

**Title:** *Kuntsmann I, Atlantic Chart*

**Date:** 1504

**Author:** Pedro Reinel

**Description:** Pedro Reinel (? - c.1542) was a Portuguese cartographer of the 16<sup>th</sup> century, author of one of the oldest signed Portuguese *portolanos* [nautical] charts c. 1485, (#250.1). That is a *portolan* chart, covering Western Europe and part of Africa, and already reflecting the explorations made by Diogo Cão in 1482-1485. Pedro Reinel and his son Jorge (1518-72) were among the leading cartographers of the age. With Diogo Ribeiro, G. L. Viegas, D.J. de Castro, and Lopo and Diogo Homem, they insured the superiority of Portuguese navigation charts in the 16<sup>th</sup> century. With his son Jorge Reinel and the cartographer Lopo Homem (#389), he participated in the construction of the well-known *Miller Atlas* of 1519 (#329.1). His *Atlantic Chart* of c. 1504 is the earliest known nautical chart with a scale of latitudes, and the first to depict a wind rose with a clearly drawn *fleur-de-lys* (an iris flower used symbolically).



The chart takes its name, *Kuntsmann I*, from the plate number from an atlas of facsimiles published in 1859 in which it was reproduced. An inscription reads “pedro Reinel a fez” [*Pedro Reinel made this*], attesting to its production by the Portuguese cartographer Pedro Reinel (c. 1462 – c. 1542). 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). The chart depicts the results of the voyages to the east coast of Newfoundland by the Corte Real brothers, Gaspar and Miguel, in 1501 and 1502; the voyage of João Fernandes to Labrador (and/or Greenland) in c. 1500 – c. 1502; and the first voyage of João Álvares Fagundes to the south coast of Newfoundland, Cape Breton Island, and Nova Scotia, probably in 1518.

The introduction, toward the end of the 15<sup>th</sup> century, of determining location using bearings taken by astronomical observation led to a much more precise knowledge of locations along the coast of West Africa. Places on the Mediterranean coast, on the other hand, were calculated several degrees too far to the north until as late as the 17<sup>th</sup> century. This was due to the magnetic declination in the Mediterranean, and it had its effect on the cartography of *portolan* charts. In a region where the magnetic declination was particularly strong, however, information was indicated on the charts that could or had to be taken into consideration by navigators. A well-known example is the “oblique meridian” in the region of Newfoundland. It was first seen on the *Atlantic Chart* of Pedro Reinel in about 1504.

With the discovery of the New World, problems arose for nautical cartographers, such as taking bearings at sea, the loxodromic curve or rhumb line, and, in fact, the entire issue of the use of projections. In the “small world” of the Mediterranean, these

problems, if recognized at all, had been of minor importance. Pedro Reinel was one of the first to address these issues successfully. He succeeded, for example, “in solving the problem of locating places and regions by their latitude and longitude in the northern as well as the tropical zones”. Between 1485 and 1519, he was in the service of three Portuguese kings as “*mestre de cartas e agulhas de marear* [master of maps and the sailing compass].

Because cartography furthered maritime exploration and the new geographical knowledge resulting from it, strong official support was forthcoming. Both Portugal and Castile engaged cartographers from other lands. Martin Behaim (*Book III*, #258), for example, went to Lisbon at the invitation of Joao III. In Lisbon and Seville, institutes sprang up for the purpose of collecting geographical data and preparing and updating navigational charts. Sea captains and pilots were trained in the use of nautical charts as well. Reinel was one of the distinguished cartographers to head one of these institutes. Amerigo Vespucci was the first “piloto mayor” of the Lisbon hydrographical institute. Other renowned cartographers, such as Juan Diaz de Solis, Sebastian(o), Cabot(o), and Diogo Ribeiro followed him in this post.

The *Kuntsmann I* map, measuring 35.4 x 24.4 in. [90 x 62 cm] is the earliest known signed Portuguese *portolan* chart in existence. It depicts the western and central Mediterranean, the coasts of Western Europe and the British Isles, Northwest Africa, and of particular interest—part of northeastern North America, based on the discoveries made by Miguel Caspar Corte-Real on their voyages of exploration (1500-1502), and the eastern coast of Newfoundland, what is now Labrador and as far south as the Hudson River.

Under the designation *partes de africa*, a rather faded reference appears to the man who presumably owned the chart, “Anne de Sanzay Compte de Magnagne,” the son of Anne, Duke of Montmorency. It probably came into the possession of the Augsburg Konrad Peutinger (1465-1547) and thus found its way to Southern Germany and eventually to the collection of the Royal Bavarian State Library. Since it was first described by Johann Schmeller, it has been the object of much interest to specialists in American studies, mainly in connection with its early representation of parts of North America. In 1859 Friedrich Kuntsmann and his collaborators made the first color reproduction of this map, and it has been known to scholars as the *Kunstmann I* ever since. In the new regions shown on the map, there are several geographical names and notes in Portuguese.

