

Conventional Wisdom and the Date of the Kunstmann I Chart

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ABSTRACT

It has long been accepted by most historians that the manuscript chart on parchment known as “Kunstmann I,” signed by the famous Portuguese cartographer Pedro Reinél, was made about 1504. The purpose of the present paper is to advocate c. 1519 as a more likely date for the composition of the Kunstmann I chart. It will be seen that the original pronouncements of past historians for the earlier date were made before other documents found later in the nineteenth century shed light upon the Portuguese voyages to Newfoundland and Nova Scotia. Repeated by subsequent historians, the dating of c. 1504 become enshrined as conventional wisdom.

Keywords: Kunstmann I, Pedro Reinél, João Álvares Fagundes, Newfoundland, latitude scale bar, oblique meridian, manuscript map, nautical chart

RÉSUMÉ

La plupart des historiens s'entendent depuis longtemps pour situer aux environs de 1504 le dessin de la carte manuscrite sur parchemin connue sous le nom de Kunstmann I, signée par le célèbre cartographe portugais Pedro Reinél. Or, plaide ici l'auteur, la création de cette carte remonterait plus probablement aux environs de 1519. Il appert en effet que les historiens passés se sont initialement prononcés sur la date antécédente de 1504 avant que la découverte ultérieure d'autres documents, au XIX^e siècle, ait jeté de la lumière sur les voyages portugais à Terre-Neuve et en Nouvelle-Écosse. Reprise par les historiens qui ont suivi, cette date des environs de 1504 a été consacrée idée reçue.

Mots clés : carte manuscrite, carte nautique, échelle graphique des latitudes, João Álvares Fagundes, Kunstmann I, méridien oblique, Pedro Reinél, Terre-Neuve

Many of the conclusions regarding maps of the sixteenth century and the early cartography of the New World were made by historians in the nineteenth century who had limited information about the voyages of exploration and few documents for reference outside of the maps themselves. If repeated by subsequent historians often enough, their conclusions become enshrined as conventional wisdom or idées reçues – that is, the explanations generally accepted as true by experts in the history of cartography and of geographical explorations. The risk is these beliefs may become so entrenched as to be resistant to facts that might diminish the conventional wisdom. Over 100 years ago Hermann Wagner, a renowned nineteenth-century German geographer, cautioned that “[P]eople have been content to express indefinite suppositions. These, repeated by one author from another without being tested, acquired the character of well-established facts, and this state of

matters satisfied a large majority of the historians of geography” (Wagner 1896, 695).

Such a situation has occurred with the manuscript chart on parchment known as “Kunstmann I,” signed by the famous Portuguese cartographer Pedro Reinél (c. 1462–c. 1542).¹ (Archival locations, with reproductions in print and online, are listed in the Appendix.) This chart has long been noted as one of the earliest maps depicting the results of the voyages to Newfoundland of the Corte Real brothers, Gaspar and Miguel, in 1501 and 1502. The Kunstmann I chart by Pedro Reinél is acclaimed as one of the earliest known, if not the first, of nautical charts with a scale of latitudes, here placed in the mid-Atlantic (Gaspar 2010, 44, 89, 127; Kupčik 2000, 22). As such, it is widely considered to be foundational in the incorporation of modern astronomically based navigation into sailing charts. It is also celebrated as the earliest map with the so-called oblique meridian, the graphic scale

bar of latitudes set at an angle off the coast of Newfoundland, apparently to indicate the direction of the geographical meridian on that part of the chart.² The pronounced difference between magnetic north, by which sailors would navigate, and true geographical north is due to the strong magnetic declination in that region (Kupčik 2000, 22–23; Taylor 1939, 48). Since the mid-nineteenth century, this map has usually been dated as “circa 1504.”

The purpose of the present paper is to advocate the acceptance of c. 1519 as the more likely date for the composition of the Kunstmann I chart. It will be seen that the original pronouncements of the earlier date of c. 1504 for the chart were made before other documents came to light in the nineteenth century that shed light on the Portuguese voyages to Newfoundland and Nova Scotia. Also, it is notable that many subsequent historians did not make comparative studies of the geographical depictions and place names of the Kunstmann I chart with contemporary charts and maps, which would perhaps have reduced the likelihood of their uncritically accepting the received scholarship. Thus, with the date of the Kunstmann I chart corrected to c. 1519, the chart may no longer hold its position of eminence in

the history of cartography and navigation, and its value as a historical, cartographic, and scientific document will need to be reassessed.

The Kunstmann I chart (Figure 1) measures approximately 62 × 89 cm. It is oriented with the neck of the parchment to the left and with north at the top on the map image. An inscription reads *pedro Reinel a fez* (Pedro Reinel made this). The lettering of his surname is spaced to accommodate a compass rose previously drawn onto the parchment surface; thus, ostensibly, he signed the map upon its completion. The letters of the words *partes de africa* are similarly located to account for another previously drawn compass rose. Part of the parchment, with a portion of Reinel's signature, has been cut off, presumably removing the date, a mutilation unfortunately too common in many old manuscript charts.³ A decorative border crosses the neck as if there once was more skin where there never was any (Kupčik 2000, 23). A faded inscription in Africa gives the name of a previous owner, Anne de Sanzay, Count of Magnagne (c. 1535–c. 1610), a French military officer during the Wars of Religion (1562–1598). It has been suggested that the map



Figure 1. The Kunstmann I chart by Pedro Reinel, c. 1519–20; Munich, Bayerische Staatsbibliothek, Manuscripts and Rare Prints Department, Cod. icon. 132

Source: Reinel (1504).

was brought from Lisbon to Germany either by the humanist collector Konrad Peutinger (1465–1547) or by the German banker and patron of the arts and sciences Johann Jakob Fugger (1516–75), before his map collection was incorporated into the ducal library in Munich in 1571 (Kupčik 2000, 26). It seems unlikely that it was Peutinger, however, because his death occurred before de Sanzay reached his majority, presumably the earliest when Sanzay would come into possession of the map and inscribe his name. Hence, probably, the map was still in France during the second half of the sixteenth century before it came to Germany, where it first came to public notice in 1844 (Schmeller 1844, 247–50).

The east coastline of Newfoundland on the Kunstmann I chart from Cape Bauld in the north to St. Mary's Bay in the south, just to the west of Cape Race, is the same configuration as that on the Cantino planisphere (1502), the Caverio planisphere (1504), the Maggiolo planisphere (1516), and other charts and maps deriving their depiction of Newfoundland from the Corte Real voyages. The Kunstmann I chart, however, has more nomenclature in this region – 20 place names, mostly on the east coast – and, as will be shown, more geographical areas are depicted than were visited by the Corte Reals.

