

The Cartographer Sets Sail: Eyewitness Records and Early Modern Maps

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ABSTRACT: In this article I examine early nautical charts and *isolarii*, or island books illustrated with maps, for evidence that indicates the maps were made on the basis of first-hand observation by the cartographer. There are very few claims on early nautical charts that the charts were created based on the cartographers' own observations. I suggest that these claims are rare because chart-making was more an artistic enterprise than as a medium for recording discoveries. This conception of nautical charts changed with the advent of the Age of Discoveries, and claims that charts were made based on eyewitness information become more common. The case with *isolarii* is very different, although the maps in *isolarii* derive from the nautical chart tradition. Some of the creators of *isolarii* claim that their works were based on first-hand experience, but not always truthfully. Other authors neither sailed among the islands they describe nor claim to have visited them.

KEYWORDS: Cartography; Nautical Charts; Portolan Charts; *Isolarii*; Eyewitness Evidence; *Cartographie de Cabinet*.

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RESUMEN: *El cartógrafo a bordo: registros de testigos presenciales en las cartas náuticas tempranas.*— En este artículo examino las cartas náuticas tempranas y los islarios, o libros sobre islas ilustrados con mapas, en busca de evidencia que indique que los mapas se hicieron en base a la observación de primera mano por parte del cartógrafo. Hay muy pocas afirmaciones en las cartas náuticas tempranas de que las cartas se crearon en base a las propias observaciones de los cartógrafos. Sugiero que estas afirmaciones son raras porque la creación de las cartas náuticas fue más una empresa artística que un medio para registrar descubrimientos. Esta concepción de las cartas náuticas cambió con el advenimiento de la Era de los Descubrimientos, y las afirmaciones de que las cartas se hicieron en base a información de testigos oculares se vuelven más comunes. El caso de los islarios es muy diferente, aunque los mapas en los islarios derivan de la tradición de las cartas náuticas. Algunos creadores de islarios afirman que crearon sus libros a partir de la observación de primera mano, pero no siempre con la verdad. Otros autores no navegaron entre las islas que describen ni afirman haberlas visitado.

PALABRAS CLAVE: Cartografía; Cartas náuticas; Cartas portulanas; Islarios; Evidencia de testigos oculares; Cartografía de gabinete.

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On John Smith's famous map of Virginia, made in 1606 and first printed in 1612, the cartographer uses a series of small crosses to mark the limit of the area that he himself had seen with his own eyes, and clearly states that he depicted the areas beyond that limit according to report.¹ The great importance and value of eye-witness testimony had been recognized since antiquity (Nenci, 1955; Schepens, 1980; Cizek, 1991; Pagden, 1993; Lapina, 2007; Schmieder, 2012; Luraghi, 2014), and has been called "the fundamental literary mechanism of legitimation in the genre of travel literature" (Elsner and Rubiés, 1999, p. 3). But there are few maps on which the cartographer is as forthright about his sources as Smith is on his, where the boundary between what has been seen and what has been heard, between the certain and the questionable, is delineated with such care. And indeed, the role of eyewitness testimony on early maps has received little attention in general.

In this article I will examine the rich and complex evidence found on maps and in closely related texts that indicates the maps were made on the basis of first-hand observation by the cartographer. Specifically, I will analyze two closely-related types of sea charts, namely early portolans or nautical charts (Campbell, 1986, 1987; Astengo, 2007; Pujades i Bataller, 2007), and *isolarii*, or island books illustrated with maps (Donattini, 2000; Tolia, 2007). Early nautical charts, namely those before the second half of the fifteenth century, are remarkable for their lack of indications of eye-witness observations by their cartographers—and so the few charts that do contain such indications are of particular interest. Beginning in the second half of the fifteenth century, with the advent of the Age of Exploration, the people doing the exploring needed to record their discoveries in order to demonstrate their accomplishments and establish claims to territory. As a result, claims of first-hand observation became much more frequent on charts.

At the same time that makers of nautical charts hesitated to claim that their charts incorporated their own first-hand observations, the authors of *isolarii*, island-books illustrated with what are in effect fragments of nautical charts that depict each island, made exactly this type of claims. In some cases these claims of first-hand knowledge were exaggerated in order to enhance the book's authority; other examples were compiled entirely from book study. Thus the epistemological foundations of different members of the same genre are entirely different.

NAUTICAL CHARTS

It is tempting to see descriptive texts as an integral part of the role of maps to convey geographical information. But in fact a study of early nautical charts reveals that some charts by a particular cartographer include descriptive texts, while others do not, so that descriptive texts were an optional feature of these charts, something that the person commissioning the chart could pay to include or not. But even on the early charts that do include descriptive texts, declarations by the cartographer that he

had visited a specific spot on the map are rare. In fact, if we look at the locations of the descriptive texts on two early nautical charts that have abundant texts, we find that not one of them is located in the Mediterranean, which is where we would expect to see a descriptive text based on the cartographer's own experience. This is true of the Catalan Atlas of 1375,² of Grazioso Benincasa's nautical chart of 1482,³ and Ottomano Freducci's nautical chart of 1539,⁴ to mention three examples from different centuries.

