



MAGELLAN'S MAP

OS MAPAS DE MAGALHÃES

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RESUMO

Em agosto de 1519, cinco navios partiram de Sevilha, sob o comando do navegador português Fernão de Magalhães. A expedição tinha como destino as ilhas orientais da Indonésia, as lendárias Ilhas das Especiarias. Magalhães havia apresentado à Coroa espanhola o projeto de navegar até o arquipélago de Maluco por uma rota ocidental, evitando assim a rota do cabo da Boa Esperança, então controlada pelos portugueses. Para conceber e realizar o seu projeto de navegação, Magalhães utilizou uma série de mapas inovadores, produzidos por cartógrafos portugueses, com base nas mais recentes viagens de exploração na América e na Ásia. O objetivo do presente texto é identificar devidamente os mapas de Magalhães.

Palavras-chave: Fernão de Magalhães; Pedro Reinel; Jorge Reinel; circumnavegação; cartografia; história moderna.

ABSTRACT

In August 1519, five ships departed from the Seville, under the command of the Portuguese navigator Fernão de Magalhães (known as Magellan). The expedition was bound for the eastern islands of Indonesia, the fabled *Spice Islands*. Magellan had presented to the Spanish Crown the project of sailing to the Maluku archipelago by a western route, thus avoiding the route of the Cape of Good Hope, which was then controlled by the Portuguese. To devise and accomplish his sailing project, Magellan used a series of innovative maps, produced by Portuguese cartographers, based on the most recent voyages of exploration in America and in Asia. The purpose of this text is to identify Magellan's maps

Keywords: Ferdinand Magellan; Pedro Reinel; Jorge Reinel; circumnavigation; cartography; early modern history.

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In August 1519, five hundred years ago, five small ships departed from the port of Seville, in southern Spain, under the command of the Portuguese navigator Fernão de Magalhães (better known as Ferdinand Magellan). The expedition was bound for the eastern islands of Indonesia, the fabled *Spice Islands*. Magellan had presented to the Spanish Crown the project of sailing to the Maluku archipelago by a western route, thus avoiding the route of the Cape of Good Hope, which was then controlled by the Portuguese. Portugal and Spain were then in a process of maritime expansion, trying to set up new trade routes and to occupy territorial spaces overseas. Since 1494, and the signing of the Treaty of Tordesillas, both Crowns – with the benediction of the Roman Pope – had agreed to divide the Atlantic Ocean in two parts, along a semi-meridian line that passed 370 leagues west of the Cape Verde islands. To the west of the demarcation line stood the Spanish area of influence, while the Portuguese area of influence extended to the east of the line. No one thought, then, about the so-called ‘anti-meridian’, that is, the demarcation line on the other side of the globe. While the Spanish established regular routes across the Atlantic into the New World discovered by Christopher Columbus in 1492, the Portuguese, with the voyage of Vasco da Gama in 1498, opened a direct maritime route between southwestern Europe and India.

Magellan, a member of the lower service nobility of northern Portugal, was among the many Portuguese that in the early years of the sixteenth century sailed all the way to the Indian Ocean and participated in the construction of what was later to be called the Portuguese *Estado da Índia* (that is, the Portuguese State of India).² The *Estado da Índia* was built as a large group of factories and fortified coastal bases, established by Portuguese military force or by peaceful alliances with local oriental rulers, and these extended from Mozambique Island, in the east coast of Africa, all the way to the Maluku Islands, in the furthest corner of Indonesia. The *Estado da Índia* was controlled by the Portuguese Crown and was connected and protected by permanent Portuguese fleets that regularly sailed across the Indian Ocean and the western part of the Pacific Ocean. Magellan, enrolled for eight years in Portuguese battle ships, saw military action on the Swahili Coast, in the Indian subcontinent, and namely at Goa and Diu, and in Malacca, in the Malayan Peninsula (LOUREIRO, 2017).

