textsuperscript{13} \textit{Ibid.}, 80.
\item\textsuperscript{14} \textit{Ibid.}, 73.
\item\textsuperscript{15} The inscription and the image of the map on Plate 11 of Soucek’s work are taken from “The Cantino Planisphere, Biblioteca Estense, Modena, inv.no.C.G.A.2.” \textit{Ibid.}
\end{itemize}
The Alberto Cantino Planisphere (1502)

In his 1995 article, "Afonso de Albuquerque's Pre-Portuguese 'Javanese' map, partially reconstructed from Francisco Rodrigues' Book," Gelpke suggested that Piri Reis used a similar source map to those used by the Portuguese cartographer Francisco Rodrigues (b. – d. unknown) in his depiction of the Indian Ocean Basin (c.1511-13). His claim was not supported but is worth referencing as an early attempt to suggest a contemporary source for the Piri Reis map.\(^\text{16}\) Gelpke did not take into account any of Soucek’s research in *Piri Reis and Turkish Mapmaking*, and he stated that Piri Reis might have obtained Arab source maps.\(^\text{17}\) Gelpke’s theory therefore contradicts the work of other scholars who believed Piri Reis did not have access to Arab charts of the Indian

\(^{16}\) J.H.F. Sollewijn Gelpke, “Afonso de Albuquerque's Pre-Portuguese 'Javanese' Map,” 77.

\(^{17}\) Soucek, *Piri Reis and Turkish Mapmaking*, 96.
Ocean at the time he recorded his map. Knowledge of contemporaneous Arab charts was not prevalent in the Ottoman world until the latter half of the sixteenth century.\(^{18}\)

Moreover, Gelpke makes the suggestion in his article that there are distinctive similarities between the depictions of the land of Brazil on both the Portuguese charts of Francisco Rodrigues (made between 1512-13) and the Piri Reis map.\(^{19}\) In his recent article, “Southeast Asian Nautical Maps,” Schwartzberg remains unconvinc ed that the Javanese map used by Francisco Rodrigues actually depicts Brazil, indicating that this information originates from other Portuguese maps as opposed to native sources from the Indian Ocean.\(^{20}\) Therefore, if Piri Reis used information that originally came from this Javanese chart then it was most likely through Rodrigues. Gelpke also states that other than the chart sent by Albuquerque to Manuel I in 1512, Rodrigues sent updated maps to Portugal after the conclusion of his expedition to the Spice Islands in 1513.\(^{21}\) When Rodrigues compiled his charts in the 1515/1516 copy of the Suma Oriental of Tomé Pires, he did so based on his drafts made during his travels.\(^{22}\) I inferred that, given the 1513 date, Piri Reis could not have used cartographical information transmitted prior to the Rodrigues charts sent to King Manuel I between the years 1512 to 1513. I will readdress the Rodrigues charts and their relation to Piri Reis’s sources later in this paper.

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\(^{18}\) Giancarlo Casale, *The Ottoman Age of Exploration* (New York: Oxford University Press, USA, 2010), 25. Professor Karen Pinto challenges this theory in her article, “Searchin’ his eyes, lookin’ for traces,” by suggesting similarities between the Piri Reis map and a set of older Islamic maps in the Topkapı Sarayı. Karen Pinto, “Searchin’ his eyes, lookin’ for traces.”

\(^{19}\) Gelpke also mistakenly states that Piri Reis had access to similar cartographic material through Arab sources, which, as I have indicated previously, is unlikely. Sollewijn Gelpke, “Afonso de Albuquerque’s Pre-Portuguese ‘Javanese’ Map,” 77. In addition, McIntosh’s analysis also agrees that similarities exist between the form of the coastlines on both the Rodrigues chart and on the Piri Reis map. This could indicate that Piri Reis used a map that bore similar Portuguese cartographical information to the Rodrigues charts. McIntosh, *The Piri Reis Map of 1513* (Athens: University of Georgia Press, 2000), 38-9.


\(^{21}\) Sollewijn Gelpke, “Afonso de Albuquerque’s Pre-Portuguese ‘Javanese’ Map,” 91.