This lack of records of first-hand knowledge on nautical charts is surprising, first because we know that a number of chart-makers were experienced mariners, and certainly had such knowledge to convey (Falchetta, 1995). The fifteenth-century cartographer Andrea Bianco had a life full enough of maritime adventure to inspire a novel,⁵ but none of his surviving maps contains any explicit reference to his own knowledge or experience. I referred above to a chart by Grazioso Benincasa, and not one of his surviving charts mentions his experience—yet Benincasa does mention his personal experience in the opening of his portolano (a port-book or rutter). At the opening of the work he writes:⁶

In this book I, Grazioso Benincasa, make mention of ports and places on the coast and also of the features of those lands from my memory, in which ports and other places I've always gone safely, both ourselves and all other navigators. These ports and land features are not taken not from a chart, but were rather touched with the hand and seen with the eyes. I will begin from the gulf of Venice and I will continue as the names cited above will grant me their holy grace (1435).

This passage shows that men of the sea were perfectly willing to assert their authority based on eyewitness experience, but for whatever reason, they generally did not do so on charts. What is particularly interesting about this passage is that Benincasa, himself a cartographer, clearly places a lesser value on the information one might obtain from charts than what one might gather from first-hand experience.

We can only speculate about why early chart makers generally did not include texts on their charts that proclaimed their accuracy due to first-hand experience. One important factor was certainly that if the Mediterranean were crowded with such claims, it would impede the actual use of the charts. And perhaps the salesmanship was largely a matter of the cartographer's reputation, or claims about accuracy were made in person to the client when the charts were being commissioned.

Nonetheless, a few early charts do preserve claims of accuracy based on first-hand experience. The first I will consider is a chart made by Francesco Beccari in 1403 and now preserved in the Beinecke Library at Yale.⁷ The chart does not contain a program of descriptive texts, just one unusually long text in North Africa in which Beccari asserts that he changed the way he depicted the Atlantic coasts of Europe on his charts beginning in 1400, and that his new depiction is based on the first-hand experiences of numerous sailors in that region:⁸

Francesco Beccari, citizen of Genoa, made this chart in the town of Savona, in the month of February, 1403. This same Francesco writes [this] note in order to remove the grounds for doubt from everyone, and declares to all who sail or will sail on the ocean, that in this chart and in others he made beginning in the year of Our Lord 1400, but not before, Francesco made the route in the ocean longer by a certain amount in miles or leagues than Francesco himself and other cartographers, whether Catalan, Venetian, Genoese, or others who made nautical charts had usually put in their charts in the past, particularly in the coast of Portugal, specifically from Cape St. Vincent as far as the Cape of Finisterre, and the route along the coasts of the Bay of Biscay, Brittany, and the English Isle. The true situation in the aforesaid areas was discovered through effective experience and the very precise account of many cartographers, patrons, ship-owners, and pilots in the Spanish Sea and those areas, and many others who are experts in nautical work and who have been in those places and sailed those seas frequently and for a very long time.

And therefore no one will be surprised if he finds maps made by the hand of the same Francesco of two forms in this regard, since before 1400 he followed the measurements of other [maps] and the forms and footsteps of the old masters—with poor results. Indeed, many patrons, ship-owners and sailors well-skilled in the maritime arts many times told me, the aforesaid Francesco, that the sea-island of Sardinia had not been correctly located on charts by the above-mentioned cartographers. Therefore, having heard their remarks, on the present chart I put that island in its correct position in Christ's name, where it should be. And let this be noted by you, the owner of this map, and by all of the others who were involved.

We have little information about the transfer of knowledge from sailors to chart-makers during the fourteenth and fifteenth centuries, but this text shows that at least some cartographers were actively seeking out and incorporating into their maps new information from both sailors and other cartographers, and placed a high value on first-hand experience. At the same time, the rarity of this type of testimony on maps confirms that there was a strong tendency not to include such information on charts.

One other early nautical chart includes an indication that it was mapped according to first-hand experience, and that is the 1455 chart by the Genoese priest Bartolomeo Pareto.⁹ The chart has a program of descriptive texts similar to those on the 1375 Catalan Atlas and Grazioso Benincasa's 1482 nautical chart mentioned above, but also has one short text in the western Mediterranean that speaks directly to Pareto's personal experience. East of the Strait of Gibraltar by the small island of Alborán is the inscription *Alborame unde ego sic vidi*, "Alborán, where I saw it." The location of the island is not significantly different than on other contemporary charts, but perhaps Pareto was correcting the position he had seen on charts that no longer survive.

Nautical charts saw a dramatic change in terms of the use of first-hand knowledge with the beginning of the

Age of Discovery in the late fifteenth century. Maps of a newly discovered area simply could not be made without knowledge of that area, and the discoverer had many good reasons to map it: at least at that moment, the crew of the discovering ship had unique access to first-hand knowledge, which was thus a precious commodity it would be foolish to waste; mapping the newly discovered areas would serve as proof of the explorer's success, which would earn him fame and the ability to obtain funding for new voyages; and maps would document territorial claims made on the voyage.