The port-city of Malacca was controlled by the Portuguese in 1511, and from there they immediately set about exploring the commercial potentialities of the Indonesian archipelago and the South China Sea region. An expedition of three ships was sent to the Maluku islands, under the command of António de Abreu, which sailed as far as the island of Banda in 1512. These were the fabled Spice Islands, from where came such valuable commodities as cloves and nutmegs. Some Portuguese sixteenth century sources suggest that Magellan took part in this expedition to the eastern islands of Indonesia. At least two chroniclers state that he sailed with António de Abreu in search of the Spiceries. And it is an established fact that Magellan

² About Magellan’s life, see JOYNER, 1992 and GARCIA, 2007; regarding the foundation of the *Estado da Índia*, see BARRETO, 2000.

and António de Abreu, one year later, traveled together from Malacca to the southern ports of India, and from there they embarked on a ship bound for Portugal. As it happens, Abreu died during this homeward bound voyage, but Magellan arrived safely at the port of Lisbon in 1513.

While he lived in Asia, for eight years, Magellan collected valuable experience as a sailor, traveling repeatedly across the Indian Ocean, as a warrior, taking part in numerous military campaigns, and as a leader of men, for we find him more than once in commanding positions. But he also collected a vast amount of information about the Asian world, and probably got his hands on important geographical and cartographical descriptions prepared by other Portuguese. In Malacca, for instance, he crossed paths with Tomé Pires, the author of the *Suma Oriental*, the first modern geographical treatise about Asia (PIRES, 2018), and with Francisco Rodrigues, the cartographer who drew the first modern maps of the Indonesian archipelago (GARCIA, 2008). Magellan certainly came back to Portugal in possession of priceless expertise on Oriental matters.

After arriving in Lisbon in 1513, Magellan immediately embarked on a large naval expedition that was being organized to conquer the Moroccan port-city of Azemour, on the Atlantic coast. For the past hundred years, the Portuguese Crown had been controlling several coastal areas in Morocco. It is possible that during this expedition Magellan met João de Lisboa, a well-known Portuguese pilot who was also in Azemour, and who had sailed in the previous years to the Rio de la Plata region, in the southern parts of America. Following a short period in Morocco, Magellan settled in Lisbon in 1514, where he appears to have lived for the next three years. This is certainly the most enigmatic and less known period in his career. No references to Magellan appear in the contemporary sources, except for some documents testifying to his involvement in commercial dealings with Asia. In these dealings, it is probable that Magellan established close relations with one Cristóbal de Haro, a wealthy Spanish merchant who was the representative in Lisbon of the Fuggers, the Augsburg bankers.³

Curiously enough, Cristóbal de Haro had been one of the sponsors of the Portuguese exploration voyage to the Rio de la Plata. And in 1515, probably under his sponsorship, a short booklet entitled *Copia der Newen Zeytung aus Presillg Landt*, describing the expedition, was published in Nuremberg. This anonymous account explained, at a certain point, that the pilot João de Lisboa believed the distance from the southern coast of Brazil to Malacca was only 600 miles, traveling by a western route, and the voyage would be much faster than through the eastern route, by way of the Cape of Good Hope. It seems obvious that Magellan's project of sailing westwards to Asia was developed in Lisbon, in the circle of Cristóbal de Haro, which included not only merchants, but also ship's captains and masters, pilots, cosmographers and cartographers. After all, the Spanish financier had been doing business with his ships, for more than a decade, in Africa, Asia and Brazil, in the wake of the Portuguese voyages of discovery

³ Regarding Haro, an understudied but very important character, see BÉNAT-TACHOT, 2011.

and exploration. Furthermore, in a few years' time, in Spain, Cristóbal de Haro would be one of the main sponsors of Magellan's enterprise.