The Question of the Date of the Chart

The date of 1504 for the Kunstmann I chart was first proposed by the German geographer Oscar Peschel (1826–75) in 1858 (Peschel 1858, 332 n. 2).⁴ Though Peschel does not provide an explicit reason for this date, it is reasonable to conclude, given the availability, or lack thereof, of pertinent documents in his time, that it was based upon his awareness of the Corte Real voyages and his lack of familiarity with other, later voyages by the Portuguese. There were many sixteenth-century maps and documents that bear upon the dating of the chart that were unavailable to him for consultation but have subsequently come to light. These include, perhaps most significantly, the notarial copy, first brought to public notice when published in 1881 (de Bettencourt 1881–82, 131–35), of the royal confirmation made in 1521 granting to João Álvares Fagundes the lands and islands he discovered. These lands were specified in the royal confirmation to be to the west and south of the lands previously bequeathed to the Corte Reals. This confirmation listed the names of lands and islands granted to Fagundes by the right of discovery, and these place names on many Portuguese charts, and the Spanish, Italian, and French maps derived from them, are located along the south coast of Newfoundland and on Cape Breton Island, confirming these coasts as the area explored by Fagundes. The account by Francisco de Souza (c. 1540–1610), written in 1570, reporting on the second Fagundes voyage transporting colonists to establish a settlement near Cape Breton, was also another important

sixteenth-century document unavailable to Peschel, not published until 1877 (de Souza 1877, 5–6).

Of the almost two dozen historians since the time of Peschel who have assigned the date of c. 1504 to the chart (listed chronologically in the footnote),⁵ none present any indication that they reconsidered the dating of the chart in light of these later-revealed Fagundes documents, and it appears they uncritically accepted the c. 1504 date suggested by their predecessors. By tracing through their cited references, the ultimate source for this pronouncement is seen to be Oscar Peschel.

A few scholars, however, revisited the Kunstmann I chart to reconsider the early dating originally proposed by Oscar Peschel in light of the additional documents and maps and thus arrived at a better understanding of the chart as a record of the Fagundes voyage to Cape Breton Island. The alternative date of c. 1518–20 was suggested by two Canadian historians, William Francis Ganong (1864–1941; Ganong 1930, 137–38) and Theodore E. Layng (1914–88; Layng 1956, 30 no. 58; Layng 1964, 481), and two American historians, Bernard Hoffman (1926–89; Hoffman 1961, 57, 86–87)⁶ and Samuel Eliot Morison (1887–1976; Morison 1971, 228). Their conclusions were that the Kunstmann I chart, in addition to depicting the results of the Corte Real voyage of 1501 and 1502, also depicts the results of the voyages of João Álvares Fagundes to the south coast of Newfoundland and Cape Breton Island in Nova Scotia. The first Fagundes voyage is believed to have occurred in 1518, 1519, or 1520. The Kunstmann I chart, according to this reasoning, would be dated c. 1519, not c. 1504.

The Voyages of João Álvares Fagundes

The key to understanding the correct date for the Kunstmann I chart is to examine the Fagundes voyages to Newfoundland and Nova Scotia. As indicated above, most historians who have pronounced a date for the chart (but more often merely repeating the received wisdom) did not give due consideration to the other contemporary documents and maps that give information about these voyages and that thereby shed much-needed additional light upon the Kunstmann I chart. After a review of the Fagundes voyages, I will identify the Fagundean place names and coastal configurations added to the Portuguese cartography of the time, followed by determining the Fagundean data on the Kunstmann I chart, thus demonstrating its later dating.

João Álvares Fagundes (c. 1460–c. 1522) was a native of Viana do Castelo in the north of Portugal. On 13 March 1521, King Manuel (1495–1521) granted to Fagundes the governorship of all the islands and lands he had discovered during a recent voyage to the west of the lands discovered by the Corte Reals. The lands discovered by the Corte Reals were the east coast of Newfoundland and a small portion

of the south coast to St. Mary's Bay, just to the west of Cape Race. The text of the grant is known from a legal copy made on 21 May 1521 (Biggar 1911, 127–31; Canto 1883, 90–91; de Bettencourt, 1881–82, 131–35; Harris 1892, 183; Hoffman 1961, 34). It seems certain that the explorations of Fagundes were in and around Cabot Strait, that is, the south coast of Newfoundland and Cape Breton Island at the northern end of Nova Scotia. The place names recorded in the notarial copy of the royal grant to Fagundes are as follows: *aas tres ilhas na baya d'auguoadá, na costa de nordeste e sudeste* (the three islands in Watering-Place Bay on the coast running northeast and southwest), *as ilhas a que elle pos nome fagumdas sam estas, a saber: sam Joam e sam Pedro, e santa Ana e santo Antonio* (the islands named by Fagundes are these, namely: St. John, St. Peter, St. Anna, and St. Anthony), *as ilhas do argepelleguo de sam Panteliom com a ilha de Pitiguoem* (the islands of the archipelago of Saint Pantaleon with the island of Pitiguoem), *as ilhas do argepelleguo das honze mill virgeens* (the islands of the archipelago of the 11,000 virgins), *a ilha de santa Cruz, que esta no pee do banco* (the island of Santa Cruz, which is at the foot of the bank), and *outra ilha que sse chama tanbem de santa Ana, que foy vista e non apadroada* (another island that is also named Santa Ana, which was seen but not claimed).

A few of these places can be identified. The island of *Santa Cruz* (Holy Cross) at the foot of the bank is doubtlessly Sable Island at the foot of the Grand Banks. *Pitiguoem* may be related to, or be a transcription error of, *pinguim*, Portuguese for “penguin.” The word originally referred to the great auk, now extinct. The islands of the archipelago of Saint Pantaleon with the island of Pitiguoem may be the present archipelago of the Penguin Islands, a cluster of a dozen rocky islets surrounding the small Lady Island, located in Cabot Strait about 20 km (12 miles) south of the coast of Newfoundland, and once a rookery of the now vanished large flightless bird. St. Pantaleon is the patron saint of Porto, where his relicts are preserved, near Viana do Castelo, the hometown of Fagundes. The liturgical calendar reveals the dates of landfalls: St. Anthony (13 June), St. John (24 June), St. Peter (29 June), St. Anne (26 July), St. Pantaleon (27 July), and Santa Cruz or Holy Cross (14 September; Biggar 1911, xxii–xxiv; Ganong 1930, 137–57),⁷ though only the present identity of the last, that is, Sable Island, seems to be reasonably certain, and must have been sighted as Fagundes was returning to Portugal.

