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a cura di
VIRGILIO ILARI

Società Italiana di Storia Militare

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Ultima Ratio Regum (Estrema ragione dei Re) iscrizione su un cannone all'ingresso del Museo di Storia Militare di Budapest. Foto O. Mustafiri, CC0 1.0 Universal Public Domain Dedication (Wikipedia commons).

Il celebre motto fu apposto sulle canne delle artiglierie francesi fuse dal 1650 al 1793, e anche su parte delle coeve artiglierie sabaude. La variante *ultima ratio regis* (estrema ragione del re) fu usata a partire dal 1742 sulle artiglierie prussiane e successivamente anche sui cannoni spagnoli, mentre l'analogo *regis ultima ratio* è tuttora il motto dell'artiglieria belga.

Cultural and Knowledge Exchange between Dubrovnik and Livorno at the Time of Ferdinando I de' Medici Through the Eyes of Vincentius Demetrius Volcius Raguseus

By Mirela Altić[1]

Abstract: Dubrovnik (Ragusa) and Livorno (Leghorn) are two old maritime cities in the Mediterranean whose strong cultural and scientific connections are here explored through the work of Vicko Dimitrije Volčić (Vincentius Demetrius Volcius Raguseus). Volčić worked in Livorno and Naples as a maker of portolan charts from 1592 to 1607. His twenty-eight charts known today represent a compendium of knowledge at a time in which intertwined practices and traditions of Dubrovnik's, Catalan, Neapolitan, Livornian, Genoese, and Venetian sailors reflected the cultural relations between the East and the West in general. This movement of charts and people through the means of trade, travel, and diplomatic activities formed the basis for cultural and knowledge exchange. Based on archival research of Volčić's charts as well as of charts by his contemporaries, this paper aims to identify knowledge exchange flows, cultural influences, and cartographic practices of individual masters and cartographic workshops that Volčić applied while working at the Livorno cartographic workshop.

Keywords: cultural and knowledge exchange, portolan charts, Dubrovnik, Livorno, Medici, Mediterranean studies

Prominence of Florentine Cartographic Tradition at the Time of the Medici

Florentine cartography, which had had a long tradition closely linked to the history of Tuscany and its ruling Medici family, started to take its prominent course in the early fifteenth century, continuing to flourish at the time of the reign of Cosimo di Giovanni

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de' Medici (1434–1464) and his family successors. The rediscovery and translation of Ptolemy's *Geography* at the beginning of the fifteenth century was an exceptional event that was to radically transform the ways in which geographical space was depicted. Though the actual circumstances of the arrival of the Greek manuscript in Florence are unclear, Florentine scholars and humanists, credited for its first Latin edition, which was prepared about 1406, are well known: Jacopo Angeli translated the text of Ptolemy's *Geography* from the Greek into the Latin, while Niccolò Niccoli was probably responsible for the translation of maps (*Dalché, 2007: 290–292*). Since then, Florence became one of the centers of the study of Ptolemy's *Geography*, a tradition from which would grow the entire geography and cartography of Humanism and the Renaissance.

Ptolemy's maps served as a base for three early regional maps of Tuscany, produced by Pieri del Massaio between 1446 and 1470 (*Rombai, 1993: 82–159*). His representation of the territory as a physical and political entity marked the birth of modern cartography of Tuscany. Another milestone in Florentine cartography was presented through the exploration work of Amerigo Vespucci, whose patron Lorenzo di Pierfrancesco de' Medici supported him to take an active part in at least two transatlantic voyages, one commanded by Alonso de Ojeda in 1499–1500 and second by Gonçalo Coelho in 1501–1502.[2] His findings irreversibly changed the image of the world with America as a new continent, designated on a map named after him.[3]

Florentine cartography of the sixteenth century saw further advance with the production of the first printed maps of Tuscany whose aim was to provide the regional government with more detailed knowledge of the territory over which they aimed to exercise their military, economic, and fiscal control. Maps by Leon-

2 According to *Cosmographiae Introductio* (Saint-Dié, 1507) which contains an appendix with accounts of the Vespucci's journeys across the ocean, he made no less than four voyages. Two of them were undertaken by order of King Fernand of Castile (1497-1498 1499-1500); the remaining two by order of King Manuel of Portugal (1501-1502 1503-1504). In chapters 7 and 9 of *Cosmographiae*, *America* was mentioned as named after *Americus Vespucius*, who first visited the fourth part of the world in 1497.

3 To recognize Vespucci's accomplishments, Martin Waldseemüller applied the Latinized form "America" in his planisphere from 1507 for the first time. Other cartographers followed suit, and, by 1532, the name America was permanently affixed to the newly discovered continents.

ardo da Vinci, such as his map of Etruria (1503) or the Pontine Marches (1513) for Giuliano de' Medici, reflect their utilitarian purpose (*Starnazzi, 2003*). The *Chorographia Tusciae*, drawn in 1536 by the Sienese military engineer Girolamo Bell'Armato, with a dedication to the Medici condottiere Valerio Orsini leaves no doubt that the map was intended as a tool of military planning. Cosimo I de' Medici, Duke of Florence (1537–1569), who was named the first Grand Duke of Tuscany (1569–1574), took further initiatives that had a strong reverberation in the development of Florentine cartography. Known as a great patron of science and art, Cosimo began to collect extensive cartographic material to support the sovereignty of his young state, but also various transoceanic expansion projects. In 1561, he founded the *Order Il Sacro Militare Ordine di Santo Stefano Papa e Martire*. The aim of this Tuscan military order was to fight the Ottomans and pirates that sailed the Mediterranean Sea, increasingly threatening the Tyrrhenian Sea as well.[4] The Order's pilots were educated in a three-year training that involved lessons in geography and cartography. The organization that flourished in the late sixteenth century and peaked in the early seventeenth century, when it counted 600 knights and 2,000 other soldiers, sailors, and oarsmen, was initially seated in Portoferraio (Elba), and then moved to Pisa.[5] Cosimo was also an avid

4 The establishment of the Order also had strong political reverberations. Cosimo also needed a symbolic fight to unite the nobility of different cities that combined to form his new Grand Duchy (including Florence and Siena), and demonstrate his support of the Roman Catholic Church. Finally, the creation of a Tuscan military order would also strengthen the prestige, both internal and international, of Cosimo's new state (*Davies, 2009: 33–35*).