We have documentary evidence that Christopher Columbus made maps of his discoveries in the New World,¹⁰ but no important map by him survives. Although knowledge that Columbus was the cartographer and of the history of his voyages would allow one to deduce that the maps showed first-hand knowledge, we do not know whether Columbus proclaimed this on his maps. We have a world map made in 1500 in the nautical chart tradition by Juan de la Cosa, an experienced navigator and cartographer who had sailed with Columbus on his First and Second Voyages and was also the chief pilot on a voyage led by Alonso de Ojeda to South America from 1499 to 1500.¹¹ It is interesting to note, however, that while la Cosa's chart certainly contains much first-hand information, the cartographer makes not a single assertion of his special authority on the map. He thus continues the tradition of cartographic reticence in this regard.

But later in the sixteenth century it became much more common for cartographer-explorers to assert their authority as first-hand observers on their maps. The Italian explorer Sebastian Cabot (c. 1474 - c. 1557) does so on his printed world map of 1544, for example (Fig. 1).¹² In legend 17 in the right-hand border of his map, Cabot writes (Deane, 1890-1891, pp. 324 and 337):

Sebastian Cabot, captain and pilot-major of his sacred Caesarean Catholic majesty, the Emperor Don Carlos, the fifth of this name, and King, our lord, made this figure projected on a plane in the year of the birth of our Saviour Jesus Christ 1544, having drawn by degrees of latitude and longitude, with its winds, as a navigating-chart, following in part Ptolemy and in part the modern discoverers both Spanish and Portuguese, and partly discovered by his father and partly by himself, by which you may navigate as by a navigating chart, bearing in mind the variation which the needle of the compass makes with the North Star...

Legend 8 in the left-hand margin of the map, which applies to northwestern North America, reads as follows:

This country was discovered by John Cabot, a Venetian, and Sebastian Cabot, his son, in the year of our Lord Jesus Christ 1494, on the 24th of June, in the morning, to which they gave the name of "first land seen" (*prima tierra vista*); and to a large island which is situated along the said land they gave the name San Juan, because it had been discovered on the same day...



FIGURE 1. Sebastian Cabot's world map of 1544 (Paris, BnF, Rés. Ge AA 582). The texts in the margins on the left and right contain Cabot's assertions that the map includes information from his own discoveries. Courtesy of the Bibliothèque nationale de France.

Cabot goes on to describe the inhabitants and the animals of the region that he and his father discovered.

Another interesting case of assertion of first-hand exploration on a nautical chart may be found in the *Nautica mediterranea* (1607) of Bartolomeo Crescentio, a Roman officer who had years of experience on papal galleys (Ciampi, 1887). In 1596 he had published an updated nautical chart of the Mediterranean, and this was reprinted in the *Nautica mediterranea*. In the dedicatory epistle of that book he proclaims his wide experience sailing the Mediterranean, and says that he is offering the fruits of those experiences in his book:

Behold, then, now wandering in Europe, Asia, and Africa; now sailing one and the other sea, more than once emerging nude and shipwrecked on barbarous shores; now mounting up above the skies on the wings of thought, I offer the best of the fruits collected in seven years...

Book 2, chapter 5 of the book is titled "L'errore delle carte del Mare Mediterraneo et il modo di farle giuste secondo i gradi e le corse," i.e. "The error of the maps of the Mediterranean and the way to make them right according to the degrees and courses." Crescentio's map, included in the book, does not have a program of descriptive texts on it, but does have a cartouche in which Crescentio proclaims the map's accuracy based on his careful investigations, and goes on to express his hope that it will prove useful to sailors:

The map of the Mediterranean, previously overwhelmed with great errors, I have now freed of those mistakes

through my own expense after a seven-year voyage and the greatest diligence in investigating the coordinates of places and the true strengths of the winds, not without clear risk to life and liberty.

The most puzzling thing about the map is that although Crescentio emphasizes that he took great pains to confirm the coordinates of places, and although it has a scale of longitudes, it lacks a scale of latitudes or parallels at regular intervals, and has instead a traditional network of rhumb lines. Nor is the data he collected about winds communicated to the user of the map. The author is very keen to correct errors, but after seven years of effort, did not find an adequate method to communicate his findings to his audience.

ISOLARII

While makers of early nautical charts were reticent about claiming the authority of first-hand experience on their maps, such claims were common in contemporary island books illustrated with maps, a surprising divergence given that the maps in *isolarii* were derived from nautical charts. At the same time, an examination of these authors' discussions of their sources reveals that some make the claim with less justification than one might hope, while others make no pretense of having seen the places they describe and depict in their maps.