Sometime around 1521–25, Fagundes recruited families from Viana and from the Azores for a second voyage for a proposed settlement near Cape Breton (de Souza 1877, 5–6). This recruiting activity may have been what prompted the extant notarial copy of the royal confirmation to Fagundes to be made in 1521 (Sauer 1971, 49). Sailing in a nau and a caravel, they settled at a beautiful bay (*uma fermoza Bahia*) near Cape Breton on a coast that ran from northeast to southwest. This apparently was the same bay

(*baya d'auguoadá*) on the same northeast–southwest coast (*costa de nordeste e sudeste*) discovered on the first voyage. It was reported to be a good land with lots of walnuts, chestnuts, grapes, and other fruits (de Souza 1877, 5–6). If one may speculate from the meagre description, it may be St. Peter's Bay, separated from Chedabucto Bay by three islands, Madame, Janvrin, and Petite-de-Grat, in the angle between Cape Breton Island and peninsular Nova Scotia (Ganong 1930, 151–52; Patterson 1890, 153, 168–69, 173).⁸

Portuguese Cartography of the Fagundes Voyage

Portuguese maps and charts, and those of other Europeans derived from Portuguese charts, incorporated the geographical depictions and place names resulting from the Fagundes explorations in the area about Cabot Strait. Because the Kunstmann IV and Miller no. 1 charts were made so soon after the first Fagundes voyage, I feel confident in asserting that, besides the place names found in the royal confirmation, the additional place names in the Cabot Strait area on these two charts are also Fagundean appellations. A comparison of the place names contained in the royal confirmation to Fagundes made in 1521 with place names on early sixteenth-century Portuguese charts, presented in Table 1, demonstrates the region about Cabot Strait as the scene of Fagundes's undertakings. First, a few introductory remarks about the charts in Table 1.

The first of these Portuguese charts is the Kunstmann IV manuscript planisphere. This large and sumptuously decorated chart is generally believed to have been made in 1519 by Jorge Reinol (c. 1502–after 1572). It is commonly supposed that the world chart was created in preparation for the Magellan voyage, which departed Spain on 20 September 1519, though it may in fact be a copy made for King Carlos I of Spain (1500–1558; Emperor Charles V after 1519; Gaspar 2015, 23 and n. 27).⁹ Jorge's father, Pedro, came from Lisbon to Seville in 1519, presumably to retrieve his son so that Jorge could assist his father in completing an atlas (now known as the Miller Atlas), begun by a young Lopo Homem (fl. 1517–54). Pedro stayed in Seville to help his son complete the world map before both returned to Portugal before 18 July 1519 (de Navarrete 1825–37, 4: 155).¹⁰ To the Kunstmann IV chart Pedro added some geographical depictions, such as the Moluccas and the Fagundean configuration of the south coast of Newfoundland, Cabot Strait, and Cape Breton Island (see Table 1 and Figure 2). As known from the royal grant to Fagundes, the island of *stã* + on the Kunstmann IV chart is the name Fagundes gave to Sable Island.

The chart of the North Atlantic known as “Miller no. 1” (see Figure 3), in the Miller Atlas, is important in our study for having the earliest and most complete Fagundean nomenclature on the south coast of Newfoundland and on the north coast of Cape Breton Island (Ganong 1930, 138; Harris 1900, 85–86). The anonymous Miller no. 1 chart

Table 1. Fagundean Place Names in Early Sixteenth-Century Portuguese Cartography

Fagundes Confirmation, 1521	Kunstmann IV, c. 1519	Miller Atlas, c. 1520	Ribeiro, 1525–32	Reinel, 1535	Viegas, 1534 & 1537	Chaves, 1536	Freire, 1546
ilhas do argepelleguo das honze mill virgeens		C.: das XI Virgēs omzemyl virgēs	Arcipielago C: de s. palos		XI virgēs/Onçe mill Virgines G. do batel/G: do batell C. dos mazicatos/c. dos mazcatos C. da volta R: fremoso R. da tauça/R: da trauesa R. comprido/R: cõprido costachã/costacham R das poblas R. da gête/R: da gamta	Onçe mill Virgines	C. donze mil virgines ouze mil virgines
castanha (Souza, p. 6) sam Pedro sam Joam		R.: de sam pablo			b: pequena R: da rolhos C. do golfa Rio das fũdos/R. dofudo s. paulo/sam paulo s. pº/sam padro Sam Joã	rio de Castanar isla de Sanct Johan	[...] de a[...]mta gen[...]
	terra q[ue] foy descuberta por bertõmēs		tierra de los bretones	terra dos bretuēs			
		C: das bretoēs	C: del bretone		C. do bretã/C. Berta/C. bartao	Cabo Breton	C. do bretãos
ilha de santa Cruz	stã +		samta +				sta cruz+

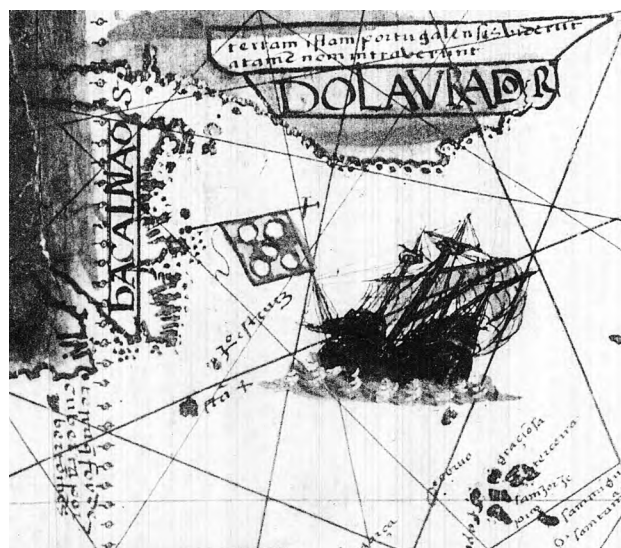


Figure 2. Detail of Newfoundland and the surrounding regions on the Kunstmann IV manuscript planisphere on parchment, probably by Jorge and Pedro Reinel, c. 1519
Notes: The features also depicted on the Kunstmann I chart: the east–west coastline of a landmass, labeled DOLAVRADOR (Labrador or Greenland), separated from Newfoundland (BACALNAOS) by the Strait of Belle Isle; Cape Breton Island, labeled terra q[ue] foy descuberta por bertômês, and separated from Newfoundland by a nascent Cabot Strait; and the Fagundean place name sta + for Sable Island, the same as samta cruz on the Kunstmann I chart. The Archipelago of the Eleven-Thousand Virgins, named as ilhas do argepelleguo das honze mill virgeens by Fagundes, is depicted unnamed on the Kunstmann IV at the entrance to Cabot Strait.