5 The Knights of St Stephen, with their own war galleys, fought alongside the Spanish (and other allied Italian states) during the siege of Malta, in 1565, and the Battle of Lepanto, in 1571. They also participated in the attack and capture of Annaba in Algeria in 1607. Furthermore, they concentrated on areas closer to home with raids on the Turkish-held islands of the Aegean, as well as on launching attacks on Ottoman forces in Dalmatia, Negroponte, and the island of Corfu. A major change came only in 1737, when the House of Medici was supplanted by the Austrian dynasty of Habsburg-Lorraine. Since then the Order became more of a feature of social status and no longer an Order focused on war and military defense (*Guarnieri, 1965a*). It should be noted that the members of the Order were not exclusively Tuscans. Of the 3,756 knights who served in the organization between 1562 and 1737, 68 percent were Tuscans, 28 percent came from neighboring Italian states (mostly the Papal States), and only 4 percent came from elsewhere (*Hanlon, 1997: 38*). Some of the particularly prominent members came from Marca of Ancona (then part of the Papal States) and were involved in cartography. Chartmaker Giovanni Freducci (son of Angelo Freducci) was admitted as Knight in 1563. Other well known Anconitan was Captain Francesco Ferretti, author of an atlas *I Diporti Notturni. Dialoghi Familiari del Cap.o Franc.o Ferre.ti Cav.ro dell'Ordine di Sa.to Stefano. Con la Dimostratione Figurale Intagliata da*

builder of military structures. His initiative to fortify Tuscan cities included the extensive redesign of Livorno into an 'ideal town,' which in the late 1580s would be declared a free port.[6]

Cosimo's son Francesco I de' Medici (1574–1587) continued his father's devotion to geographic knowledge and cartography. In 1584, he ordered two maps of the Medici state, *Dominio Fiorentino* and *Dominio Senese*, produced by Stefano Buonsignori, the cosmographer of Grand Dukes Francesco I and Ferdinando I, that well reflected his attitude toward the territorial and political sovereignty of the Grand Duchy.[7] Yet, his passion for cartography had a clearly military purpose. The strengthening of naval power and general militarization of the Grand Duchy stressed the need for more reliable navigational charts for defense purposes. To meet that requirement, his successor, Grand Duke Ferdinando I de' Medici (1587–1609) established a workshop of nautical cartography (*Scuola livornese di cartografia nautica*). Opened in Livorno in 1592, the workshop became the main supplier of charts for the Order of San Stefano that defended the Duchy at sea. That institution would hold the primacy in the chart production of the Duchy until 1688 (*Guarnieri, 1965: 7–8; Astengo, 2019: 25–36*). That soon brought to the city some exceptional cartographers such as Vicko Dimitrije Volčić, Joan Oliva,[8] Giovanni Battista Cavallini,[9]

Michel'Angelo Marrelli Anconitano 1579. This work also known as *isolario* was printed by Francesco Salvioni in Ancona in 1579 (colophon dated 1580) (*Licini de Romagnoli, 2020*).

6 In 1577, the architect Bernardo Buontalenti drew up the first plan. The new fortified town had a pentagonal design, for which it was called *Pentagono del Buontalenti*, incorporating the original settlement. The *Porto Mediceo* was overlooked and defended by towers and fortresses leading to the town center.

7 In 1589, Stefano Buonsignori painted versions of these two maps in the Sala della Matematiche in the Galleria degli Uffizi for Grand Duke Ferdinand I (*Rombai, 2007: 912–913*).

8 Joan [Giovanni] Oliva (fl. 1592–1643) came from a Sicilian family of chartmakers. Joan Oliva moved constantly along the Italian coast. In 1592–1599, he resided in Messina, in 1601–1603 in Naples, then he returned to Messina in 1606–1608, and left for Malta in 1611. In 1612, he was already in Marseilles, spent the years 1614 and 1615 in Messina and Marseilles, to finally, from 1616–1643, come to Livorno (*Conti, 1993: 493–510)*.

9 Giovanni Battista Cavallini, a Genoese cartographer who inherited the role of chartmaker for the Order of the Knights of San Stefano from Joan Oliva, a master of chart drawing, with whom he co-signed a chart in 1636. His earliest extant work dates from 1635 (an atlas with thirteen charts), while until 1656, he produced at least nineteen charts (sometimes co-signed with Pietro Cavallini) (*Vagon, 2019: 37–52*).

Pietro Cavallini,[10] and Robert Dudley.[11] The establishment of the Livorno cartographic school marked the end of the predominance of Messina and Naples which, along with Venice and Genoa, mastered the Italian chart production of the sixteenth century, and the affirmation of Tuscany as a new center of chartmaking, a branch of cartography that was until then absent in the Grand Duchy. Although it appeared in the time of decline of chart production, the Livorno workshop left a significant mark in the history of portolan chartmaking.

Dubrovnik and Livorno at the time of Ferdinando I de' Medici

Relations between Dubrovnik and Livorno were characterized by a strong maritime and trade cooperation which, in addition to economic benefits for both parties, would also bring about a significant cultural and scientific exchange. This exchange would be particularly fruitful at the time of Ferdinando I de' Medici, Grand Duke of Tuscany, when Livorno, in the late 1580s, was granted a free port status. Ferdinando fostered commerce and gained great wealth through the Medici banks, which were established in all major cities of Europe. He enacted an edict of tolerance for Jews and heretics, and Livorno became a haven for Spanish Jews as well as other persecuted foreigners.