The *Kunstmann I* chart is celebrated as one of the earliest maps with the so-called oblique meridian. This is the graphic scale bar of latitudes set at an angle off the coast of Newfoundland to act as an auxiliary latitude scale for that region, and to indicate the direction of the geographical meridian on that part of the chart. Pedro Reinel’s “oblique meridian” or “tilted latitude grid” off the North American coast with its 22.5° declination from true North is noteworthy because it had been completely unheard of in cartography until then. The use of this device is connected with early depictions of North America and especially with the peculiar, and erroneous, way of delineating the coastline of eastern North America, as running from west to east. The tilted latitude grid means that the region involved—and this is invariably Newfoundland and Labrador—

must be turned to the left until this line is vertical. Then the general orientation of the coastline, which runs vertically on the maps, will also be correct at NNW. The pronounced difference between magnetic north, by which sailors would navigate, and true geographical north is due to the strong magnetic declination in the region of Newfoundland. Though Cape Race is at the correct latitude of the oblique meridian and the two latitude scales may give the impression that the chart was based upon Ptolemaic mapping principles, the oversized scale of Newfoundland, its angled appearance, and its distance from the Azores reveal that Newfoundland was positioned on the chart in the *portolan* chart-making tradition from information obtained by dead reckoning sailing. Dead reckoning is navigation based on compass directions and distances.

To achieve this, cartographers had used two grids on different scales, which is what Claudius Clavius did in 1427, for example. The double Equator in the *King Hamy* map (#307.1) and the doubling of both the Equator and the Tropics, as seen in the maps of the Spanish cartographer Gutierrez, serve the same purpose. Pedro Reinel's map is not only important because it is the earliest signed Portuguese chart, but also because it demonstrates the underlying sense of the "oblique meridian," which was at times misunderstood by later cartographers. The tilted latitude grid with a length of no more than 15°, which runs parallel to or at an angle to the main scale, can be seen from 1504 until the end of the 17<sup>th</sup> century on some thirty charts. The noticeably marked magnetic field deviation (declination) of the magnetic needle from true North and the resulting errors in the dead reckoning of the latitude gave rise to this expedient device. The phenomenon of declination was probably discovered in about the middle of the 15<sup>th</sup> century and was also taken into account by Columbus. Because of the increase in magnetic deviation from true North, navigators who sailed by dead reckoning followed a course, which inclined, farther to the west, the farther they were from Europe. Consequently, they reached the American coast at lower latitudes than they had expected.

Another cartographical innovation found on the *Kuntsmann I* map, an entirely new type of wind rose, had, as its main feature, a lily with a diamond-shaped central petal, lateral tendrils.



*Reinel Chart of 1535*

Matthew Hill Voss presented a theory in his address at the 47<sup>th</sup> annual meeting of the Society for the History of Discoveries, September, 2006, "In this sign you shall conquer." The Cross of the Order of Christ in Sixteenth-Century Portuguese Cartography", that although recent scholarship has rightly argued that for the Portuguese colonial "possession" was based on monopolization of logistical and navigational information, not the control of territory, Portugal also justified its right to empire on religious grounds. This is evident in a chart of the Atlantic made by Jorge Reinel, on which two different flags designate Portugal's possessions in West Africa and Brazil: the *Royal Standard* and the *Cross of the Order of Christ*. According to Voss this is not mere decoration, for while the *Royal Standards* are placed in areas where Portugal had an established presence, the *Cross of the Order of Christ* marks places where that presence was unrealized or challenged. The Cross symbolized the ideology of crusade that had driven Portugal's expansion and was its chief legitimizing factor. By marking these uncertain possessions on the chart with the Cross, Voss argues, Portugal included them in its wide and exclusive mandate to conquer lands for the glory of God, thus creating a powerful justification of its empire and a legitimate reason to defend it from interlopers.





The chart is held by the Bayerische Staatsbibliothek, Munchen, as reference *Kuntsman I*, and is 90 x 62 cm. It has a latitudinal spread of 16°N to 62°N along the Atlantic coastline and covers the western Mediterranean Sea as far east as Sicily. The chart positions of the Cape Verde islands and the Canary islands are quite correct. The chart has what is considered a latitudinal scale bar set along the first wind rose sub-division line to the west. This would appear to be a later addition to the chart and is poorly drawn. In the North West corner of the chart another landmass is shown with a separate scale bar appended but it is not subject to investigation in this paper.

**Location:** Bayerische Staatsbibliothek, Munchen (Cod. Icon 132)

**Size:** 35.4 x 24.4 inches [90 x 62 cm]

**References:**

\*Cortês, A., *The History of Portuguese Cartography*, Volume I, Coimbra: Junta de Investigações do Ultramar Lisboa, pp. 37ff, Plate 12.

\*Ferrar, Michael. "ChMES/1; Jorge de Aguiar, 1492 and Pedro Reinel, 1504 Charts; The Myth of the League Derivation, Mpm and C Ptolemy", 2016.

Harris, H., *The Discovery of North America*, pp. 509-510.

\*Quinn, D.B., *The Exploration of North America*, #67.

\*Wolff, Hans (ed.), *America, Early Maps of the New World*, pp. 130-132, Figure 3.

\*illustrated