Source: [Stevenson \(1903–06\)](#), no. 5.

is almost assuredly, as others have concluded, also a map by Pedro and Jorge Reinel ([Denucé 1908](#), 63–69; [Harrissey, 1900](#), 84–86). Toponymic analyses and reviews of the history of the place names by previous historians have amply demonstrated that the land on the south side of Cabot Strait on the Miller no. 1 is Cape Breton Island ([Ganong 1930](#), 137–57; [Hoffman 1961](#), 97–101; [Morison 1986](#), 97). The Archipelago of the Eleven Thousand Virgins (*omze-myll virgēs*) has generally been identified as the islands of Miquelon, Langlade, Saint-Pierre, and Le Cap.¹¹ From the depiction on the Miller no. 1 chart, however, the archipelago may instead be (or also include) the myriad rocks and islands stretching along the south coast of Newfoundland from the Ramea Islands and the Burgeo Islands westward to LaPoile Bay and Garia Bay, and beyond to Cape Ray. The name Burgeo itself may be a derivative of Virgio, relating to the Islands of the Eleven Thousand Virgins ([Marks 2008](#)). C. *fremoso* would be either the present-day Channel Peninsula (Channel-Port-aux-Basques) or the nearby Cape Ray.



Figure 3. Miller no. 1 chart, Miller Atlas, c. 1519–25; Paris, Bibliothèque nationale de France, département Cartes et plans, GE AA-640 (RES)

Notes: Detail of Cape Breton Island, Cabot Strait, and southern Newfoundland showing Fagundean configurations and place names.

Source: Homen, Reinel, and Reinel (1519). Physical map at Paris, Bibliothèque nationale de France.

For the remainder of the sixteenth century, Portuguese charts and maps continued to show configurations and place names in the region of Cabot Strait resulting from the Fagundes voyages, confirming the location of the Fagundean activities. These include the half dozen planispheres (some fragmentary) attributed to Diogo Ribeiro (Diego Ribero, fl. 1502–32) made between 1525 and 1532 (listed in [Table 1](#)), the chart of about 1535 by Pedro Reinel, the chart of 1534 by Gaspar Viegas, and his two atlases of about 1537. The important chart of 1536 by Alonso de Chaves (c. 1493–1587) was designed as the updated version of the *Padrón General*, that is, the Royal Master Chart or Standard World Chart, to replace the earlier one created by Ribeiro. Though lost, it was minutely described by its maker and also by the Castilian historian Gonzalo Fernández de Oviedo y Valdés (1478–1557).¹² One of the place names, *rio de Castanar* (Chestnut River), recalls the chestnuts mentioned in the report of Souza on the Fagundes voyage. The south coast of Newfoundland and Cape Breton Island on chart no. 7 in the atlas by João Freire (1546) is either a direct copy of the same on the Kunstmann I chart or from a common source (see [Figure 4](#)). The place names of these charts are listed in [Table 1](#) for comparison.

An island, possibly representing Sable Island, is named *Fagunda* or *Fagumda* on later Portuguese maps, such as those by Lopo Homem (c. 1550 and 1554), and in the atlases of 1570 and 1580 by Fernão Vaz Dourado (c. 1520–c. 1580). In the manuscript atlas by Lázaro Luís of 1563, on a large peninsular region south of Newfoundland, and corresponding to Cape Breton Island and Nova Scotia, an inscription reads “La terra Doo laurador que descobrio Joaom Alueres” (The land of Labrador that João Álvarez [Fagundes] discovered), and Sable Island is named *yo al-vêz*, after Fagundes ([Harrissey 1892](#), 184; [Luís 1990](#), fol. 7v). Diogo Homem (1521–76), son of Lopo, on his chart of

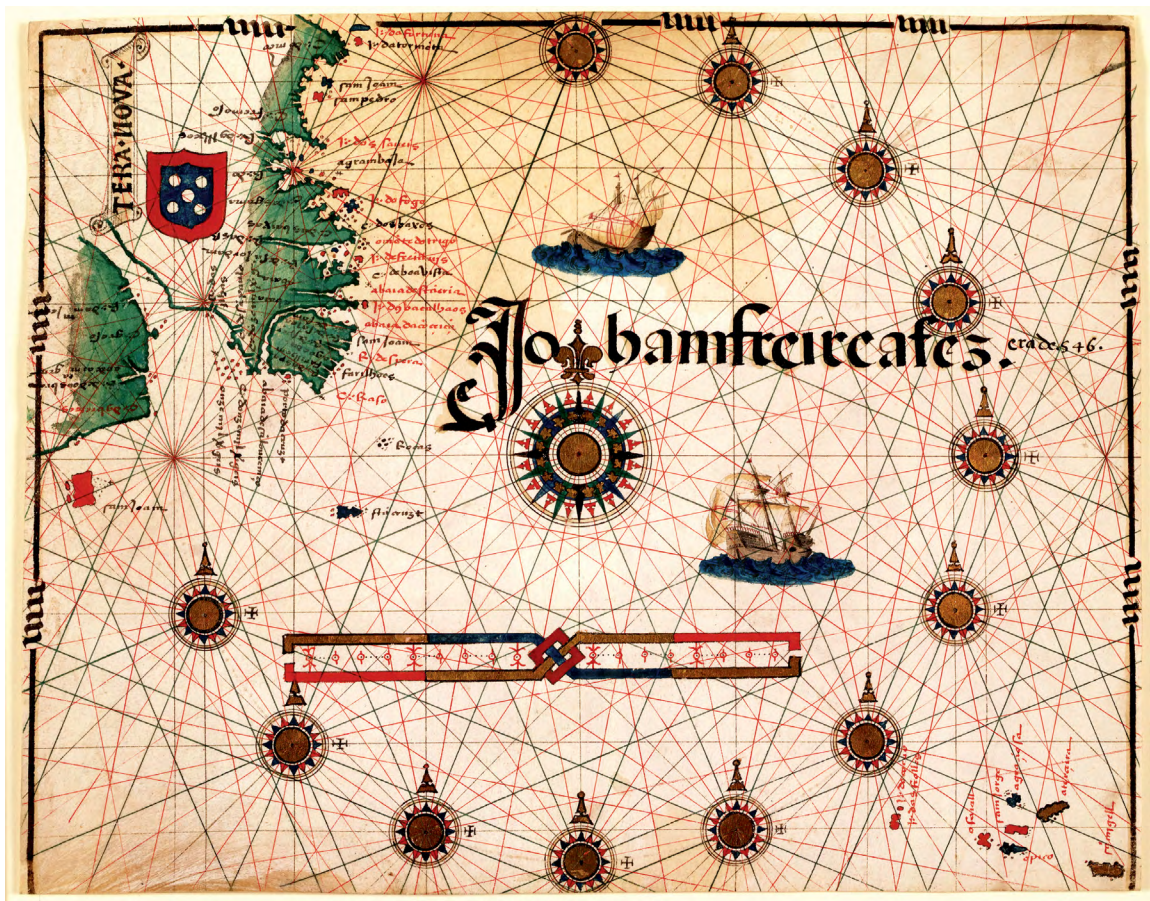


Figure 4. João Freire portolan atlas, 1546

Notes: North Atlantic Ocean, Newfoundland, and Cape Breton Island showing the same Fagundean configurations and place names as on the Kunstmann I chart. Compare with Figures 1 and 5.