In Lisbon, Magellan was also trying to gather information from the officials of the *Casa da Guiné e Índia*, the House of Guinea and India, the Portuguese Crown's department responsible for the organization of all overseas affairs. A Portuguese chronicler, João de Barros, in his *Terceira Década da Ásia*, published in Lisbon in 1563, claimed that Magellan was «always dealing with pilots [and] sailing charts». And when he traveled to Spain in late 1517, after breaking up with King Manuel I of Portugal and intent on offering his services to King Carlos I of Spain, Magellan carried in his luggage some «cartas e pomas de marear» («sailing charts and spheres», BARROS, 1973: vol. V, pp. 627-629). These cartographic items would have been based on the most recent explorations and speculations of Portuguese cartography.⁴ After all, during the 1510's several Portuguese expeditions had explored both the easternmost regions of Indonesia, with the contribution of Magellan himself, and the southernmost parts of the American continent. And there would surely be sailing charts in Portugal that recorded these exploratory voyages. It seems almost certain that Magellan would have in his possession maps prepared by Pedro Reinel and his son Jorge Reinel, two of the most active and prominent Portuguese cartographers at the time of his departure from Portugal.⁵ But let us first look at some textual evidence referring to Magellan's maps.

The most puzzling reference is found in the account of the first circum-navigation by Antonio Pigafetta, one of the survivors of the first voyage of circumnavigation (1519-1522). The relation of this Italian traveler was published a few years later in Paris, somewhere between 1526 and 1536, in a French condensed translation, with the title *La voyage et nauigation, faict par les Espaignolz es Isles de Mollucques*. But there are several manuscripts, in French and Italian, more complete than the printed version.⁶ Pigafetta, at a certain point in his narration, when the expedition searched for the passage from the Atlantic to the maritime space which soon became known as the «Pacific», reports that Magellan «knew that he had to navigate a very hidden strait, which he had seen in a nautical chart of the king of Portugal, that had been made by a great pilot and navigator named Martin of Bohemia».⁷ Martin Behaim is a somewhat controversial figure, who between the 1480's and 1500's lived intermittently in Portugal, where he was connected to the maritime and mercantile Portuguese circles.⁸ He collaborated in the design of the famous globe dating from 1492, which is associated with his name, and which is still extant in Nuremberg, and on the basis of which would have been a planisphere designed by

4 For previous approaches to the cartography of Magellan's expedition, see SANDMAN, 2007; and also SÁNCHEZ MARTÍNEZ, 2009.

5 About the Reinel, see AMARAL, 1995; and also MOREIRA, 2015.

6 Regarding the printed accounts of Magellan's voyage, see FARIA, 1975; on Pigafetta and his work, see PIGAFETTA, 1999; and also the recent edition in CASTRO *et al.*, 2007: vol. I, pp. 77-261.

7 CASTRO *et al.* 2007: vol. I, p. 106.

8 On Behaim, see RAVENSTEIN, 1908; POHLE, 2007; and also LOUREIRO, 2019a.

the German cartographer Henricus Martellus.⁹ But other cartographic productions of Behaim are not known, so it is difficult to accept the statement of Antonio Pigafetta.

Was the Italian traveler, who usually is a rather reliable informer, referring to a cartographic specimen that has since been lost, effectively produced by Martin Behaim during his years of residence in Portugal? Pigafetta certainly received this information from Magellan himself, since they travelled in the same ship for many months. Thus, it seems difficult to attribute to error or misconception the mention of a German cosmographer. Magellan could indeed have consulted in Portugal, in the nautical and cosmographic circles connected with the court of King Manuel I, a cartographic specimen that had been prepared by Behaim, or based on his geographical speculations. And after 1492 Martin Behaim's cartographic ideas might have evolved, as information arrived in Lisbon about new lands visited or discovered by the many sea expeditions dispatched from Portugal and Spain to distant destinations.