The expansion and modernization of the port of Livorno under the rule of the Medici family, who not only ordered the construction of an external port, capable of taking the largest ships, but also passed legislation encouraging immigration of skilled labor regardless of nationality, by the end of the sixteenth century transformed Livorno into the main Tuscan port for trade with the Levant (*Tazzara, 2017: 20–21*). Exceptional in a period when intolerance and religious persecution were the norm in Catholic and Protestant countries alike, these measures made a

10 Pietro Cavallini, probably a son of Giovanni Battista, with whom he co-signed an atlas from 1654, thus lightly indicating Pietro as a successor of Giovanni Battista. He was active in Livorno from 1654 to 1688. He continued to produce charts of the Order of San Stefano, yet his charts make a sharp decline in the Livorno chart tradition.

11 After leaving England, the Englishman Robert Dudley, Earl of Warwick (1574–1649) found his place in the service of Grand Duke of Tuscany. Dudley designed and built warships for the arsenal of Livorno. In 1608, Dudley convinced Ferdinando I to send a privateer galleon to Guiana and northern Brazil. The venture is known as the Thornton expedition. In 1646, he gave birth to the first maritime atlas in history (*Dell'Arcano del Mare*) and was the first in Italy to produce nautical maps in the Mercator projection.

concrete contribution to the development and prosperity of Livorno, attracting to the city foreign bankers, merchants, pilots and captains, master joiners and navigators from all over the Mediterranean. Guarantees of an undisturbed existence, together with the opportunities offered by the development of both the Tuscan mercantile fleet and the naval fleet of the Sacro Militare Ordine di Santo Stefano Papa e Martire made Livorno one of the most cosmopolitan and propulsive cities of the young Duchy of Tuscany, which was to take a prominent place in the world of cartography. As Ferdinando de' Medici was particularly interested in strengthening trade ties with the Ottoman Empire, Dubrovnik, as a close ally of the Ottomans, with its numerous ships in the port of Livorno as well as skilled navigators, would play a significant role not only in the development of Livorno cartography, but even more in Tuscan international trade and cultural exchange.

The Republic of Dubrovnik, an independent aristocratic republic, sandwiched between the Ottoman Empire and the Venetian Republic since the fifteenth century based its development on political neutrality as a key factor in its development, which enabled it to develop into one of the most important naval powers in the Mediterranean (*Harris, 2006)*. The avoidance of open war conflicts and the use of skillful diplomatic maneuvering with the great powers, especially the Ottoman Empire (winning exclusive rights to trade with the Ottoman Empire in 1443), made Dubrovnik a reliable partner for the Grand Duchy of Tuscany. As early as 1495, Florence had a consulate in Dubrovnik, and from 1517, Dubrovnik established its own consulate in Livorno, to which Dubrovnik ships brought goods from the Levant (*Kapovic, 1988: 37*). This consulate operated in parallel with the Ragusan consulate in Pisa until 1541, when the consulate in Livorno became completely independent of Pisa *(Castignoli, 1988: 32).* Already in the Late Middle Ages, Dubrovnik established itself as one of the focal points on the route connecting Tuscany with Constantinople. Whether using the sea route (from Ancona or Dubrovnik to Constantinople), or the overland route (Ancona-Dubrovnik-Sarajevo-Novi Pazar-Edirne [Adrianople]-Pera), Dubrovnik was always included in the chain of exchange between the West and the East (*Devi, 2009: 13*).

The great presence of the people of Dubrovnik and their importance in Tuscan trade is well evidenced by the fact that, in 1574, the existence of the *Via dei Ragusei* was recorded in Florence (*Castignoli, 1988: 29*). When Livorno established itself as the main Tuscan export port for trade with the Levant, numerous Ragusan merchants and navigators were attracted to the town. Dubrovnik ships

were granted a special privilege of trading and sailing for the needs of the Tuscan Dukedom from both the port of Livorno and Dubrovnik itself. Ragusan captains were highly esteemed and were thus regularly trusted to carry even the most valuable cargo, but often took part in battles, defending the interests of Tuscany and its allies. The influence of the people of Dubrovnik in Livorno would be especially strengthened after Ferdinando I de' Medici founded the Livorno cartographic workshop, which was to produce nautical charts for the needs of the Holy Maritime Order of Saint Stephen Pope and Martyr. No less important, this is the evidence that several citizens of Dubrovnik were members of the Tuscan military Order of San Stefano, which clearly demonstrates their prestigious status.[12] Such relationship, in addition to strong trade ties, brought about a strong cultural and scientific exchange between Dubrovnik and Tuscany.

Vicko Dimitrije Volčić, a Chartmaker from Dubrovnik

Vicko Dimitrije Volčić (1563–1607), better known as Vincentius Demetrius Volcius Raguseus, is considered one of the most prominent chartmakers working in Livorno. Born and initially educated in Dubrovnik, in 1592 he began working in Naples and Livorno, where, in the period from 1592–1607, he produced at least twenty-eight handwritten nautical charts. They are now held in archives and libraries in Italy, France, Spain, Germany, Greece, the UK, Finland, and the United States (see Appendix I). Many details from his professional life have not yet been clarified. Obviously showing a strong interest in maritime cartography, Volčić did not stay in Dubrovnik, but left it permanently at the age of twenty-nine. The Republic, which highly valued its territorial sovereignty, and had one of the most significant naval fleets in the Mediterranean, was extremely reserved toward the production of maps. Geographical data were considered highly sensitive information, which had to be carefully protected from possible abuse, particularly by numerous informers and spies who came to Dubrovnik by both sea and land. Thus, although Dubrovnik ships were regularly equipped with the best nautical charts, the Republic did not encourage their creation.[13] The confi-

12 Gino Guarnieri identified three Ragusans in the Order: Đuro Dolisti, Ambroz Gozzi, and Ivan Restidi.

13 This certainly does not mean that the citizens of Dubrovnik were not well acquainted with the achievements of cartography of the time. On the contrary, an insight into the content

dentiality of information was to contribute to the security of Dubrovnik, but also of the neighboring Ottoman Empire. No less important, the lack of real information had to further support the myth of wealth and power of the Republic. Situated between the possessions of the Venetian Republic and the Ottoman Empire, the Republic of Dubrovnik had to skillfully balance between the two empires, carefully controlling the dissemination of information about Dubrovnik and the creation of image of itself in the eyes of others in general. The few maps that the Republic of Dubrovnik had produced during its long history, served the needs of the administration of the Republic, and only a small circle of the ruling aristocracy had access to those maps.[14] Such circumstances were not favorable for Volčić's keen interest in cartography, so he left for Italy where mapmaking was a highly appreciated skill.[15]

It is not known what Volčić did before February 1592, when he appeared in Naples for the first time.[16] Given that he originated from a maritime hub like

of libraries of wealthy Dubrovnik families confirms that many highly valued cartographic editions were represented in their collections. Mavro Orbini, one of the most prominent Dubrovnik writers and historians (mid-16th century – 1614), mentions that, while writing his famous work "Il Regno degli Slavi" (Pesaro, 1601), he used the works of Abraham Ortelius, Giacomo Gastaldi, Sebastian Münster, and Wolfgang Lazius (*Altić, 2017: 55–57*).