Source: Friere (1546). San Marino, California, The Huntington Library, HM 35, fol. 7 (detail), www.digital-scriptorium.org.

1568, gives the name *Cap Fagundo* to Cape Breton (Mori-son 1986, 97).

Beyond the Portuguese cartography of the 1520s and 1530s, the same Fagundean configurations and place-nomenclature were also copied into the maps and charts of Spanish, Italian, and French cartographers. In the planisphere of 1527 by the Italian cartographer Vesconte Maggiolo (c. 1475–c. 1550) are many of the same place names as on the Miller no. 1 chart: *p de crux*, *Unze mil Virgenes*, *c. de S. paulo*, *c. fermoso*, *c. grosso*, *tera de muita gente*, *rio de S. paulo*, *c. de bertones*, *la. de S. Joan*. The same Fagundean Newfoundland and Cape Breton, and some of the Fagundean nomenclature on Cape Breton Island (*R grasso* and *c de bretons*, and the two islands of *S. Ionim* and *santa cruz*), are seen on the planispheres of 1526, c. 1528, and 1529 by Girolamo (Hieronymo) Verrazano (c. 1490–after 1529), brother of the explorer Giovanni Verrazano (1485–1528). Similar Fagundean configurations are seen on the two Spanish planispheres, one known as the Salviati, made about 1525, and the other made about 1526 by Juan Vespucci (fl. 1512–28). The Fagundean nomenclature around

Cabot Strait also passed from Portuguese cartography to the Dieppe school of map-making in Normandy (Harris-1900, 233, 234, 364).

Fagundean Depictions on the Kunstmann I Chart

A prominent feature of the Portuguese maps and charts derived from the first Fagundes voyage of about 1518–20 is that Cabot Strait is depicted as either an indeterminate opening or a closed bay, flanked by Newfoundland to the north and Cape Breton Island to the south. The large Gulf of Saint Lawrence and the connection with Cabot Strait were to remain unrecorded by mapmakers until after the first voyage of Jacques Cartier (1491–1557) in 1534.

Another notable feature of these maps and charts is the large landmass with the east–west coast looming to the immediate north of Newfoundland. Its earliest extant appearance, though in a more tentative outline than what is later seen on the Kunstmann IV and Miller no. 1 charts, is on the Vesconte Maggiolo chart of 1516, where it is named Labrador, apparently after João Fernandes (1453–after 1501). Fernandes was

an Azorean landowner (labrador) who sailed to the northern regions, probably about 1500–1502 (Morison 1940, 51–68), but whether the land depicted is modern Labrador, Greenland, or a confounding of the two remains an unresolved question, though most have concluded that it represents Greenland.¹³ It is notable that the Kunstmänn I chart by Pedro Reinel, the subject of the present study, has the exact same large Labrador feature, though unnamed, as the Kunstmänn IV and the Miller no. 1, both of which were undoubtedly made with the participation of Pedro Reinel. This same Labrador feature is also prominently seen on the planispheres and charts of the 1520s and 1530s based upon the maps of the Casa de Contratación in Seville, such as Ribeiro, Verrazano, and Viegas, which were derived from earlier Portuguese cartography, especially that of the Reinels, further supporting the contention that the depiction of Newfoundland, Cape Breton Island, and Cabot Strait on the Kunstmänn I chart is of the same cartographic design and same time period as these other maps, many of them made by the Portuguese.

With the preceding information regarding the cartographic depictions of the Fagundes voyage in mind, when we turn our attention to the Kunstmänn I chart by Pedro Reinel, we see Cabot Strait bordered to the north by the south coast of Newfoundland and bounded on the south by Cape Breton Island (Nova Scotia), with Cabot Strait depicted as a narrowing bay of indeterminate extent (see Figure 5). It is also striking that the Archipelago of the



Figure 5. Detail of the Kunstmänn I chart showing Cape Breton Island (Nova Scotia), Cabot Strait, and southern Newfoundland with (1) the unnamed Archipelago of the Eleven Thousand Virgins (Miquelon, Langlade, Saint-Pierre, and Le Cap), (2) the island of sam johã (St. John), and (3) the island of samta cruz (Sable Island) referred to in the notarial copy, dated 21 May 1521, of the lost original Fagundes royal confirmation of 13 March 1521. Source: Reinel (1504).

Eleven Thousand Virgins (*onze mil virgens*) off the south coast of Newfoundland, which we have seen is a distinctive and shared element of the charts and maps depicting the Fagundean features, is prominent on the Kunstmänn I chart, though unnamed. The archipelago was often shown unnamed on maps such as the Reinel chart of about 1535. These features are the same distinguishing traits that characterize the charts and maps depicting the results of the Fagundes voyages.¹⁴ The Kunstmänn I chart has only two place names in this region. These are *sam johã* for an island near Cape Breton and *samta cruz* at the position of Sable Island.¹⁵ According to his royal confirmation, Santa Cruz was the name Fagundes gave to Sable Island at the foot of the Grand Banks (*a ilha de santa Cruz, que esta no pee do banco*). The detail of *samta cruz* clearly labeling Sable Island on the Kunstmänn I chart lends strong support to the chart being a record of the Fagundes voyage.

Conclusions

The conclusion seems inescapable: the Kunstmänn I chart by Pedro Reinel depicts the results of the first voyage of João Álvares Fagundes, in addition to the Corte Real voyages. The geographical extent and limits of the Corte Real voyages to Newfoundland of 1501 and 1502 are well demarcated and revealed on the earliest Portuguese charts, such as the Kunstmänn III (1501)¹⁶ and the Cantino (1502), and indicated in the royal charter to Fagundes. Working from these documents, the Fagundean place names on the Portuguese charts by Pedro and Jorge Reinel, Diogo Ribeiro, Gaspar Viegas, João Freire, Lopo and Diogo Homem, Vaz Dourado, and others, and the associated Fagundean configurations that have been identified, we arrive at the judgment that the locale of the Corte Real voyages was the east coast of Newfoundland and a little of the south coast, as far as St. Mary's Bay. The Corte Reals did not sail along the Newfoundland coast to the west nor did they sight or visit Cape Breton Island nor Sable Island. Yet the Kunstmänn I chart depicts the south coast of Newfoundland, Cape Breton Island, Cabot Strait, and Sable Island, the scene of the first voyage of Fagundes.