Or would Pigafetta have made a mistake in the name of the cartographer, wanting to refer to Martin Waldseemüller? This German cartographer had recently produced his monumental world map, where the name of «America» was registered for the first time, in a tribute to the Italian navigator Amerigo Vespucci.¹⁰ The large planisphere of 1507, entitled *Universalis cosmographia secundum Ptholomaei traditionem et Americi Vespucii aliorumque lustrationes*, was published in Saint-Dié-des-Vosges, near Starsbourg, in an edition of one thousand copies, and it is highly probable that one of them arrived at the court of King Manuel I. This could be the world map that was in the possession of the Portuguese monarch, to which a number of sixteenth-century accounts allude, and in that case, Magellan could have seen it in Lisbon before moving to Spain. This world map, which on the southernmost coast of America registers the toponym «Rio de Cananerũ», could somehow suggest the existence of a maritime passage to the west.

Several later Spanish chroniclers take up Pigafetta's reference. The Dominican Bartolomé de las Casas, who in 1518 met Magellan in Valladolid, will later write in his *Historia de las Indias*, completed in the 1560's but only published in modern times, that the Portuguese navigator had seen the sailing charts of «one Martin of Bohemia, great pilot and cosmographer, which was in the treasure house of the King of Portugal». He was copying Pigafetta's account, of course. But he added that Magellan, in order to convince Carlos I of the correctness of his cosmographic ideas, had brought with him from Portugal «a well-painted globe in which the whole earth was represented, and there he pointed out the route he was to follow, except that, on purpose, he left a blank space in the region of the strait, so that no one knew about it» («un Martin de Bohemia, gran piloto ó cosmógrafo, que estaba en la Tesorería del rey de Portugal»; «un globo bien pintado, en que toda la tierra estaba, y allí señaló el camino que habia de llevar,

9 Regarding Martellus, see VAN DUZER, 2019.

10 On Waldseemüller, see LEÓN-PORTILLA ed., 2007; and LESTER, 2009.

salvo que el estrecho dejá, de industria, en blanco, porque alguno no se lo saltease», Las Casas, 1875-1876: vol. IV, p. 377). The word «globe» used by Las Casas would not necessarily mean a terrestrial globe, for it is unlikely that Magellan carried with him such an artifact, at that time extremely rare and valuable. Possibly the Dominican chronicler would refer to a planisphere, a planned terrestrial globe, or perhaps even a globe represented in a double polar projection, to which the Portuguese cartographers of the time used the designation of ‘poma e carta’ (sphere and chart).

Pigafetta’s reference to the alleged world map of Martin Behaim is repeated by other Spanish chroniclers, such as Francisco López de Gómara, in his *Historia general de Indias*, published in Zaragoza in 1552, and by Antonio de Herrera y Tordesillas, in his *Historia general de los hechos de los Castellanos en las islas y tierra firme del mar océano*, published in Madrid in 1601.¹¹ But another Spanish author writing in the early years of the seventeenth century introduced a curious remark about the map that Magellan had with him during his interview in Valladolid with the Spanish monarch. Bartolomé Leonardo de Argensola, in his *Conquista de las islas Malucas*, a work first printed in Madrid in 1609, states that the Portuguese navigator, on his way to Spain, carried with him «a Planisphere devised by Pedro Reynel» («un Planisferio dibuxado por Pedro Reynel», Argensola, 1609: p. 16).

This is the most plausible hypothesis, which seems to be confirmed by documentation from the time of the preparation of the Magellan expedition. Magellan, during the years immediately prior to 1517, would have made acquaintance with Pedro Reinel, who in Lisbon served as a cartographer in the *Casa da Mina e da India* (House of Mina and India). Somehow, he would have been able to obtain from Reinel a planisphere, which could be very similar to a work attributed to this cartographer and his son Jorge Reinel, dated from about 1519, today known as *Kunstmann IV*, whose original disappeared, but of which a trustworthy copy is preserved. This large world map represents the Atlantic coast of South America in order to suggest a sea passage to the «Sea seen by the Castilians», placing the Maluku archipelago in the westernmost part of this wide open sea, in a location that could be interpreted as belonging to the area of Spanish influence.¹² The Reinel world map was the blueprint for Magellan’s Plan A: to reach the Spices sailing continuously on a westward rhumb, thus totally avoiding the maritime areas controlled by the Portuguese.