14 In the long history of the Republic of Dubrovnik (1358–1808) there is evidence of very few maps of its territory that were made based on first-hand knowledge. To this date, only two of them are preserved – one created between 1718 and 1746, probably by Miho Pešić, a painter and diplomat from Dubrovnik, and the second one created in 1804 that was based on an Austrian survey approved by the Dubrovnik authorities. None of them were published. The only printed map of the Republic was compiled by Vincenzo Maria Coronelli in 1688, according to information provided by the Dubrovnik authorities. This unusual decision was made in the midst of the Ottoman-Venetian War (1684–1699), when it became obvious that the Ottomans were losing the war and that, due to Ottoman territorial losses in the hinterland of Dubrovnik, the Republic of Dubrovnik might have a direct border with the Venetian Republic. In addition, in 1667, Dubrovnik survived a catastrophic earthquake that greatly weakened the Republic, and from which it only began to recover. All this prompted the Dubrovnik authorities to a silent cooperation with the Venetians who, by publishing the map, contributed to the trade re-empowerment of the Republic (*Altić, 2017*).

15 Vicko Dimitrije Volčić is not the only significant cartographer originating from the Republic of Dubrovnik. Ruđer Bošković (1711–1787), one of the most eminent scientists of the eighteenth century, author of the first science-based map of the Papal States, was also born in Dubrovnik. Significantly, none of the mentioned two were cartographically active in Dubrovnik (*Altić, 2014: 71–89*).

16 The name of the Ragusan noble family Volčić appears in several wills found in the State Archives in Dubrovnik, but there is no mention of Vicko Dimitrije. That could speak in fa-

Dubrovnik, it is highly possible that he spent his early years sailing, thus acquiring practical navigational knowledge. In the absence of other written traces, his professional life was reconstructed primarily based on his charts, which he always signed with his full name in Latinized form, Vincentius Demetrius Volcius Raguseus, thus emphasizing his Ragusan origins, and with a clear note on the place and date of chart production. To date, twenty-eight of his charts produced between 1592 and 1607 have been identified, which gives us some insight into his life and professional activity.

Although Roberto Almagià considered him the first cartographer of the Livorno workshop, that is hardly possible, since we know that, in the period from 1592–1593, Volčić mostly resided in Naples, where he made at least eleven charts (*Almagià, 1933: 6)*. The thesis that Volčić is one of the founders of the Livorno school was instigated by the fact that one of the oldest Volčić's charts was created in August 1592 in Livorno. Known only from Attilio Mori's description, this chart of the Mediterranean was signed *Vincentius Demetri Volcii Rachuseus fect terra Liburni die 26 Augusti 1592*, and garnished with the coat of arms of the Order of San Stefano (*Mori, 1908: 281–290*). Yet, before he drafted this chart in Livorno on February 28, 1592, he produced four charts for one of his atlases in Naples. Only then does he appear in Livorno to draft his chart in August, but already in September 1593, he is back to Naples were he produced at least another seven charts. Such trajectory makes his founding role in Livorno hardly possible, as it is unlikely that he would come from Naples to produce only one chart during his short stay in Livorno, and then left back for Naples.

His second appearance in Tuscany is documented only in March 1595. That year he produced one chart in Portoferraio, a harbor on the island of Elba that was founded by Cosimo I de' Medici in 1548 as a fortified naval outpost for defending the Tuscan coasts, and later also known as the site of the Order of San Stefano. Having worked on Elba, there is no evidence of his activity to July 1598, when he appears in Livorno, staying there for another three years and working as a mapmaker in the famous Livorno cartographic workshop. This was the most flourishing period of his professional life, in which he produced at least thirteen charts. In 1601, he moved back to Naples, where he lived until his death in 1607, producing only two charts.

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vor of the fact that he came from a commoner branch of the family.

Based on the order of appearance of his maps, a large oscillation in their production is noticeable. In the years 1592 and 1593, which he spent in Livorno and Naples, as well as in the years 1598, 1600, and 1601, which he spent in Livorno, he produced as many as twenty-four of his twenty-eight charts. At the same time, we do not have any data on his activity in 1594, on the period between March 1595 and July 1598, nor on the period between May 1601 and July 1605. What Volčić did in those periods remains unknown. It is possible that, like some other of his colleagues, he combined the activity of chartmaking with periods of navigation. Despite the gaps in his biography, the nautical charts he produced speak in favor of his high education and awareness of then-current trends in nautical cartography across the Mediterranean world.