Cristoforo Buondelmonti (c. 1385 - c. 1430) traveled the Greek islands seeking to purchase manuscripts of

works of classical literature for patrons back in Florence, and these travels served as the basis for his *Liber insularum archipelagi* (Book of the Islands of the Archipelago). This was the first island book illustrated with maps, which Buondelmonti wrote in 1420, and then expanded in two subsequent versions completed in 1422 and 1430; the work survives in about seventy manuscripts (Campagna, 1957; Turner, 1987; Ragone, 2002; Bessi, 2012).¹³ The author ends the work by mentioning his first-hand experience of the islands:¹⁴

And so let there be an end at last, after I journeyed through the islands of the whole archipelago in four years with much fear and anxiety, and came to this island of Aegina, where the head of St. George is revered within sight of the city of Athens. And here the boat of our ineffective journey safely found a port for future recreation.

The first to follow Buondelmonti's footsteps seems to have been Bartolomeo dalli Sonetti, a Venetian mariner whose name "Sonetti" comes from the fact that he describes each island in his book with one or more sonnets. His work survives in a few manuscripts and in an edition printed in Venice in about 1485 (Goff, 1972; Donattini, 1994-1995; Bracke, 2001; Zaccovic, 2013).¹⁵ At the opening of the book he emphasizes that he has visited every part of the Mediterranean:¹⁶

And I don't want my attempt to achieve anything other than its goal, because there's no place within the whole space that the Aegean embraces that I didn't tread and examine personally, sometimes feeling happy, as I did not surrender to sadness.... now, with the agreement of Good Fortune, I have painted with my own hands and placed in this little volume each of the islands, together with their corresponding sonnets, numbering seventy-two.

Sonetti no doubt drew inspiration from Buondelmonti, but it does seem that Sonetti's work, and particularly his maps, are based on independent observations and experiences of the islands. It is difficult to compare the maps in the two works in a definitive way as there are so many different surviving manuscripts of Buondelmonti's book, each with its variations and stylistic differences. But from the comparisons I have been able to make, Sonetti's maps seems to be original in their details to a significant extent.

The Ottoman admiral and cartographer Piri Reis (1465/1470-1553) finished his *Kitab-ı Bahriye* or Book of Navigation in 1521, and greatly expanded it 1524-25. It is a guide to the islands and coasts of the Mediterranean, illustrated with maps, and survives in fifteen manuscripts (Soucek, 1973, 1992). In his introductory poem, Piri Reis strongly asserts that the work is based on his first-hand knowledge (Reis, 2013, p. 11):

I have roamed the shores of the Mediterranean, Arabia, and Europe, and through the lands of Anatolia and the Maghreb. And I have written, my friend, all that needs to be written about each and every thing: what sort of plac-

es they are, whether they are high ground or low; and I would have it known what place one will arrive at when disembarking and what the distance may be. Good reader, whenever I arrived at a port I would also make careful note of such things: its anchorages, its wells, and all its landmarks, and thus all the details of the Mediterranean Sea; where there were passages among the islands, and whether they are deep or shallow, narrow or wide.

Some of Piri Reis's maps in his *Kitab-ı Bahriye* were certainly inspired by Sonetti, for example his maps of Lemnos, Samos, and Cyprus.¹⁷ But the many differences of detail in these pairs of maps, together with the much greater length and detail of Piri Reis's text, demonstrate that the Ottoman admiral was indeed using sources in addition to Sonetti, presumably his own knowledge. It is interesting to compare Piri Reis's emphasis on his first-hand knowledge in his *Kitab-ı Bahriye* with his account of his sources in his famous 1513 world map, of which only the portion depicting the New World, the Atlantic, and western African and Europe survives.¹⁸ On this map the cartographer makes no mention of his experience at sea, but explains that he compiled it using information from twenty earlier maps (McIntosh, 1993, pp. 291-292; 2014):

In this age, no one has seen a map like this. The hand of this poor man [i.e. Piri Reis] has drawn it and completed it from about twenty charts and *mappaemundi*. These are charts drawn in the days of Alexander the Great, which show the inhabited quarter of the world. The Arabs name these charts Geographia. From eight Geographies of that kind and one Arabic map of India, and from four newly drawn Portuguese maps which show the countries of China, India, and China geometrically drawn, and also from a map drawn by Columbus in the western region I have extracted it. By reducing all these maps to one scale this final form was arrived at, so that this map of these lands is regarded by seamen as accurate and as reliable as the accuracy and reliability of the Seven Seas on the aforesaid maps.

We thus acquire an image of Piri Reis as a pragmatic cartographer, making use of his own experience in making his maps where possible, but drawing information from multiple other maps for areas that he had not visited.