Given that the Kunstmänn IV chart, ostensibly completed before 18 July 1519, contains Fagundean place names and a Fagundean depiction of the Cabot Strait region, and given that the Portuguese voyages to Newfoundland, either for exploration or fishing, invariably returned home in October to avoid the arrival of the harsh winter of the North Atlantic waters, the first Fagundes voyage probably occurred in 1518. And assuming that the Kunstmänn I chart by Pedro Reinel, with a more perfunctory and less elaborated depiction of Cape Breton Island, was made before the Kunstmänn IV chart, the Kunstmänn I chart was most probably made after the autumn of 1518 and before the summer of 1519. With a date of 1519 for the Kunstmänn I chart, it can no longer be certain the Kunstmänn I chart is

an early innovation in the development of modern latitude navigation, particularly because it appears that the oblique meridian may be a later addition.¹⁷ Portuguese cartography in the 16th century is distinguished for spearheading the incorporation of modern astronomically based navigation into the production and function of sailing charts. This process, which continued for the remainder of the 16th century and beyond, is only partially understood, and the uneven steps in its development have yet to be clearly identified and sequenced. A proper estimate of the place of the Kunstmänn I chart and other charts and maps in this sequence is fundamental for understanding the emergence of modern nautical cartography. The authoritative pronouncements of previous scholars must always be given serious consideration, but as new documents and maps come to light, as they did in the nineteenth century regarding the Fagundes voyages, these earlier, preliminary assertions should be re-evaluated.

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Notes

1. The manuscript maps known as Kunstmänn I, II, etc. take their names from the plate numbers in Friedrich Kunstmänn's *Atlas zur Entdeckungsgeschichte Amerikas* (Kunstmänn and others 1859), in which they were first reproduced.
2. On the oblique meridian and other auxiliary latitude scales on sixteenth- and seventeenth-century maps and charts, see Cerezo Martínez (1985); Conti (2015); Gernez (1952); Winter (1937).
3. Examples of charts with the dates altered or removed are shown in Sider (1992, 20, 24, 25, 41, 44, 45). A similar disfigurement was made when the date of the Vesconte Maggiolo planisphere of 1527 was altered to read "1587"; see Desimoni (1881, 355–57).
4. "... höchst wahrscheinlich vor 1504 gezeichnet ..." [... most likely drawn before 1504 ...].
5. In chronological order: Kunstmänn and others (1859, no. 1); Kohl (1869, 177); Harris (1882, 162–63); Bancroft (1883, 122); Patterson (1890, 140); Harris (1892, 435–36, no. 60); Kretschmer (1892, 1: 379–80, no. 7); Nordenskiöld (1897, 178); Harris (1900, pl. 5); Nansen (1911, 2: 321); Bjørnbo (1912,

127–28); Nunn (1928, 19); Cortesão (1935, 1: 260); Almagia (1937, 407); Winter (1937, 62); Taylor (1939, 48); Cortesão and Teixeira da Mota (1960, 1:27); Cortesão (1969–71, 1:113, 2:107); Skelton (1962, 308); Bagrow and Skelton (1964, 114); Skelton (1965, 17); Quinn (1977, 550); Marvel (1988, 14, no. 38); Wolff (1992, 131); Kupčik (2000, 21); Alegria and others (2007, 986, 987); Fernández-Armesto (2007, 759, [762] fig., 30, 13).

6. Many of the assumptions and conclusions regarding the dates of several maps made in Hoffman's work are incorrect and must be treated with caution.
7. The name *Ilhas do Argepelleguo das Honze Mill Virgeens* apparently was given by Fagundes to the extensive islands, not because of an association with the feast day of 11 October, but because the many islands and islets called to mind the popular legend of St. Ursula and the Eleven Thousand Virgins. This was the same reason for Christopher Columbus naming the present Virgin Islands (Las Once Mil Virgenes) in the Caribbean in November 1493.
8. A case may be made for present-day St. Peter's, Nova Scotia, as the site of the Fagundes settlement, but I cannot address this interesting subject here in the detail it deserves.
9. The general acceptance by most historians that the Kunstmänn IV planisphere was made in preparation for the Magellan voyage is well attested in the literature since the nineteenth century; Gaspar (2015) is offered as a recent example.
10. "... la poma y carta que aqui hizo el hijo de Reinel, la cual no estaba acabada quando aqui vino su padre por él, y su padre lo acabó todo ..." (... the globe and chart made here by the son of Reinel, which was not finished when his father came here for him, and his father finished everything ...). Letter written in Seville by Sebastian Alvarez on 18 July 1519. The source is unknown for the year of 1522 given in de Herrera y Tordesillas (1601, 168 [dec. iii, lib. iv, cap. xiii]).
11. For example, as stated in 1541 by Alonso de Santa Cruz, cosmographer of the Casa de Contratación; see de Santa Cruz (1918, 1: 438). Also, Biggar (1911, 191); Patterson (1890, 148).
12. Alonso de Chaves (1536). Described in de Oviedo y Valdés (1851–55, vol. 1, pt. 2 [2nd vol.]: 148–49); and Stokes (1915–28, 2: 39–40 et seq., and pl. 11).
13. Biggar (1903, 590–93); Morison (1940, 55); Nansen (1911, 2: 315n, 331n, 335, 358n); Williamson (1929, 41, 78 n. 1, 198–200, 220, 223); Winter (1937, 61–73).
14. Ganong (1930, 137–57) embarks on a long, detailed toponymic analysis of Miller no. 1, Maggiolo of 1527, Verrazano of 1529, Ribeiro of 1529, and Chaves of 1536, demonstrating the close familial relationship of these maps in their depiction of Newfoundland and Cape Breton Island incorporating the new Fagundean data.
15. Skelton (1965, 17) states that because the names *sam joham*, *sam pedro*, and *santa cruz* on the Kunstmänn I chart are on the east coast of Newfoundland, they cannot have been bestowed by Fagundes, because the location of his coastal traverse was further south in the Nova Scotia region. This reasoning is baseless, however, because *sam joham* and *santa cruz* are not on the east coast of Newfoundland on the Kunstmänn I chart. They are the names of islands to the south in the area explored by Fagundes.

16. The Kunstmann III chart, lost in the bombing of Munich in 1945 during World War II, is usually dated as c. 1506 but was almost certainly initially drawn in 1501, with subsequent additions and emendations, possibly as late as the 1520s. The explanation for this rectification to the present state of knowledge would take us too far afield from our present discussion of the Kunstmann I chart and must await another time.
17. The length of a degree of latitude on the Kunstmann I chart has been calculated to be 17.8 leagues (Gaspar 2010, 55). This value implies that it is a hybrid chart incorporating both compass courses and latitude measurements, not unusual for a sixteenth-century Portuguese chart. Such a chart would normally have a latitude scale depicted on the face of the chart in addition to the league scale. A discussion of this would take us too far afield from the present argument regarding the proper date for the Kunstmann I chart and therefore must await another time.