\(^{22}\) *Ibid.*, 93.
Five years after the publication of Gelpke’s article, Gregory C. McIntosh analyzed the Piri Reis map for geographical elements that were transferred from contemporary European sources. In his work *The Piri Reis Map of 1513*, McIntosh noted similarities between the southern continent (South America, primarily Brazil) on the Francisco Rodrigues map (c.1511-13) and on the Piri Reis map. In addition, McIntosh compares the later Atlas Miller world map (c. 1519) to the Piri Reis map’s depiction of the southern continent, suggesting that Piri Reis used a Portuguese source to draw that region. McIntosh’s research identifies the lay of the land, so to speak, of the sources that Piri Reis put into each section of the map. To illustrate his findings, he even suggests a possible reconstruction of the entire Piri Reis map based on contemporary cartographic knowledge.

In her recently published article, “Searchin’ his eyes, lookin’ for traces,” Karen Pinto identifies a set of eight maps that contain similarities to Piri Reis’s map and may correspond to his reference of Arab Ja‘rafiyya. In her article, Pinto pointed out several differences between the iconographical depictions of contemporary European maps made by Juan de la Cosa in 1500, the Cantino map of 1502 (mentioned by Soucek) and the Piri Reis map. She revealed that Piri Reis’s map contains stylistic differences both in terms of paint and imagery from the presentation portolan tradition of contemporary European maps. Her conclusion that Piri Reis used Arab miniatures housed at Topkapı Sarayı

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23 Gregory C. McIntosh, *The Piri Reis Map of 1513*, 3.
25 Although McIntosh draws interesting comparisons between the Piri Reis map and the Atlas Miller, though not necessarily the same similarities that I describe later in this paper. – *Ibid.* 50-51.
29 Pinto argues that the painting style on the Piri Reis map does not “fit the bill” of contemporary European portolan styled charts. *Ibid.*, 70.
reinforced Soucek’s argument that Piri Reis consulted many different types of cartographical sources to complete his work.\textsuperscript{30} Even though Piri Reis may not have had access to sources procure in the regions he depicted, he likely used a variety of sources that were available to him. In his study of Ottoman exploration in the Indian Ocean, Giancarlo Casale reveals that Ottoman citizens were interested in owning Western style maps during Piri Reis’s lifetime, however, published Portuguese maps were not typically mass produced for their consumption.\textsuperscript{31} Piri Reis was certainly an experienced traveller and may have come by his sources while he was abroad. The list of possible candidates for his sources might not be as extensive as historians presume.

The debate regarding the map’s sources has focused primarily on the extant section of the map and its depiction of the discoveries in the New World. The mystery behind the missing section of the map has yet to reach the fore of this debate. As a result, the inability of scholars to discover contemporaneous Portuguese sources impeded historians from considering a wider range of candidates that might share cartographical information with Piri Reis’s map. By searching for these sources, the missing section of the map can be illuminated to reveal what was once a beautiful work.

\textbf{The Cartographer’s Tale: The Artist at Work}

\textit{“These are the things said by those who are true seafaring men and they are the truth. Hear now their circumstances and how they investigate these things. They proceed by taking elevations. They take measurements wherever they go and so become experienced. Do not suppose that their words are hearsay or that they have acquired this knowledge in such a way.”}

\textit{– Pırı Reis, Kitab-ı Bahriye, 1526}\textsuperscript{32}

\begin{flushleft}
\textsuperscript{30} \textit{Ibid.}, 70.
\textsuperscript{31} His discussion indicates that the Portuguese were not usually the producers of published maps that were commonly sold in the Ottoman market, an issue that adds to the mystery of how Piri Reis came across his Portuguese sources. Giancarlo Casale, \textit{The Ottoman Age of Exploration}, 198.
\textsuperscript{32} Pırı Reis, \textit{Kitab-ı Bahriye}, 133.
\end{flushleft}
The information we have regarding Piri Reis’s methods for obtaining his sources comes from the extant portion of the map. For example, Piri Reis used cartographical information drawn by Christopher Columbus (known in Turkish as Qulunbu) to depict the New World discoveries. Piri Reis used a map made by the first man to visit the lands the map depicted. If he obtained a map made by Columbus (or by someone else on Columbus’s voyages), he may have also wanted to use maps made by Portuguese explorers who actually travelled to the regions of India and China.