While Buondelmonti, Sonetti, and Piri Reis all made use of their personal experience in creating their island-books, the case is very different with the editor and cartographer Benedetto Bordone (1460-1531). In his *Libro di Benedetto Bordone nel qual si ragiona de tutte l'isole del mondo* (Venice, 1528), Bordone expanded the geographical coverage of the *isolario* to include the Atlantic and Indian Oceans (Almagià, 1937; Skelton, 1966; Armstrong, 1996; Lancioni, 2009).¹⁹ but as he makes clear in the preface, the book is not based on information he gathered on his own voyages among the islands, even within the Mediterranean. In a remarkable contrast to the claims we have seen in other *isolarii*, Bordone says that he hopes his descriptions of the islands will carry his patron back to his own memories of his naval victories among the islands:

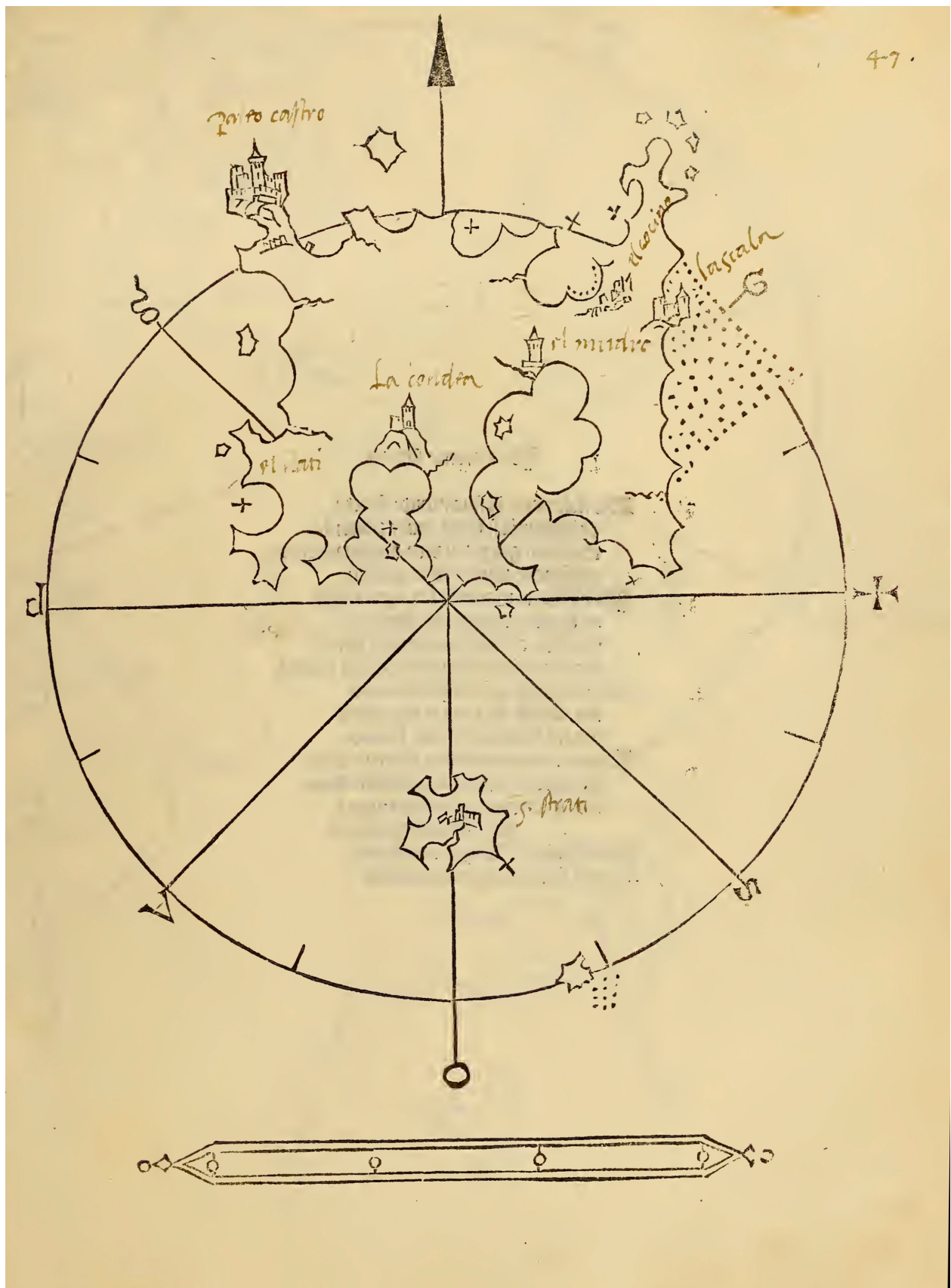


FIGURE 2. Map of the island of Stalimene in Sonetti's *isolario* (Venice, c. 1485). Courtesy of the Boston Public Library.



FIGURE 3. Map of the island of Stalimene in Bordone's *Libro di Benedetto Bordone nel qual si ragiona de tutte l'isole del mondo* (Venice, 1534), f. 60r. Courtesy of the Renaissance Exploration Map Collection, Stanford University.