11 Regarding these references, see LOUREIRO, 2019b.

12 See reproduction and comments in KUPČIK, 2000: pp. 41-47.

Map 1: World map by Pedro / Jorge Reinel, 1518-1519¹³



A letter written by Sebastião Álvares, representative of the Portuguese monarch in Seville, dated July 1519, on the eve of the departure of Magellan's ships from that port-city, confirms the involvement of Pedro Reinel and his son Jorge in the preparation of the charts and maps used during the expedition. Álvares wrote to King Manuel I that in a meeting with the Portuguese navigator he had seen the islands of Maluku represented in a «spherical chart that the son of Reinel made here, which was not completed when his father arrived to fetch him; and his father completed the chart; and he represented these islands of Maluku» (« poma carta que ca fez o filho de Reynell, a qual nom era acabada quando caa seu pay veo por ele; e seu pay acabou tudo; e pos estas terras de Maluco», RAMOS-COELHO ed., 1892: p. 434). From this standard map produced by both Reinel, father and son, Magellan had commissioned two other cartographers, the Portuguese Diogo Ribeiro and the Spanish Nuño García de Torenó, to produce all the charts necessary for the journey that was about to begin, and at least 24 maps were drawn by both.¹⁴

Sebastião Álvares's information is somewhat puzzling. Apparently young Jorge Reinel was in Seville working for Magellan, drawing charts for the expedition that was being prepared. The expression «poma carta» will certainly refer to a planisphere. It makes sense that the youngest Reinel was attracted to Seville by the news that Magellan would be recruiting specialists who could contribute to his project. The father, Pedro Reinel, had come to Seville in search of his son to take him back to Portugal. But in the meantime, he completed one of the maps that was being prepared, adding to it the Spice Islands. Which seems to make less sense, since it would be to collaborate in an enterprise that manifestly harmed the overseas interests of the Portuguese crown. The only possible explanation for this attitude of Pedro Reinel would be the existence of strong bonds of friendship and solidarity with Magellan.

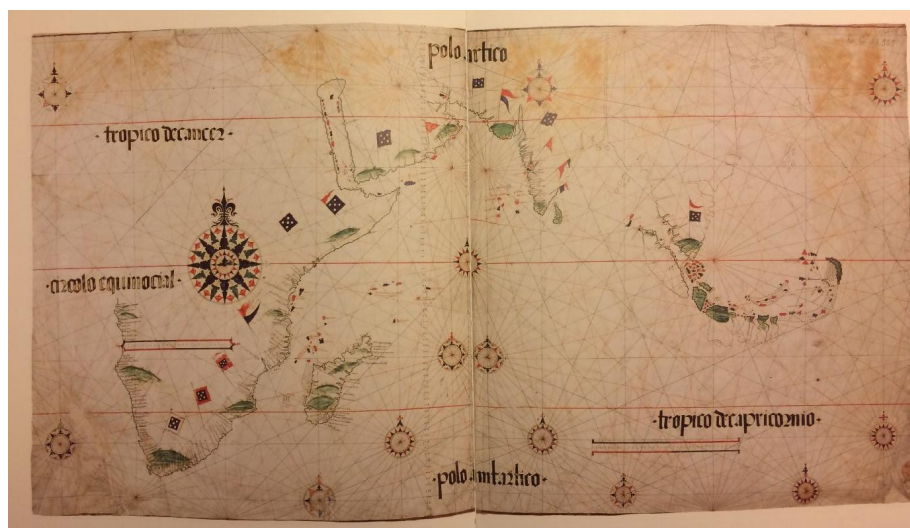
13 Source: <https://gallica.bnf.fr/ark:/12148/btv1b59055673/f1.item> (accessed 19-01-2021); Gallica, Bibliothèque Nationale de France. Regarding this planisphere, see also SANZ-HERMIDA, 2019