The 1513 map is not the only work by Piri Reis created that could be used to reveal the nature of his sources. In his Kitab-ı Bahriye, Piri Reis described his influences in detail. He wrote this “Book of Navigation” in 1521 to accompany his map as a guide for mariners and later gifted an updated version to Sultan Suleiman the Magnificent in 1526. He wrote his book in conjunction with a set of maps meant to depict areas primarily in the Mediterranean Ocean. Piri Reis’s book also described what was illustrated on his charts in his statement regarding his purpose for compiling the work:

By means of these maps now employed, one may operate along the extensive shores of the seas and around the major islands. Nevertheless even in such broad places as these, the representation of a number of important markings goes unnoticed for they are abbreviated. However I have made this so easy that those who are masters of this profession may by applying that which is written in this book and with the grace of God facilitate all their affairs, even if they have never before seen or been acquainted with such places, and they will have no need of pilots.

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33 Svat Soucek, Piri Reis and Turkish Mapmaking, 50.
34 Gregory C. McIntosh, The Piri Reis Map of 1513, 6.
36 Pırı Reis, Kitab-ı Bahriye, 43-44.
Piri Reis boasted that the book he compiled in 1526 was meant to be used as a guide to sailors in conjunction with nautical maps similar to his world 1513 map. He was aware of the limitations of his charts, which did not nor could not easily display every important geographical feature in the lands depicted. He therefore appended descriptions of the geography and culture of these lands to “facilitate all their [sailors] affairs, even if they have never before seen or been acquainted with such places.” Piri Reis’s *Book of Navigation* can provide useful information regarding the types of sources he used to construct his world map. For instance, Piri Reis valued the first hand narratives often indicated his reverence for the accounts of “true seafaring men” who were his foremost authorities regarding not only the geography of distant lands, but also reports of the behavior and cultures of peoples who occupied them. In this early ethnographic account, Piri Reis describes how the people of China greeted foreigners or perhaps their social superiors based on the testimonies of Portuguese sailors who visited the country:

When greeting another they never say another word, whether one is a great man or a child, he clasps his hands together. Having tightly clasped his hands together holds them at the level of his knees. And swinging his tightly clasped hands left and right says “Master”. Now you have learned of China as the Portuguese tell it.

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37 The facsimile edition of the *Kitab-ı Bahriye* states: “Having made use of new maps of the Chinese and Indian Seas which no one in the Ottoman lands had hitherto seen or known, I presented them to the late and deceased Sultan Selim Han (may he reside in Paradise) while he was in Egypt and received his favor. In the same way the map presented here was a summary.” In the last line, Piri Reis reveals that he compiled his book and his map in the same manner. – *Ibid.*, 43.


39 The Turkish Admiral indicates his value for first hand nautical and geographical information in his *Kitab-ı Bahriye*, as he states, “These are the things said by those who are true seafaring men and they are the truth. Hear now their circumstances and how they investigate these things. They proceed by taking elevations. They take measurements wherever they go and so become experienced. Do not suppose that their words are hearsay or that they have acquired this knowledge in such a way.” *Ibid.*, 133.

What is important about Piri Reis’s description of Chinese social behavior is his claim that the description came from Portuguese accounts arriving from the Far East. Not all of the information used to depict the land of China (or Cathay) was accurate. Some of that information may have been transferred from Ptolemaic maps prior to the arrival of the Portuguese in China. However, Piri Reis specified that the Portuguese depict China differently than the “old-timer’s tale” that from his narrative seems reminiscent of the Ptolemaic description of the Far East. The fact that Piri Reis made a distinction between contemporary Portuguese sources and old cartographic representations indicates that he knew that they were different. Piri Reis recognized the difference between Portuguese accounts of China and those of medieval myth. He had access to new accounts and new charts produced by the Portuguese from voyages to the Far East. Portuguese maps retained Ptolemaic influences long after the first Portuguese voyages to the Far East. The imago mundi changed slowly over time, starting with the Portuguese exploration of new territories abroad. The information Piri Reis used was likely an updated version of older Ptolemaic maps in lieu of Portuguese discoveries in the Far East. Piri Reis could have used maps produced from data collected on Portuguese voyages to China.

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41 In China, Piri Reis depicts several imaginative creatures commonly depicted in cartographic information of the Ptolemaic tradition as evidenced by the following description in the Kitab-i Bahriye: “Among them were beings of every type: God had created each one of them individually. Some were horned like deer, some had one eye in the center of their faces. The feet of most of them were joined. Their language sounded like the shrieks of seabirds. In some the head and neck were combined and located in the middle of their chests. Many of them had faces like dogs and were tailed as well. But though they resembled dogs, they were not: they would not bite or break a man’s flesh.” Ibid., 143. Several of these same creatures are commonly depicted on Ptolemaic maps of Asia, such as the Sebastian Münster map Tabula Asiae VIII: Scythia extra Imaum circa 1540 that has “illustrations of Blemmyae (headless creatures with facial features in their chests) Ymantonopodes (one-footed creatures) and Cynocephali (dog-headed peoples). – Min-min Chang ed. China in European Maps (Kowloon Hong Kong: Hong Kong University of Science and Technology Library, 2003), 41, 145.