Because it seems to me to accomplish something very beneficial, if I make known all of the islands and peninsulas of the world with their ancient and modern names, and with everything else that pertains to them, including some of the histories written about them, and also the fables, and in what part of the sea lie, and the various customs that everyone sailing there sees, and at what latitude, and in which climatic zone they are located; so that in doing this, I think that I make it as if you have carefully observed these things with your eyes, through my writing I have now reduced them to memory, and generated new pleasure in your spirits, carrying you back to the memory of the honors you gained in the mighty armies of the Signori of Venice and the Catholic King, sailing all over the Mediterranean Sea, from many magnanimous lords and valiant knights.

Bordone's lack of originality is clear in his maps, quite a number of which are close copies of those in Sonetti's *isolario* (Figs. 2 and 3).

The island book completed in 1542 by the Seville cosmographer Alonso de Santa Cruz (1505-67) survives in five manuscripts and is titled *Islario general de todas las islas del mundo* (Hill, 1971; Santa Cruz, 2003; Cuesta Domingo, 2004).²⁰ It is similar to Bordone's in that the author makes no pretense to have visited the islands he describes and depicts. He cites Diodorus Siculus, Pliny, Strabo, Ptolemy, Macrobius, and Solinus as his sources, along with many others, and in his introductory epistle to Philip II he writes:²¹

and also for having again inquired and searched carefully in all the authors that came to hand and that I was able to obtain, both ancient and modern, to draw from them all that was relevant to this work, adding the islands of the Atlantic which were discovered by command of your Majesty and your Catholic grandparents.

Santa Cruz's *Islario* is also similar to Bordone's work in that he made extensive use of Sonetti's island-book as a source for his maps (or else Bordone's), often making no change other than consistently orienting all of the maps to the north, whereas Sonetti oriented his maps with a variety of compass directions at the top of the page. Although Santa Cruz mentions modern authors in the passage in his introductory epistle just cited, nowhere does he cite Sonetti (or Bordone) by name.

With the *isolarii* of Antonio Millo (active 1557-1590) we return to a situation much closer to what we saw with Sonetti and Piri Reis. Millo was a mariner from the Greek island of Milos, and his *isolario* survives in several manuscripts (Millo, 1979; Moschona, 1997; Tolia, 1999, 2001, pp. 62-63; Bykuć, 2005).²² Millo is quite emphatic that his work is based on his own first-hand experience, and the first-hand experience of his colleagues (Millo, 2006, pp. 5-6):

Because Heaven has favored me, the Most Clement Signor Giacomo Contarini deigned to charge me with it, so that I might make some nautical charts and record as

many coasts and seashores as possible. I thus decided to draw the present *Isolario*, as well as a *Portolano*, that includes all the islands, ports and bays found in the Mediterranean Sea that are so far known to navigators, and to me in particular, who have personally been to many of them or have been informed of them by a number of other well versed and experienced men, through whom and with the help of God, I started writing this work in praise and glory of Your Most Illustrious Excellency.

His maps are based closely on those of Sonetti, but while Bordone simply copies Sonetti's maps, Millo, like Piri Reis, often modifies what he finds in Sonetti with details that evidently come from his own experience with the islands. The amount of modifications he makes to Sonetti's maps varies: his map of Rhodes, for example, is very similar to Sonetti's, but his map of Milos, the island where he was born, differs in many details from Sonetti's: Millo adds topographical details, places towns in different locations, and changes proportions and shorelines (Figs. 4 and 5).

Two later cartographers produced their *isolarii* through book study ("cartographie de cabinet") rather than by sailing the islands themselves. Thomaso Porcacchi in the preface to his *L'Isole piu famose del mondo* (Venice: Galignani, 1572) (Gerstenberg, 2004; Lastraioli, 2006) explicitly disqualifies himself from trying to add anything to the accounts that others have written of distant islands, and speaks of borrowing from another *isolario*. And the posthumous preface to Jean Matal's *Insularium* (Cologne: Ioann Christophori, 1601) says clearly that Matal merely copied the maps of others, translating them into Latin for consistency and adding historical notes.²³

CONCLUSIONS

This examination of the role of first-hand knowledge in nautical charts and *isolarii* has revealed a striking division of the genre into those whose authors had visited the places they describe, and those produced by book study, or what would later be called "cartographie de cabinet." It has also shown the remarkable influence of Sonetti's maps on later examples of the genre: even when cartographers were adding their own first-hand knowledge to the maps, they still often took Sonetti's maps as their foundations.

While in nautical charts, first-hand knowledge became more important and more commonly declared over time, in *isolarii* made during the same period, first-hand knowledge became less important after the efforts of Buondelmonti, Sonetti, and Piri Reis. The *isolario* was primarily an intellectual engagement with geography and history, a genre for the armchair traveler, often written by an armchair geographer. There were many nautical charts—one thinks immediately of the works of Battista Agnese—which were purely workshop productions, produced for collection and display by nobles, on which the cartographer's personal knowledge of distant shores was irrelevant (Wagner, 1931, 1947). But nautical charts were the main medium in which new discoveries were



FIGURE 4. Map of the island of Milos in Sonetti's *isolario* (Venice, c. 1485). Courtesy of the Boston Public Library.