The fact that he successfully worked in three ports of the Tyrrhenian Sea – Naples, Portoferraio, and Livorno, is what distinguishes him from his contemporaries. Very few cartographers seem to have moved from one school to the other (*Baldacci, 1988: 49*). The mobility of Mediterranean cartographers had been largely due to their search for better markets, or for more favorable working conditions, which were determined by policies of local governments. Volčić's commuting between Livorno and Naples is particularly interesting in the context of the geopolitical turmoil of the late sixteenth and early seventeenth centuries. When Volčić resided in Naples, the Kingdom of Naples was part of the Habsburg dominions under the rule of Philip II of Spain (1554–1598). Philip II saw himself as the defender of Catholic Europe against the Ottoman Empire and the Protestant Reformation.[17] At the time of Volčić's first stay in Naples (1592/1593), the Anglo-Spanish War (1585–1604) was in full swing, and would be ended only by his son Philip III (1598–1621). No less important, Ragusan ships took an active part in the Spanish campaign against England. At the same time, reigned by Ferdinando I de' Medici, the Grand Duchy of Tuscany was also marked by pragmatic foreign policy. Although Ferdinando attempted to free Tuscany from Spanish (Habsburg) domination established due to his alliance in the Holy League, he later supported both Philip III of Spain in his campaign in Algeria and the Holy Roman Emperor Rudolf II in his fight against the Turks, thus continuing

17 Between 1567 and 1574, nearly 43,000 men left Spain to fight in Italy and the Low Countries. Philip did achieve a decisive victory against the Turks at Lepanto in 1571, with the allied fleet of the Holy League, reconquering Tunisia from the Ottomans in 1573.

his father's policy.[18] The alliance of Habsburg Spain with the Medici's Tuscany greatly facilitated Volčić's multiple movement between Naples and Livorno. No less important, the Republic of Dubrovnik had close diplomatic and political relations with both the Kingdom of Naples and the Duchy of Tuscany, embodied not only in trade exchange, but also in diplomatic missions in Naples, Livorno, and Florence.[19] Furthermore, his stays in Naples, which was strongly affected by Spanish culture and science, and Livorno, which was predominantly influenced by the Italian Renaissance, enabled him to take the best of the two worlds and incorporate both heritages into his charts.

Geographical Scope and Graphic Style of Charts by Volčić

Portolan charts were an instrumental tool for medieval navigators who sailed the Atlantic and the Mediterranean along well-established routes, which were determined by the nature of local winds and currents and never lost sight of land for more than three days.[20] Ultimately, the conquest of the oceans made navigation by stars a necessity, thus indications of latitude were regularly added to the old rhumb line, gradually transforming portolan charts into flat gridded charts, a fact that would enable them to stay in use after the transatlantic traffic was opened and the Mercator projection (1569) invented (*Astengo, 2007: 174*). Yet, although staying on the market until the mid-seventeenth century, from the second half of the sixteenth century onward there was a gradual decline in their production as well as a clear shift in their purpose.[21] Portolan charts were often purchased not as navigational aid but as a symbol of knowledge and prestige by notable individ-

18 Ferdinando strengthened the Tuscan fleet, and it saw victories against pirates on the Barbary Coast in 1607 and against a superior Turkish fleet the following year.

19 Among others, the consulates of Dubrovnik were located in Venice, Rome, Naples, Messina, Catania, Florence, Pisa, Genoa, Ancona, but also in London, Antwerp, Brussels, Cadiz, Mallorca, Marseilles, Corfu, Rhodes, Beirut, Cairo, Alexandria, and Goa, a fact that well reflects their widely developed trade and diplomatic networks (*Mitić, 1973*).

20 For more on early portolan charts see Tony Campbell, "Portolan Charts from the Late Thirteenth Century to 1500." In *History of Cartography, Volume 1: Cartography in Prehistoric, Ancient and Medieval Europe and the Mediterranean*, edited by J.B. Harley and David Woodward. Chicago: University of Chicago Press, 1987, 371–463.

21 The sixteenth-century trend toward small-volume merchant shipping meant that there was practically no need for nautical charts of the Mediterranean as a whole; on short coastal voyages from one port to another, what counted was the personal experience of captains and pilots.

uals like rich merchants, members of sacred or military orders, or noblemen and clergy. Charts produced by Volčić reflect that late stage of portolan production when most of the portolan charts were not used for actual navigation. None of the extant charts by Volčić bear traces of navigational use (water stains on some of the charts indicate neglectful maintenance rather than their use onboard). Further support to this thesis comes from the fact that more than half of the extant charts by Volčić were bound in luxurious leather hard covers, which was typical for the sixteenth century atlases but highly unpractical for their use onboard.

Sometimes nautical charts and atlases were commissioned directly, but it was perhaps more usual for cartographic workshops to produce them at their own expense in the hope of subsequently finding a purchaser. This practice can be traced in the cartouches or frames that were left empty to be later filled by the owner's coat of arms, or by a dedication to the owner or his patron (*Astengo, 2007: 178*). In most cases, the charts by Volčić do not have any dedications or cartouches that would speak of the charts' purchasers. Although some of his charts have empty cartouches, apparently waiting for a dedication to be inscribed, their unfilledness speaks in favor of buyers that might not have been high-ranking people (even the ships that appear as an illustration on the Vatican copy have white flags that wait to be colored). Yet, some of his specimens came into the hands of prominent noble families and members of the Order of San Stefano: the missing chart of the Mediterranean from 1592 was designated by the coat of arms of the Order, the chart of the Mediterranean produced in c. 1598 (kept in Heidelberg) has a family crest that also contains the symbol of the Order, the chart of the Mediterranean kept in Florence has a coat of arms of the Quartesi family,[22] while the 1598 atlas kept in the Houghton Library contains a separate page with a large coat of arms of the mighty Barbolani di Montauto family, which was closely attached to the Medici and to the Order of San Stefano (Figure 1).[23]

22 The Quaratesi, originally from Quaranta in the Potesteria del Galluzzo, came to live in Florence in the Borgo di S. Niccolò, where they built their houses in which the Bards found safety during the siege of 1343. They were wealthy and reputed merchants, and as such were repeatedly called to be part of the Signoria.

23 Barbolani di Montauto are one of the oldest aristocratic families in Italy that, for centuries, had great importance in political, military, cultural, and religious history, especially in Tuscany. In the 1580s, Bartolo Barbolani was appointed general of the galleys of the Order of San Stefano, and was entrusted with the command of the Tuscan troops destined to aid the Republic of Venice in the defense of Greek islands against the Turks. Since then their fam-

Fig. 1 Coat of arms of the Barbolani di Montauto family in Volčić's 1598 atlas testifies to its dedication to this famous Italian family who was strongly related to the Medici and the Order of San Stefano (Haughton Library).