42 Piri Reis, Kitab-i Bahriye, 143.

43 Several examples of Ptolemaic maps continued to be produced well into the seventeenth century. – Min-min Chang, China in European Maps, 41, 145.
Piri Reis was also familiar with the methods of navigation in the Indian Ocean that the Portuguese had learned from Arab travellers in that region. During a voyage in the Indian Ocean, the famous Portuguese captain Vasco da Gama observed a Moorish pilot from Gujarat who knew how to navigate using the north star and a cross staff (also referred to as Jacob’s staff). The pilot was familiar with the astrolabe and described many methods of navigation similar to those described in Piri Reis’s book. Piri Reis incorrectly attributed these navigational methods to the Portuguese, who adopted them from indigenous navigators:

They put the rod down and take up another and by such reckoning they chart their course. Good friend, this then is the science of proportional navigation. It is the result of hundreds of trials on the routes to India. By their experience, they know where they are going and even if the sea is raging, they return. This method is used only in the Indian Ocean, for the north star is clearly visible there. The north star is always their target; with it they perform their tasks. Nevertheless in some places the north star is not visible, but wise men have discovered a remedy for that too. Companion, they chart that course with the astrolabe by taking elevations.

Instead of specifying that the indigenous mariners navigated based on the sun’s distance from the equinoctial line, Piri Reis stated that it was a Portuguese method. This error indicates that he knew only of the Portuguese methods of navigation to the Far East and not those borrowed from the indigenous mariners in the Indian Ocean Basin. Piri Reis falsely attributed navigational techniques to Portuguese innovation. Therefore, it is likely that Piri Reis consulted Portuguese sources to obtain this information on the Indian Ocean. Similarly, Soucek indicated that Piri Reis did not use other sources of information.

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44 The tale of the Moor of Guzarat is discussed in the 2nd footnote of Chapter XV, and relates the types of navigation techniques employed by those in the Indian Ocean and taught to the Portuguese who employed local pilots. Gaspar Corrêa, *The Three Voyages of Vasco de Gama and His Viceroyalty: From the Lendas da India* (London: Hakluyt Society, 1869), 137-138.

from the Indian Ocean while compiling his book. In his analysis, Soucek also determined that Piri Reis did not know of the cartographic work of his Arab contemporaries, Ibn Majid and Suleyman al-Mahri, on the Indian Ocean Basin.\textsuperscript{46} If Piri Reis used Portuguese sources for his book, then his earlier map would have used similar, if not the same, cartographical sources. His Portuguese sources were also likely contemporaneous charts that contained the descriptions of the geography and peoples of the Far East that he transmitted in his \textit{Book of Navigation}.

\textbf{The Francisco Rodrigues Charts: Do They Fit the Bill?}

Piri Reis valued the new cartographic information that was brought back by the Portuguese from the Far East. However, the question remains: What were these Portuguese sources that Piri Reis used in lieu of those produced by Arab and Indian navigators? I already determined that the earliest extant cartographic depiction of the Far East produced by the Portuguese was found in the \textit{Book of Francisco Rodrigues}.

Historians know about Francisco Rodrigues both from his \textit{Book} and from the information provided in two letters written by the Portuguese explorer Afonso de Albuquerque to King Manuel I of Portugal (written in Colchin, April 1\textsuperscript{st} and 20\textsuperscript{th} of 1512).\textsuperscript{48} In the first of his letters, Albuquerque indicates that Francisco Rodrigues sketched a Javanese map, depicting the Indian Ocean region. The following passage from the letter tells of the extent of the map’s depictions:

\begin{quote}
It seems to me, Sir, that this was the best thing I have ever seen, and your Highness will be very pleased to see it; it had the names
\end{quote}