14 Concerning Ribeiro, see VIGNERAS, 1962; about Torenó, see SÁNCHEZ MARTÍNEZ, 2013, and SÁNCHEZ MARTÍNEZ, 2014.

A few years later, in 1522, the navigational materials that were on board the *Trinidad*, Magellan's own ship, were captured by António de Brito, the Portuguese captain dispatched to the Maluku islands to intercept the Spanish expedition. These materials were later sent to Lisbon, and the chronicler Fernão Lopes de Castanheda, in his *Historia do descobrimento e conquista da Índia pelos portugueses*, published in Coimbra between 1551 and 1561, mentions that they included «two planispheres of Ferdinand Magellan made by Pedro Reinel» («dous planisferios [...] feytos por Pero Reynel», CASTANHEDA, 1979: vol. II, p. 218). Pedro and Jorge Reinel were undoubtedly the essential cartographers of the Magellan voyage. They designed the world map with which the Portuguese navigator managed to convince King Carlos I to support his proposal to sail to the Spice Islands following a western route, and which would be similar to the *Kunstmann IV*. And at least two other cartographic works of the Reinel can be associated with Magellan's project.

On the one hand, a chart of the Indian Ocean dating from around 1517, attributed to Pedro Reinel, that has disappeared, but of which a reliable copy is preserved in Paris. In this cartographic item a very detailed representation of the islands of Indonesia appears, reflecting the most recent Portuguese voyages of exploration in those Asian regions.¹⁵ This map, it seems evident, was supposed to be of use only if Magellan had to opt for his Plan B: in case he could not find a passage to the *Mar del Sur* (or Pacific ocean) in the southern parts of America, he would try to reach the Maluku islands sailing across the Indian ocean, on an eastward rhumb, directly from the Cape of Good Hope to the Indonesian archipelago.¹⁶ As it happened, this map, or some copy of it, was certainly used on the return voyage by Juan Sebastián Elcano and his crew, that sailed directly from Timor, across the Indian Ocean, to the Cape of Good Hope and beyond, into the Atlantic Ocean.

Map 2: Map of the Indian Ocean by Pedro / Jorge Reinel, 1517¹⁷



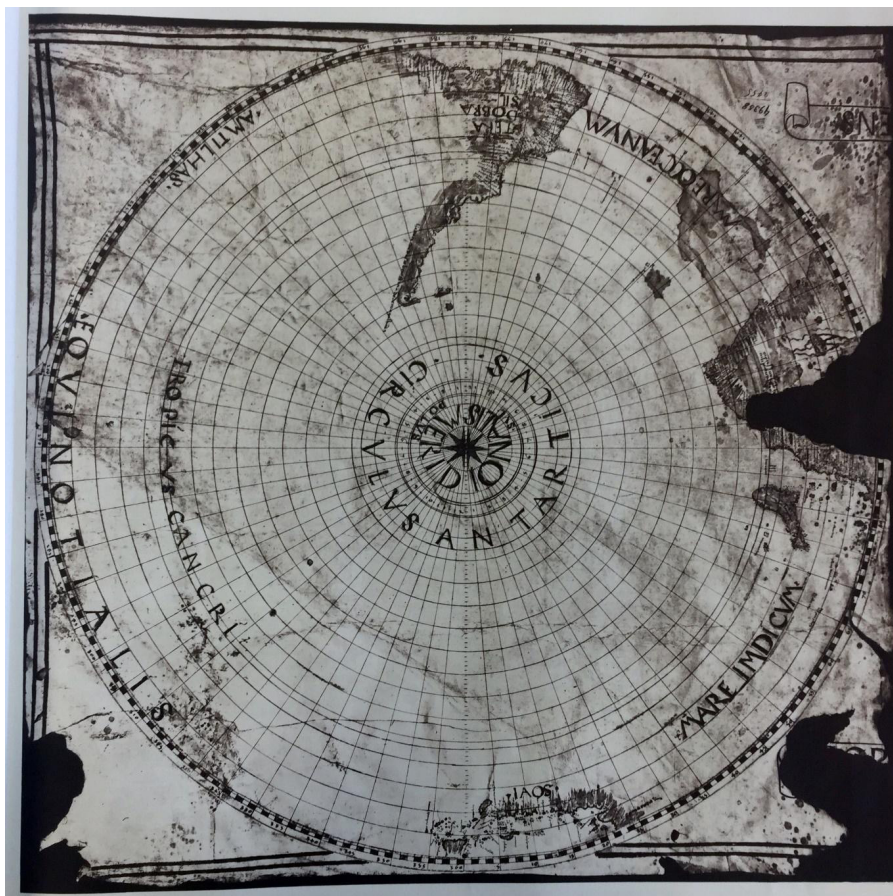
15 See reproduction and comments in KUPČIK, 2000: pp. 130-135.