All charts by Volčić are drawn on parchment. The usual neck of the chart (*umbilicus*), which always occupies the left side, appears only on copies which are not intended to be bound. Of the twenty-eight extant charts produced by Volčić, as many as fifteen are bound into four atlases. All his atlases have the same coverage, the chart of the whole Mediterranean from the west coast of the Atlantic to the Black Sea (known as a 'normal portolan'), usually accompanied by three more detailed charts of the western, central (with the Adriatic), and eastern Mediterranean (the Black and the Aegean Seas). Their uniform size, scale, orientation, and stylistic features indicate that they were intended to be bound into an atlas and form a single entity.

The atlas kept in Madrid (Naples, 1592) is the earliest known atlas by Volčić. It contains four mid-scale charts that fit together, covering the region from the Atlantic coast in the west to the Black Sea in the east. There is no chart of the whole Mediterranean. The volume starts with a chart of the eastern Atlantic coast (that is the only one oriented to the west in order to fit in when bound with the others). It is followed by three charts of the Mediterranean (the western, central, and eastern, all of the same size and orientation, with north on top), as well as of the same scale. The charts of this specimen are more decorated than the other copies, with major cities marked by miniature views and heraldic symbols, and a votive image of Christ on the first chart (Figure 2). There is an oddity in this atlas. Although the back sides of the parchment of the charts are never used, a "negative" image of the Black Sea was drawn on the back side of the first chart. The purpose of the odd chart is not known (*Astengo, 2007: 186*).

The specimen kept in Helsinki (Naples, 1593) was purchased by A.E. Nordenskiôld, who brought its reproductions and transcriptions of place names in his *Periplus*. It contains three charts; two, which cover the whole Mediterranean, and fit together as the western and eastern sheet, and one that shows only the Adriatic at a grater scale (Figure 3). Only the first chart has a cartouche with the name of the maker and the date of production. The simple style of this volume (no city views or heraldic symbols, no religious images) shows many similarities with the Harvard copy. That particularly refers to the charts of the Adriatic, which completely coincide.

The Eaton's copy (Naples, 1593), with three charts, differs from the others.

ily coat of arms also included the symbol of the Order of San Stefano.

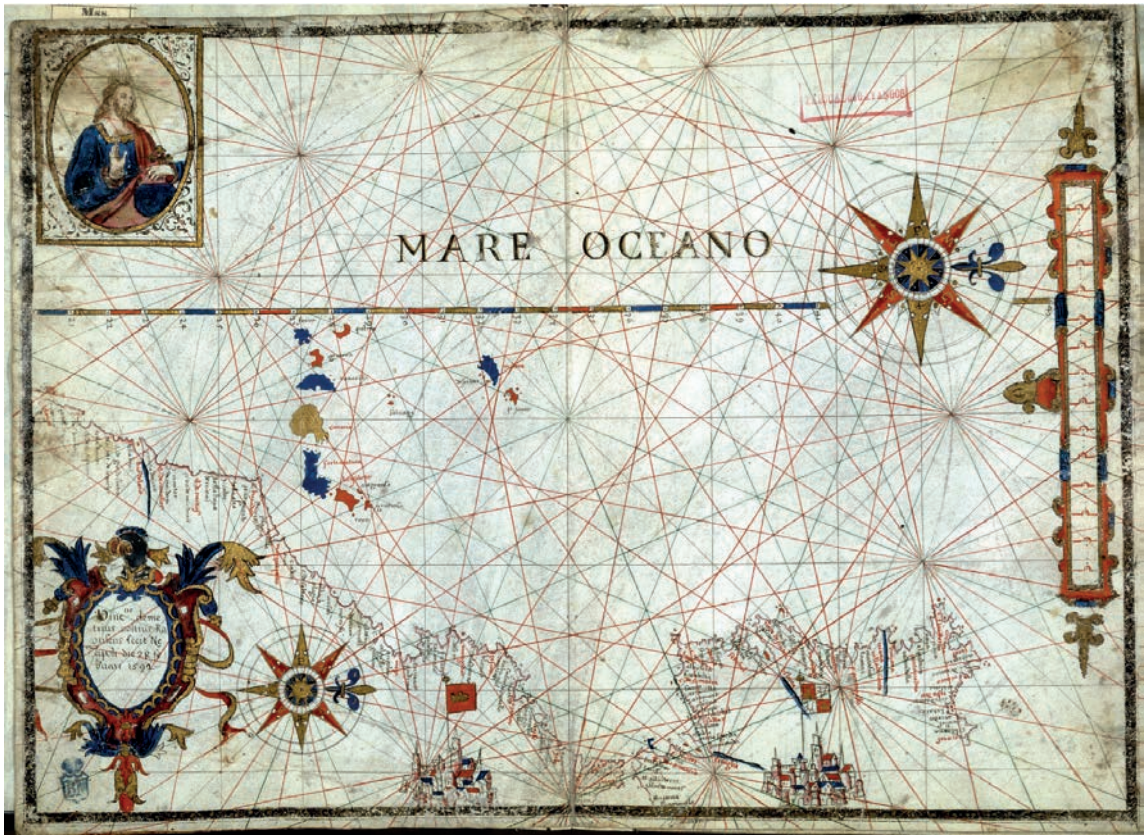

Fig. 2 A chart of the Atlantic (Mare Oceano), drawn by Volčić on February 28, 1592, is one of his oldest extant charts bound into an atlas that is kept in Madrid (BNE).

The three charts, drawn to fit together and covering the whole Mediterranean (the western with the Atlantic coast, the central with the Adriatic Sea, and the eastern with the Black and Aegean Seas), are featured in a different style. Each sheet is accompanied by figures of rulers and by a votive image of Christ. Although the original charts were drawn in portrait format (with the north on top), the sheets were bound in the landscape format, which requires the rotation of the atlas (yet, the figures of rulers are drawn to fit the landscape format!). While the graphic scale (ladders) has the same ornamental features as on other copies, the wind roses in this specimen are more ornated. The wind rose on the chart of the eastern

Fig. 3 A chart of the Adriatic Sea (Golfo di Venetia), drawn by Volčić in Naples on August 19, 1593, for his atlas that is today kept in the National Library in Helsinki.