\textsuperscript{46} Svat Soucek, \textit{Piri Reis and Turkish Mapmaking}, 96.
\textsuperscript{47} Armando Cortesão ed., \textit{The Book of Francisco Rodrigues}, xcv. Refer to the discussion about the Rodrigues charts in the historiography section of this paper titled “The Debate to Date” which refers to the following sources. J.H.F. Sollewijn Gelpke, “Afonso de Albuquerque’s Pre-Portuguese ‘Javanese’ Map”; Armando Cortesão ed., \textit{The Book of Francisco Rodrigues}; Joseph E. Schwartzberg, “Southeast Asian Nautical Maps.”
\textsuperscript{48} Armando Cortesão ed., \textit{The Book of Francisco Rodrigues}, lxxvii.
in Javanese writing, but I had with me a Javanese who could read and write. I send this piece to Your Highness, which Francisco Rodrigues traced from the other, in which Your Highness can truly see where the Chinese and Gores come from, and the course your ships must take to the Clove Islands, and where the gold mines lie, and the islands of Java and Banda, of nutmeg and maces, and the land of the king of Siam and also the end of the navigation of the Chinese, the direction it takes, and how they do not navigate farther. The main map was lost in Frol de la Mar. With the pilot and Pero de Alpoim I discussed the meaning of this map, in order that they could explain it to Your Highness; you can take this piece of map as a very accurate and ascertained thing, because it is the real navigation, whence they come and whither they return. The archipelago of the islands called Celates, which lie between Java and Malacca, is missing.49

Only part of the map, “hum pedaço de padram,” was copied before the original was lost in the shipwreck of the Frol de La Mar in the last months of 1511.50 This portion of a larger Javanese map is no longer extant, but its form can be gleaned from the sketches depicted in Francisco Rodrigues’s Book. According to Sollewijn (1995) and the piece of the Albuquerque letter above, the copied map illustrated the practical trade routes used by the indigenous mariners from the Far East.51 This information was intended for the Portuguese King’s use and was all that was recorded before the map was lost. These charts were carried back to Spain by ship, but the extant drafts were published later and compiled in the Suma Oriental 1515/16. If Piri Reis used Portuguese sources that depicted the Indian Ocean Basin and the geography of the Far East, he would therefore have needed access to the charts sent to the Spanish court in 1512-13.

49 Ibid., lxxvii-lxxix.
50 This source also indicates that, contrary to Cortesão’s analysis, the date for Rodrigues’s sketches should be placed in the year 1511 because when Albuquerque mailed his letter holding the pedaço de padram to Manuel I in 1512, Rodrigues was already en-route to the Spice Islands on a mission with Abreu, and therefore he must have drawn them while in Malacca between August and December, before the sinking of the Froll de La Mar. J.H.F. Sollewijn Gelpke, “Afonso de Albuquerque’s Pre-Portuguese ‘Javanese’ Map,” 80.
51 Ibid.
The Piri Reis map includes inscriptions of information attributed to his Portuguese charts that do not appear on the sketched charts in *The Book of Francisco Rodrigues*. Likewise, the fragment reproduced for Albuquerque to send to Lisbon in 1512 probably depicted little more than the trade routes described in his letter of April 1st, 1512 mentioned earlier. The map was meant as a template for King Manuel I’s court cartographers, rather than as a decorative map filled with inscriptions about Portuguese voyages to the Far East. Piri Reis used maps “drawn by four Portuguese which show the countries of Sind, Hind, and China geometrically drawn” [Fig 1]. Since the charts of Francisco Rodrigues were the first Portuguese maps to depict China and India, then Piri Reis must have used maps made later by other cartographers. Who were these cartographers? What did the maps look like?

**Portuguese Portolans and The Master Chart of Portugal**

There is a possibility that Piri Reis obtained portolan charts from ships. He may have used his contacts in the navy to obtain up-to-date maps salvaged from enemy Portuguese ships. Several Ottoman seamen volunteered in the Mamluk navy prior to Selim’s conquest of Egypt in 1516-17. These sailors may have captured Portuguese vessels and stolen their maps during skirmishes in the Red Sea. The cartographical treasure they might have claimed on raids could have found its way back to Gallipoli and into Piri Reis’s hands some time before 1517.\(^{52}\) This is, however, unlikely because Portuguese portolan charts used at sea received damage from being in the open ocean environment for extended periods of time. The increase in exposure to the elements of sea charts used in navigation prompted those onboard to repair them and in some cases to edit them. On voyages of discovery, the charts were often revised as new information

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\(^{52}\) Giancarlo Casale, *The Ottoman Age of Exploration*, 32.
streamed in from various places. A damaged navigation chart also did not have the decorative illustrations and stories that Piri Reis used for his world map [Fig 1]. The imagery that inspired Piri Reis would not have come from charts that had been exposed to the harsh winds and gales. The information gathered by the Portuguese sailors would appear in the decorative maps meant for display rather than navigation.