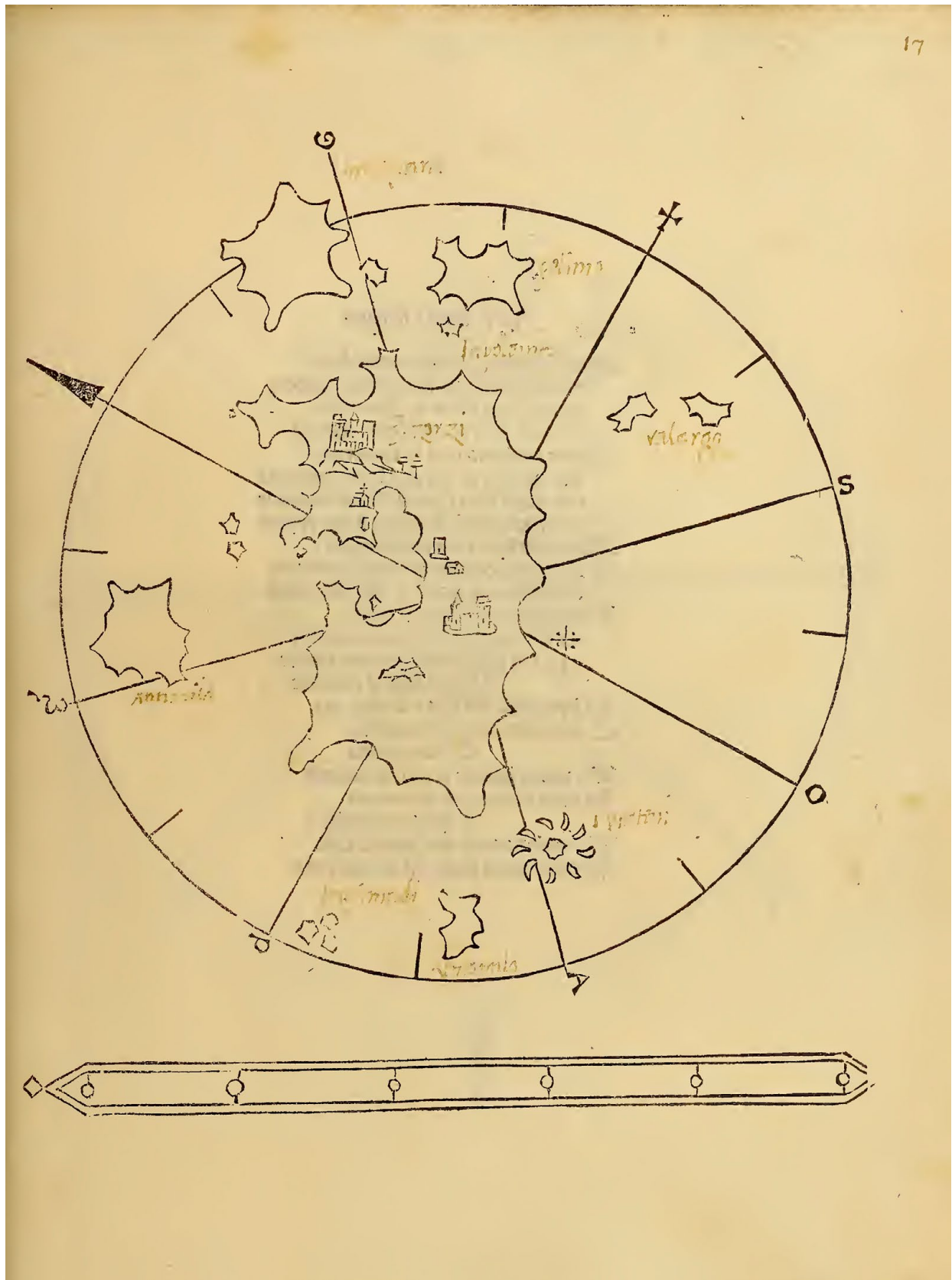


FIGURE 5. Map of the island of Milos in Millo's *Isolario*, from a manuscript made in 1582 and in the collection of Sylvia Ioannou Foundation in Vaduz, Principality of Liechtenstein, shelfmark B.0254, f. 32v. Courtesy of the Sylvia Ioannou Foundation.

registered: these were the charts made by explorers, and it was on these charts that the Casa de Contratación in Seville registered each new discovery made in the New World (Sandman, 2007, pp. 1107-1130). In the Age of Discovery, first-hand experience quite naturally acquired a renewed importance as a guarantee of veracity in descriptions of distant lands.