Mediterranean, thus the region mostly under the Ottomans, has a biblical motto inscribed into the rose: *Vias tuas d[omine] demonstra michi* (Figure 4).[24]

The most complete is the binding kept in the Haughton Library at Harvard University, which was compiled in Livorno in 1598, and was the last known atlas by Volčić. It contains five charts of the same size. The leather binding is luxurious and, apart from charts, contains two additional vividly illustrated sheets – the one,

24 It is a shortened version of Psalm 25:4: *Vias tuas, Domine, demonstra mihi, et semitas tuas edoce me*, or Show me thy ways, O Lord; teach me thy paths.

Fig. 4 Part of a chart of the eastern Mediterranean with a representation of the Black Sea and a representation of the ruler figures had a richly decorated wind rose with a biblical motto inscribed into it (Eaton College Library).

which shows the Virgin Mary, opens the volume,[25] while the second, with the coat of arms of the Barbolani di Montauto family, closes the volume. The same as in the Eaton's copy, the original charts were drawn in the portrait format, and then bound into the landscape format. The three main charts, the Atlantic coast with the western Mediterranean, the central Mediterranean, and the eastern Mediterranean, are made at the same scale and compiled to fit together (with some

25 The large image of the Virgin Mary contains an inscription reading "Purpureas prebeterio sas flores Marie utobis fructum prebeat, illa suum [Offer purple roses and flowers to Mary, so she may offer you the fruit].

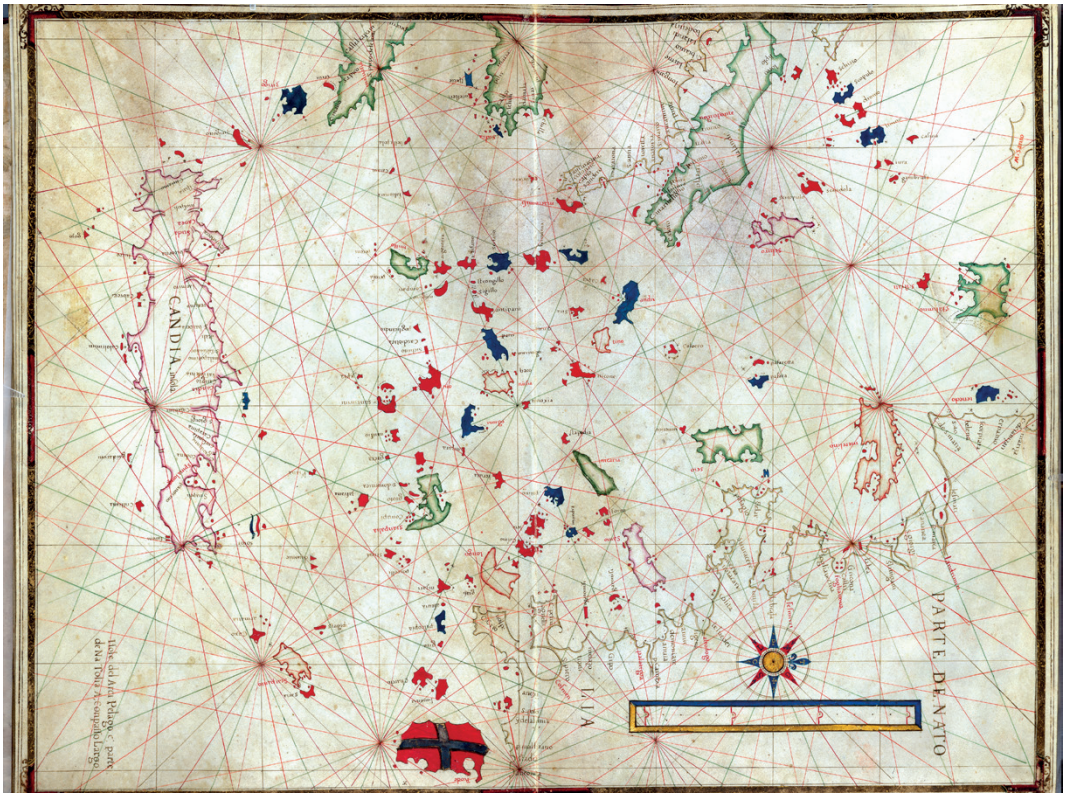

Fig. 5 A detailed chart of the Aegean Sea drafted in Livorno in 1598, and comprising the atlas dedicated to the Barbolani di Montauto family. Note the special marking of the island of Rhodes (red with a black cross) as the site of the Order of Saint John (Haughton Library, Harvard).

overlap), covering a wide region from Britain and Ireland in the west to the Black Sea in the east. The most indented parts of the Mediterranean, the Adriatic and the Aegean Seas, are presented with two additional charts at a larger scale (Figure 5). The usual title cartouche is missing, only on the sheet no. 2 can we find a simple note inscribed along the edge with a date and name of the author of the chart. Also, there is no votive image nor the marking of major cities with vedutas and / or common heraldic symbols.

The remaining thirteen pieces by Volčić are single charts. They all have a neck at the left side, which confirms they are not created to be part of an atlas. As a rule, they cover the whole Mediterranean. The only exception are the charts of the

Fig. 6 A chart of the Mediterranean with an enlarged view of the Adriatic Sea inserted on top. The map was drafted in Naples on July 15, 1605. It is decorated with figures of sovereigns and a rich cartouche that stayed empty (Vatican Library).

Aegean Sea from 1595 and 1598 (both in private collections), and a chart of the same region drawn in 1601 in Livorno (kept in Bologna). Among single charts particularly stands out a 1605 copy kept in the Vatican. Volčić applied something unusual in this chart of the Mediterranean: he inserted an additional chart in the upper right corner – an enlarged view of the Adriatic Sea (Figure 6). He did the same on his first chart produced in 1592 and in the copy kept in Heidelberg (c. 1598). Moreover, he inserted a world map, *Typus Orbis Terrarum*, in his chart of the Mediterranean kept in Yale (c. 1600). This is a direct reference to Abraham Ortelius and his map computed in the Mercator projection (which, ironically, announced the end of the portolan chart era). Volčić was the first to introduce inserts of additional charts into portolans, a fashion that would later be taken over

by some other masters.