The detailed inscriptions present on the extant copy of the Piri Reis map more than likely came from decorative portolan maps meant for display in the court of Renaissance Portugal. The maps Piri Reis used depicted Portuguese ships as well as different types of creatures and events that he transferred onto his world map. He most likely used a decorative chart based on the presence of inscriptions on his map that were derived from Portuguese maps: And in this country it seems that there are white-haired wild beasts in this shape, and also six horned oxen. The Portuguese infidels have written it on their maps…[Fig 1]. This inscription reveals that the map Piri Reis used bore inscriptions detailing the lands visited by the Portuguese. The map provided images of elegantly drawn mythical beasts that would have only existed on political maps in Portugal. In addition, the presence of the ships from historic Portuguese voyages on the Piri Reis map attested to influences of Portuguese court cartographers [Fig 1]. A sixteenth century court cartographer glorified his country as any other Renaissance artist would. The first Portuguese cartographic depiction to show information on the Far East was the updated version of the Padrão Real (master chart). Court cartographers used the master

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53 This is indicated by the following statement: “As we have already seen in the case of the latter half of the fifteenth century, it is highly probable that early cartographic sketches were constantly revised as new navigation opened up new horizons. Deterioration through use and the constant process of revision must, therefore, have been the main reasons for the disappearance of the earliest Portuguese cartographic specimens.” Piri Reis probably did not use this type of source that was so easily damaged. Maria Fernandez Alegria, Suzanne Daveau, João Carlos Garcia, and Francesc Relaño, eds. “Portuguese Cartography in the Renaissance,” (In The History of Cartography, edited by David Woodward, 975-1059. 3 vols. Chicago: University Of Chicago Press, 2007), 983.
map of the *Armazém da Guiné e Indias* (the official repository for the Guinea and India Office in Lisbon) to update maps in lieu of Portuguese discoveries.\(^{54}\)

The Rodrigues charts and other portolan maps that survived the voyages to the Far East and other lands were incorporated into the master chart before the Crown destroyed them. In accordance with the Royal Decree of November 13, 1504, any charts and logs connected with Portuguese navigation south of the equator were destroyed after first being incorporated into the *Padrão Real*.\(^{55}\) Piri Reis could not have used the Rodrigues charts or any Portuguese sea charts, which were probably destroyed after they arrived in Portugal. Instead, he likely obtained copies of the *Padrão Real* adorned with images of creatures and with written descriptions of regions of the Far East on them [Fig 1]. In November of 1502, Alberto Cantino supposedly paid an anonymous Portuguese cartographer twelve gold ducats for a copy of this master map which he then had transported to the library of Ercole d’Este, Duke of Ferrara.\(^{56}\) Piri Reis may have used decorative maps he obtained from Portuguese traders as well as Portuguese maps that were produced in print for a European audience.\(^{57}\) He may have obtained one or more of these decorative charts during his stay in Gallipoli from 1510-17 as information from the Far East continued to arrive in Portugal.

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55 Sollewijn Gelpke, “Afonso de Albuquerque’s Pre-Portuguese ‘Javanese’ Map,” 76.
56 The so-called ‘Cantino Planisphere’ depicts the discovery of Brazil by the Portuguese commander Pedro Alvares Cabral in 1500 just before the creation of the map. The Cantino map anecdote reveals, first, that the Portuguese were known to sell their cartographic information to foreign leaders (at least not long after their early voyages of discovery), and second, that foreign dignitaries desired charts that depicted the full extent of Portuguese cartographical knowledge. Jerry Brotton, *Trading Territories: Mapping the Early Modern World*, 22-3.
57 Casale states in his book that the maps printed in the Italian publishing houses were widely valued in the Ottoman Empire. Piri Reis may therefore be one of the earliest Ottoman customers to purchase Portuguese maps. Casale, *The Ottoman Age of Exploration*, 197-8.
The Master Chart and The Atlas Miller