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Appendix: Maps Referenced in the Text, Listed Chronologically, with Reproductions Cited

Kunstmann III, 1501, with later additions. Formerly Munich, Wehrkreisbücherei, no. VII. Previously in Munich, Königlich Bayer'schen Haupt Conservatorium der Armee (Armeebibliothek). Manuscript on parchment of the Atlantic Ocean. Lost in the bombing of Munich in 1945. Photographic reproduction: [Stevenson 1903–06](#), no. 3; [Cortêsão and Teixeira da Mota 1960](#), 1: pl. 6. Facsimile: Hand-drawn in color, 98.5 x 78 cm, by Otto Progel in 1836. Donated in 1843 to Paris, Bibliothèque nationale de France, Rés. Ge. B. 1120. Reproduction of facsimile: Bibliothèque nationale de France, "Carte de l'Océan Atlantique, de la Mer Méditerranée et de la Mer Noire (Fac-similé manuscrit)." Available at <http://gallica.bnf.fr/ark:/12148/btv1b59055658/f1.item.r=otto%20progel>.

Cantino, 1502. Modena, Biblioteca Estense Universitaria, C.G.A.2. Also known as Anonymous–Portuguese. Manuscript planisphere on parchment. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: nos. 4 & 5; Biblioteca Estense Universitaria, "Carta del Cantino." Available at <http://bibliotecaestense.beniculturali.it/info/img/geo/i-mo-beu-c.g.a.2.pdf>.

Caverio, 1504. Paris, Bibliothèque nationale de France, S.H. Archives no. 1 (OCLC Control Nos. 494384945 & 494710883). Manuscript planisphere on parchment by Nicolay da Caverio. Available at <http://gallica.bnf.fr/ark:/12148/btv1b550070757/f1.item.r=caverio>.

Vesconte Maggiolo, 1516. San Marino, California, The Huntington Library, HM427. Manuscript planisphere on

parchment by Vesconte Maggiolo. Reproduction: Digital Scriptorium Database, "Huntington Catalog – HM 427." Available at http://dpg.lib.berkeley.edu/webdb/dsheh/heh_brf?Description=&CallNumber=HM+427.

Kunstmann I, c. 1519. Munich, Bayerische Staatsbibliothek, Manuscripts and Rare Prints Department, Cod. icon. 132. Manuscript chart on parchment of the North Atlantic by Pedro Reinel. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: pl. 8; Wikipedia, "Pedro Reinel (c. 1504). Bayerische Staatsbibliothek, Munich." Available at https://en.wikipedia.org/wiki/Pedro_Reinel#/media/File:Pedro_Reinel_1504.jpg.

Kunstmann IV, c. 1519. Formerly Munich, Haupt Conservatorium der Armee Bibliothek, MS 31- 3. Manuscript planisphere on parchment attributed to Jorge and Pedro Reinel. Lost in the bombing of Munich in 1945 during World War II, presumably destroyed. Photographic reproduction: [Stevenson 1903–06](#), no. 5; [Cortêsão and Teixeira da Mota 1960](#), 1: pl. 12. Facsimile: Hand-drawn in color by Otto Progel, 1836, now in Paris, Bibliothèque nationale de France, département Cartes et plans, CPL GE AA-564 (RES). Reproduction of facsimile: Bibliothèque nationale de France, "Carte du monde (Fac-similé manuscrit)." Available at <http://gallica.bnf.fr/ark:/12148/btv1b59055673/f1.item>.

Miller no. 1, c. 1519–25. Manuscript chart of the North Atlantic by Pedro and Jorge Reinel, fol. 6r in Miller Atlas. Paris, Bibliothèque nationale de France, département Cartes et plans, GE AA-640 (RES). Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: pl. 24; BnF Gallica, "Atlas Miller: cartes de l'Océan Atlantique et de la Méditerranée." Available at <http://gallica.bnf.fr/ark:/12148/btv1b525032239/f1.item.r=atlas%20miller>.

Salviati, c. 1525. Florence, Biblioteca Medicea-Laurenziana, Mediceo-Paletino no. 249. Manuscript planisphere on parchment sometimes attributed to Nuño García de Toreno. Reproduction: [Cumming, Skelton, and Quinn 1972](#), 72; Wolff 1992, 48–49; Wikipedia, "Salviati Planisphere." Available at https://commons.wikimedia.org/wiki/File:Salviati_Planisphere.jpg.

Castiglioni, c. 1525. Modena, Biblioteca Estense Universitaria, C.G.A.12. Also known as Mantua, Mantova, or Mantoue. Manuscript planisphere on parchment attributed to Diogo Ribeiro (Diego Ribero), or Nuno Garcia de Toreno, or both. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: pl. 37; [Stokes 1915–28](#), 2: pl. 8 (detail); Codices Illustres, "Rare Book Facsimiles." Available at http://www.codicesillustres.com/pdf/Castiglioni_World_Map.pdf.

Girolamo Verrazano, 1526. Wolfenbüttel, Bibliotheca Ducale. Also known as Wolfenbüttel A. Manuscript map of America on parchment by Girolamo Verrazano. Reproduction: [Destombes 1987](#), 40.

Juan Vespucci, 1526. New York, Hispanic Society of America. Manuscript planisphere on parchment by Juan

Vespucci. Reproduction: The Hispanic Museum & Library, “The Map of the World by Juan Vespucci.” Available at <http://hispanicsociety.org/cuentame-un-cuadro/the-map-of-the-world-by-juan-vespucci/>.

Vesconte Maggiolo, 1527. Formerly Milan, Biblioteca Ambrosiana. Manuscript planisphere on parchment by Vesconte Maggiolo. Lost in bombing of Milan during WWII, presumably destroyed. Reproduction: [Stevenson 1903–06](#), no. 10; [Weise 1905](#); [Stokes 1915–28](#), 2: pl. 12; “Map of the World by Viconte di Maiollo, 1527. Part 4. Global Mapping of Macao.” Available at <http://lunamap.must.edu.mo/luna/servlet/detail/MUST~2~2~71~408:Map-of-the-World-by-Viconte-di-Maio?sort=identifier%2Ctitle%2Ccontributor%2Ctype&qvq=w4s:/when%2F1527;q:maggiolo;sort=identifier%2Ctitle%2Ccontributor%2Ctype&mi=3&trs=4>.

Diogo Ribeiro, 1527. Weimar, Herzogin Anna Amalia Bibliothek, Kt 020–57S. Anonymous manuscript planisphere on parchment attributed to Diogo Ribeiro. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: pl. 38; [Stokes 1915–28](#), 2: pl. 9 (detail).

Girolamo Verrazano, c. 1528, with additions c. 1540. Greenwich, National Maritime Museum, General Chart Collection, G201:1/15. Manuscript planisphere on parchment by Girolamo Verrazano. Reproduction: Royal Museum Greenwich, “World.” Available at http://collections.rmg.co.uk/collections/objects/540298.html?_ga=2.95106076.1497843079.1522494263-281934005.1522251999.