16 Regarding this secondary plan, see RAMOS PÉREZ, 1975.

17 Source: <https://gallica.bnf.fr/ark:/12148/btv1b5905566p/f1.item.r=reinel> (accessed 19-01-2021); Gallica, Bibliothèque Nationale de France.

On the other hand, a polar projection chart, representing the southern hemisphere, which is kept in an Istanbul archive, is also attributed to Pedro Reinel and his son Jorge, being dated to about 1522. This type of chart would clearly reveal the possibility of reaching the Maluku islands by the western route, bypassing the southern tip of the American continent. This could be a *poma e carta* (spherical chart) copied from one of the planispheres produced in Seville by the Reinel for Magellan.¹⁸ The map was probably produced in Seville around 1519, and it was later completed with the reference «Hesta terra descobrio Fernão de Magalhães» («This land was discovered by Ferdinand Magellan»), written along the southern tip of America. This last detail was certainly added in 1522, when the only surviving ship of Magellan's expedition returned to Seville under the command of Juan Sebastián Elcano. Later, someone, probably Antonio Pigafetta, was responsible for taking this map to Istanbul, where he appears to have resided after his European tour accomplished between 1522 and 1525 (COUTO, 2019).

Map 3: Polar projection of the southern hemisphere by Pedro / Jorge Reinel, 1519-1522¹⁹



The Reinel, the father Pedro and the son Jorge, were undoubtedly the main cartographers of Magellan's projected voyage to the Spice Islands. They were the cartographers of Magellan's maps. Drawing on the most recent Portuguese voyages of exploration, in the southern parts of America, in the Indian Ocean and in the easternmost parts of Asia, the two Portuguese technicians provided the navigator with the most updated maps then available in Europe, which were essential to the

18 About this map, see DESTOMBES, 1955; and also COUTO, 2019.

19 Source: LOUREIRO, 2019b: p. 153.

success of the epic voyage of maritime exploration carried out by Magellan and his multinational crew. But the vexing question remains: How to explain in what manner Magellan managed to get the assistance of two top Portuguese cartographers then working for King Manuel I of Portugal, in a project that was directed against the overseas interests of the same monarch and against his explicit imperial policy? So far as it is known, after Magellan's departure from Seville in August 1519, the Reinel returned to Portugal and continued to draw maps and charts in the Portuguese cartographic workshop, located in Lisbon and functioning under royal patronage and royal surveillance. The problem still deserves further inquiries. And the explanation to this unnatural alliance, between the royal Portuguese cartographers and the estranged Portuguese navigator must certainly be searched in the obscure period between 1515 and 1517, when Ferdinand Magellan lived in Lisbon and was gathering intelligence for his project of sailing to the Maluku islands.

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