What did these embellished maps look like? What maps did Piri Reis obtain from the Portuguese? Piri Reis stated in his inscription that he used “maps just drawn by four Portuguese which show the countries of Hind, Sind and China geometrically drawn…” [Fig 1]. There were four contemporaneous Portuguese cartographers to Piri Reis who collaborated on nautical sea charts modeled after the Padrão Real. 58 Pedro and Jorge Reinel were two of the most famous Portuguese cartographers of their day. Their extant maps range from the dates 1485 to 1540, and they worked on maps primarily out of Lisbon until the year 1519 when they were in Seville. 59 Their cartographical work earned them annual pensions from King João III in 1528. 60 The Reinels were colleagues of another Portuguese cartographer, Lopo Homem, who collaborated with them and Gregorio Lopes to complete the Atlas Miller, a set of embellished charts now housed in the Bibliothèque Nationale de France. 61

The cartographers completed the Atlas Miller in 1519, and its world map bears similarities to the Piri Reis map. Coincidentally, it is also possibly the earliest set of Portuguese charts to depict the Far East using the Padrão Real after the inclusion of the Rodrigues charts. McIntosh pointed out similarities between the shape of South America on the Atlas Miller world map and the Piri Reis map fragment. 62 In his analysis, Piri Reis’s rendering of the geography of the southern continent seems to curve and connect to the Indian Ocean Basin and the Far East.

59 Ibid., 987.
60 Ibid., 987.
61 Svat Soucek, Piri Reis and Turkish Mapmaking, 80.
62 Gregory C. McIntosh, The Piri Reis Map of 1513, 50-51.
The connecting Indian and Atlantic Oceans depicted on the Atlas Miller is reminiscent of the inscription on the Piri Reis map regarding the Encircling Lake:

They have given it the name of Ovo Sano [Oceano] that is to say, healthy egg. Before this it was thought that the sea had no end or limit, that at its other extremity darkness prevailed. Now they have seen that this sea is surrounded by a coast and because it is like a lake, they have called it Ovo Sano [Fig 1].

This image of the new Encircling Lake connecting the Atlantic and Indian Ocean is present in the geography depicted on the world map of the Atlas Miller [Fig 3] and is the Portuguese cartographer’s attempt at reconciling new geographic information from the Far East with the entrenched Ptolemaic map tradition. It is no surprise that Piri Reis included this inscription on his map to illustrate the changing perceptions of the world in...
the eyes of mariners. Since the *Atlas Miller* was one of the earliest maps to depict Portuguese cartographic information that arrived from the Far East, Piri Reis might have seen them or a set of similar maps as accurate depictions of the region.

There are also similarities between the Piri Reis map and the other individual charts of the *Atlas Miller*. For example, creatures present on the southern continent on the Piri Reis map resemble the ones depicted on the *Atlas Miller* [Fig 4]. The animal on all fours and the monkey on the Piri Reis map [Fig 1] are similar to the monkey and four-legged creature on the *Atlas Miller* [Fig 4]. The orange plumage on the head of the Blemmyae on the Piri Reis map [Fig 1] resembles to the plumage on the headdresses of the natives depicted on the *Atlas Miller* [Fig 4].

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63 In her forthcoming publication, Karen Pinto discusses the meaning of Piri Reis’s inscription regarding the Encircling Ocean or “Healthy Egg.” Karen Pinto, “Searchin' his eyes, lookin' for traces,” 40-42.
South America and the Atlantic in The Atlas Miller

Figure 4. – Feuille 5 r°: Océan Atlantique Sud-Ouest avec le Brésil [Atlas nautique du Monde, dit atlas Miller]; 2-5. [Atlas Miller: feuilles 2 à 5]. Housed in the Bibliothèque Nationale de France.

In this case, Piri Reis may have combined some of his information from different sources as he “compared all these maps with one another” [Fig 1]. In addition, indigenous people wearing headdresses and the presence of parrots on the Atlas Miller are reminiscent of the descriptions on the Piri Reis map:

This region is known as the province of Antilia. It is in the direction where the sun sets. They say that there are four kinds of parrots: white, red, green and black. The people eat the flesh of parrots and their headdress is made entirely of parrots’ feathers [Fig 1].

Piri Reis could have used the Atlas Miller or a version of it for his Portuguese sources. The regions of China and India on the Atlas Miller are an example of what Piri
Reis’s entire map might have depicted. Elephants lurk in northern India not far from two large soldiers carrying spears. A horseman rushes through the Arabian Peninsula as the Portuguese ships sail across the Indian Ocean. Thousands of islands below India represent the cartographer’s persistent use of the austral continent despite the new reports of a chain of islands, the archipelago [Fig 5].