Girolamo Verrazano, 1529. Vatican City, Biblioteca Apostolica Vaticana. Also known as Borgiano I. Manuscript planisphere on parchment. Reproduction: [Stokes 1915–28](#), 2: pl. 13; K. Buzard, “Jacques Cartier, Verrazano and France in the New World.” Available at <https://traveltoeat.com/jacques-cartier-verrazano-and-france-in-the-new-world/>; Jim Siebold, My Old Maps, “#347 The Verrazano World Map.” Available at www.myoldmaps.com/renaissance-maps-1490-1800/347-the-verrazano-world-map/; Heritage: Newfoundland & Labrador, “Later Exploration.” Available at <http://www.heritage.nf.ca/articles/exploration/after-exploration.php>.

Diogo Ribeiro, 1529. Weimar, Herzogin Anna Amalia Bibliothek, Kt 020–58S. Manuscript planisphere on parchment by Diogo Ribeiro. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: pl. 40; [Stokes 1915–28](#), 2: pl. 10 (detail).

Diogo Ribeiro, 1529. Vatican City, Biblioteca Apostolica Vaticana, Carte Nautiche Borgiano III. Also known as Vatican-Ribeiro or Propaganda. Manuscript planisphere on parchment by Diogo Ribeiro. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: pl. 39; [Cumming and others 1972](#), 106–07; [Wolff 1992](#), 52–53; [Stokes 1915–28](#), 2: pl. 10 (detail); Wikipedia, “Diogo Ribeiro.” Available at https://commons.wikimedia.org/wiki/Category:Maps_by_Diego_Ribeiro#/media/

[File:Carta_universal_en_que_se_contiene_todo_lo_que_del_mundo_se_ha_descubierto_fasta_agora_hizola_Diego_Ribeiro_cosmographo_de_su_magestad,_ano_de_1529,_en_Sevilla.jpg](#).

Diogo Ribeiro, c. 1530. Studienbibliothek, Dillingen, Germany. Two fragments of a manuscript planisphere on parchment by Diogo Ribeiro. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 5: pl. 523; Bayerische Staatsbibliothek, “Ribeiro, Diego, ‘Welserkarte’ des Diogo Ribeiro – Studienbibliothek Dillingen Mapp. 1.” Available at <https://bildsuche.digitale-sammlungen.de/index.html?c=viewer&bandnummer=bsb00105879&pimage=5&v=2p&nav=&l=de>. sed 18 April 2018].

Diogo Ribeiro, c. 1532. Wolfenbüttel, Bibliotheca Ducale, 95 Aug. fol. Also known as Wolfenbüttel B. Remnant depicting America from a lost manuscript planisphere on parchment attributed to Diogo Ribeiro. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: pl. 41.

Gaspar Viegas, 1534. “Carte nautique de l’Océan Atlantique et de la Mer Méditerranée,” 1534, Paris, Bibliothèque nationale de France, département Cartes et plans, CPL GE B-1132 (RES). Manuscript chart of the Atlantic Ocean. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: no. 44. Available at <http://gallica.bnf.fr/ark:/12148/btv1b52503224r/f1.item.r=gaspar%20viegas%201534>.

Pedro (or Jorge) Reinel, 1535. Greenwich, National Maritime Museum, Hydrographic Collection, Portolan No. 2 (G213:2/4). Manuscript chart on parchment of the Atlantic Ocean attributed to either Pedro or Jorge Reinel. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: pl. 14; Royal Museum Greenwich, “Atlantic Ocean, Mediterranean and Black Sea.” Available at http://collections.rmg.co.uk/collections/objects/540311.html?_ga=2.21340659.914921682.1523466308-281934005.1522251999.

Gaspar Viegas (Archivio), c. 1537. Florence, Archivio di Stato. Manuscript portolan atlas on parchment. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: no. 53A.

Gaspar Viegas (Riccardiana), c. 1537. Florence, Riccardiana. Manuscript portolan atlas on parchment. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: no. 53B.

João Freire, 1546. San Marino, California, The Huntington Library, HM 35. Manuscript portolan atlas on parchment by João Freire, chart no. 7, North Atlantic Ocean, Newfoundland and neighboring coast. Reproduction: [Cortêsão and Teixeira da Mota 1960](#), 1: pl. 76; Digital Scriptorium Database, “Huntington Catalog Images – HM 35.” Available at http://dpg.lib.berkeley.edu/webdb/dsheh/heh_brf?Description=&CallNumber=HM+35.

Lopo Homem, c. 1550. Lisbon, Biblioteca Nacional, CC-1230-R. Manuscript chart on parchment of the North Atlantic by Lopo Homem. Reproduction: Biblioteca Nacional de Portugal, “Carta do Atlântico Norte.” Available at <http://purl.pt/5053/3/>.

Lopo Homem, 1554. Florence, Museo Galileo, Inv. 946 (formerly Museo di Storia della Scienza, 1 C.N.). Manuscript planisphere on parchment. Reproduction: [Stokes 1915–28](#), 2: pl. 11; Museo Galileo, “Planisphere (Inv. 946).” Available at <https://catalogue.museogalileo.it/gallery/PlanisphereInv946.html>.

Lázaro Luís, 1563. Lisbon, Biblioteca Nacional de Portugal, CA-50-R. Manuscript portolan atlas by Lázaro Luís, chart no. 3r, North Atlantic. Reproduction: [Luís 1990](#); Biblioteca Nacional de Portugal, “Atlas de Lázaro Luís: 1563: códice da Academia das Ciências de Lisboa, Lisboa, 1990.” Available at <http://purl.pt/27808>.

Diogo Homem, 1568. Dresden, Sächsische Landesbibliothek, Mscr. F. 59^a. Manuscript atlas on parchment by Diogo Homem, fol. 6, east coast of North America, and chart no.

9, North Atlantic. Reproduction: [Cortese and Teixeira da Mota 1960](#), 2: pls. 132A & 134A.

Fernão Vaz Dourado, 1570. San Marino, California, The Huntington Library, HM 41. Manuscript portolan atlas by Fernão Vaz Dourado, chart no. 4, Newfoundland and east coast of North America. Reproduction: Digital Scriptorium Database, “Huntington Catalog – HM 41.” Available at http://dpg.lib.berkeley.edu/webdb/dsheh/heh_brf?Description=&CallNumber=HM+41.

Fernão Vaz Dourado, 1580. Munich, Bayerische Staatsbibliothek, Manuscript and Rare Prints Dept., Cod. Icon. 137. Manuscript portolan atlas on parchment, chart no. 4. Reproduction: [Kunstmann, von Spruner, and Thomas 1859](#), no. XI; [Cortese and Teixeira da Mota 1960](#), 3: pl. 318; [Kupčák 2000](#), 82–3.