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NOTES

- 1 The map was printed in Smith, 1624. A high-resolution image of the map is available at <https://www.loc.gov/resource/g3880.ct000377/>. The text in the upper right corner of the map reads “To the crosses hath bin discovrd; what beyond is by relation.”
- 2 The Catalan Atlas is in Paris, Bibliothèque nationale de France, MS Espagnol 30, and has been reproduced in facsimile several times, for example in Cresques, 1983, and Cresques, 2005; the atlas is also reproduced in Pujades i Bataller, 2007, on the accompanying CD, number C16. An excellent high-resolution image of the map is available at https://upload.wikimedia.org/wikipedia/commons/3/35/1375_Atlas_Catalan_Abraham_Cresques.jpg.
- 3 Grazioso Benincasa’s chart of 1482 is in Bologna, Biblioteca Universitaria, rot. 3, and is well illustrated in Cavallo, 1992, vol. 1, pp. 356-357, with brief discussion and bibliography on pp. 353 and 358. On this and other charts made by members of the Benincasa family see Emiliani, 1936.
- 4 Ottomano Freducci’s chart of 1539 is in London, British Library, Add. MS 11548, and is well illustrated in Van Duzer, 2015, p. 8; and studied in Van Duzer, 2017.
- 5 On Bianco see Falcheta, 1995, pp. 49-52; the novel is Slaughter, 1958.
- 6 The text of Benincasa’s portolano is supplied by Kretschmer, 1909, pp. 358-420, with the passage in question on p. 358. The translation is mine.
- 7 The shelfmark of the Beccari chart in the Beinecke Library at Yale is Art Object 1980.158, and a high-resolution image of it is available at http://brbl-dl.library.yale.edu/vufind/Record/3521236?image_id=1027149. On Beccari’s work as a cartographer see Skelton, 1968.
- 8 Beccari’s text may be found in Gautier Dalché 2001, p. 24; the translation is mine.
- 9 Pareto’s chart is in Rome, Biblioteca Nazionale Centrale, Cart. naut. 1, and is reproduced and discussed in Cavallo, 1992, vol. 1, pp. 314-315; and is reproduced in Pujades i Bataller, 2007, on the accompanying CD number C57. There is also and in a hand-drawn facsimile in Kretschmer, 1892, plate 5; and some discussion of the map in Amat di San Filippo, 1878.
- 10 For detailed discussion of Columbus’s maps see HARRISSE, 1892, pp. 399-437 and *passim*; and Ferro, 1997.
- 11 On Juan de la Cosa see Harley and Tilton, 1992. His map is in the Museo Naval in Madrid, shelfmark MN 257; for discussion of it, see Cerezo Martínez, 1989; and O’Donnell y Duque de Estrada, 2006. The map has been reproduced in facimile as J. L. Comellas García-Llera, *El mapa de Juan de la Cosa* and as *Carta de Juan de la Cosa: año de 1500*.
- 12 Cabot’s 1544 map survives in two exemplars, in Paris at the Bibliothèque nationale de France (Rés. Ge AA 582), and at the Klassik Stiftung Weimar (Kt 020 - 31 S), which latter exemplar however lacks the surrounding descriptive text. The Paris exemplar is well reproduced in Nebenzahl, 1990, pp. 106-107, and a full-size color facsimile of the map has been published as *Mappemonde de Sébastien Cabot, 1544*. On the discovery of the exemplar in Weimar see Schilder, 1986-2007), vol. 2, p. 23. On Cabot and his map see Kelsey, 1987; and Karrow, 1993, pp. 103-112, esp., pp. 108-109.
- 13 A facsimile of the Düsseldorf manuscript has been published in Siebert and Plassmann, 2005; the accompanying commentary volume is Bayer, 2007.
- 14 The text is from von Sinner, 1824, p. 133; the translation is mine.
- 15 The Boston Public Library copy of Sonetti’s book is available in digital format at <https://archive.org/details/isolario00bart>.
- 16 I thank Giuseppe Ragone for his valuable help in translating this passage from Sonetti.
- 17 The manuscript of the *Kitab-ı Bahriye* in Baltimore at the Walters Art Museum (MS W.658) is available in digital format at <https://searchworks.stanford.edu/view/gm992tz4846>, and in this manuscript the map of Lemnos is on f. 47r, the map of Samos is on f. 79v, and the map of Cyprus is in f. 334v. On the Walters manuscript see Hepworth, 2005.
- 18 Piri Reis’s 1513 map is in Istanbul, Topkapı Sarayı Müzesi Kütüphanesi R.1633 mük, and is well reproduced in Nebenzahl, 1990, p. 63. The standard study of the map is McIntosh, 2000.
- 19 A copy of the 1534 edition of Bordone’s *isolario* is available in high-resolution scans at <https://searchworks.stanford.edu/view/10239942>.
- 20 The only complete manuscript of the *Islario general* is in Madrid, Biblioteca Nacional de España, MS Res. 38, which is available in digital format at <http://bdh.bne.es/bnesearch/detalle/bdh0000149359>.
- 21 On Philip II’s interest in maps see Parker, 2002.
- 22 The manuscript owned by the Sylvia Ioannou Foundation has been published in facsimile with a transcription and Greek and English translations of the text as Millo, 2006.
- 23 A digital edition of Matal’s book is available at http://daten.digital-sammlungen.de/bsb00093631/image_1. Some information about Matal is supplied in Hobson, 1975.

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