The Indian Ocean in The Atlas Miller

Figure 5. – Feuille 3 r°: Océan Indien Nord avec l’Arabie et l’Inde [Atlas nautique du Monde, dit atlas Miller]; 2-5. [Atlas Miller: feuilles 2 à 5]. Housed in the Bibliothèque Nationale de France.

Piri Reis may have been mesmerized by the splendorous amalgam of imagery and illumination on the Atlas Miller charts. Perhaps he felt he could create a work just as beautiful for his sovereign. Piri Reis could not have seen the 1519 Atlas Miller before he

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64 It is fitting that the Atlas Miller should be suggested as Piri Reis’s source, as Svat Soucek states, the two maps were likely some of the “best specimens of the period.” Soucek, Piri Reis and Turkish Mapmaking, 80.
presented his map to Selim in Cairo, but he may have used a similar set of maps from an earlier date. The extant map fragment of Piri Reis’s map could be an updated version copied for a presentation to Sultan Suleiman along with the Kitab-ı Bahriye in 1526. It is generally believed that Piri Reis presented his map to Sultan Selim the Conqueror (c.1467-1520 r.1512-1520) in 1517 while in command of several ships accompanying the Grand Vizier, Ibrahim Pasha (c. 1493-1536), on his way to meet the Sultan in Cairo. Between these years, Piri Reis would have had more time to update his map, perhaps by using sources adapted from maps of the Far East brought back to Europe after the first Portuguese voyages of exploration.

**Conclusion: Over the Edge of the Map**

Piri Reis created his world map at a time when the Ottoman Empire was about to challenge the Portuguese for control of trade in the Indian Ocean Basin. He desired his sovereign’s patronage and hoped that Sultan Selim would appreciate a world map that could accurately depict the regions of the Far East. Historically, Ottoman interest in the Indian Ocean Basin began with the conquest of Egypt in 1517 and after the Portuguese naval blockade was set up around the Holy Cities of Mecca and Medina. The sultan adopted the titles of Caliph and Protector of the Holy Cities and claimed Ottoman sovereignty in the regions once dominated by the Mamluk Sultans. Piri Reis’s map represents the investment that the Sublime Porte made toward the extension of their trade network to the Red Sea and by extension the Indian Ocean Basin.

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The Portuguese attacked several Muslim seaports in the Indian Ocean Basin in the first years of the sixteenth century. Both Piri Reis and the Sublime Porte recognized the strategic economic importance of the Indian Ocean trade network and were concerned about Portuguese hegemony that threatened the Muslim ports of Hormuz and Jedda. Conceivably, Piri Reis’s knowledge of Portuguese encroachment on the territories near the Red Sea prompted him to use Portuguese maps of India and China “just drawn” [Fig 1]. He created his map for a sovereign who was both ready and able to compete with the Portuguese upstarts in the Indian Ocean. His map in conjunction with his other work is a testament to the importance of an expansionist agenda to the Sublime Porte and the economic policies that motivated Ottoman foreign policy objectives. The rest of the map may have included demarcations of strategically important areas to Ottoman foreign policy, or it may have been a work of political propaganda supporting overseas expansion. In *The Ottoman Age of Exploration*, Giancarlo Casale diminished the overall importance of the Piri Reis map in the milieu of Ottoman exploration in the early 16th century.69 He argued that the map was not particularly significant to the history of Western cartography due to the commonality of similar maps in the marketplaces of Turkish cities.70 Given the salience of Piri Reis’s map to Ottoman foreign policy and the cartographer’s recognition of Portuguese encroachment in the Pacific, this map has a rich history attached to it, hardly undeserving of scholarly attention.

The search for Piri Reis’s sources may turn up new evidence and new insights into the nature of the missing section on his sixteenth-century map. It may also reveal new evidence in support of Ottoman designs for exploration and expansion. The search

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69 Giancarlo Casale, *The Ottoman Age of Exploration*, 25.
for the Portuguese sources, however, may only have been delayed due to the uncertainty of any conclusions regarding the map’s missing section. Scholars should not be deterred, for the mapmaker provided clues. The mystery of what shapes and forms were once in the space beyond the edge of the map is ascertainable. It is a challenge that can be met through analysis of Piri Reis’s extant works and through the persistence of modern scholarship. Were there elephants and naval battles along the famous spice route? Were there mythological creatures or unexplored continents? Luckily for us, we do not have to worry about the monsters of those uncharted lands.

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Bibliography