Charts by Volčić have typical technical features that include rhumbs, wind roses, and a scale. The system of rhumbs used in charts of the sixteenth century differ very little from those in charts of the Late Middle Ages. The color-coded lines of the wind roses already formed the cognitive framework necessary for the alignment of a chart and actual plotting of a ship's course. Most of Volčić's charts contain more than one wind rose in which the north is always designated by a lily, and the east by a cross (referring to Jerusalem).[26] The graphic scale is a regular element of all his charts. It was given in a strictly codified form: there was an alternating sequence of white and dotted spaces (each corresponding to fifty miles), with the dotted spaces internally divided into five short bars (each corresponding to ten miles). According to Baldacci's calculations, the scales of Volčić's charts of the Mediterranean vary between 1:10,000,000 and 1:7,000,000, while the scales of his charts of the Adriatic are about 1:2,500,000 (*Baldacci, 1988: 45–46*). The graphic scale is the subject of Baroque ornamentation, colored in blue, red, and sometimes green and gold. In addition to rhumbs, the wind roses and scales on some of his charts are supplemented with the indication of latitude (especially those that refer to the Atlantic).

One of the typical features of Volčić's charts is the lack of unnecessary ornamentation. There are only several charts on which the author seems to give way, at least partially, to the fashion of his time, yet nevertheless with great moderation. That particularly refers to his presentation of major cities in the form of miniature views, which only appear on a few of his charts, most notably on the charts that appeared in the atlas from Madrid (Fig. 2), on a 1607 chart of the Mediterranean that is kept in Florence, and on the chart kept in Bavaria (c. 1600). Generally, Volčić's views are standardized representations, an ideogram that shows a defensive wall, a gateway, a few buildings, and a church, which he used to designate the majority of the cities. Apart from by miniatures, the cities are also marked by their respective flags. The only documentary miniatures that maintain the actual outlines a the city are given for Genoa and Venice. His views of Genoa, with a clearly recognizable curved harbor with quays and a lighthouse,

26 Although some considered the lily typical for Catalan charts and the wedge for Italian charts, there is no consistency in their use.

as well as of Venice dominated by the domes of San Marco stand out.[27] Although some chartmakers designated Volčić's home town of Dubrovnik with a recognizable vignette and the flag of the Republic, he never did that.[28] A further feature in regard of heraldry refers to a special marking of the island of Rhodes as the site of the Order of Saint John, also known as the Knights of Malta (note the island colored in red and designated with a large cross on Figure 5).[29] The island of Khios is also regularly overlaid with the Genoese cross of Saint George, thus claiming the island, which had actually been under Ottoman rule since 1566. Apparently, there was a certain reluctance to register these territorial defeats of Christianity as final.

During the course of the sixteenth century, the custom of decorating the neck of a chart with a religious image became the norm. According to Baldacci, crucifixes, Madonnas, and saints are the expressions of a typically Mediterranean exuberance in the religious faith (*Baldacci, 1990: 84*). The appearance of religious images is the result of growing Catholicism in general (in opposition to Protestantism), but also of regional wars between the Catholic powers and the Ottoman Empire. Volčić certainly followed the fashion, thus many of his charts refer to religious figures. In his most lavish edition, the atlas dedicated to the Barbolani di Montauto family, he inserted the whole page to illustrate the Virgin Mary with angels honoring her with flowers. The image of the Madonna with child in her arms is most common on Volčić's single charts. That image appears on a 1595 chart of the Aegean Sea (private collection), a 1605 chart of the Mediterranean (the Vatican Library), two charts of the Mediterranean kept in Bavaria (c. 1600) and at Yale, a 1598 chart of the Aegean Sea (private collection), a 1601 chart of the Aegean Sea (Bologna), and a 1607 chart of the Mediterranean kept in Florence. The image of Saint Paul holding a sword appears only on a 1593 chart from the Newbery Library, while the image of Christ holding a sphere appears on his 1598

27 Recognizable views of Genoa and Venice appeared already in charts from the second half of the fourteenth century, so Volčić took them from older templates. Volčić's miniature of Venice is particularly similar to the view of Matteo Prunes's 1578 chart, but Volčić is even more realistic (*Baldacci, 1988: 49*).

28 See charts by Jacopo Maggiolo from the second half of the sixteenth century, as well as Matteo Prunes's chart from 1578, both kept in the Museo Correr, Venice.

29 Yet, even this small particularity did not reflect the time of the chart's production, as the Knights had been headquartered in Rhodes only until 1522, while in 1530 they moved to Malta. Despite that fact, the custom of designating Rhodes with the coat of the Knights of Malta continued long afterward.

Fig. 7 Christ holding a sphere on a 1598 chart of the Mediterranean from the BNF atlas (left), Saint Paul on the 1593 chart of the Mediterranean from the Newberry (center), and the Madonna with Child from the 1605 Vatican chart (right), which is inspired by a similar illustration from his 1598 atlas.

chart (kept in Paris). Against the custom, some of his atlas charts also included religious images (the first chart from his 1592 atlas kept in Madrid, as well as the first chart from the atlas kept at Eton contain the image of Christ) (Figures 7).

A figure of a sovereign was another decorative feature, though of no practical use to sailors and often out of date.[30] Although they were rather commonly used by many mapmakers, Volčić himself used them only on three occasions, on the 1596 chart of the Mediterranean kept in the Vatican, on the chart of the Mediterranean (c. 1600) kept at Yale, and on a series of charts included in his 1593 atlas that is kept at Eton College (Figures 4 and 6). The figures of rulers of Spain (Rex Hispaniarum), France (Rex Francorum), L'Imperator (without further designation, probably of Hungary), Russia (Rex Russie), Turkey (Emperor Turcorum), Algeria (Rex Algiere), Tunisia (Rex Tunesi), Rex Fexxs (sic), and Egypt (Rex Egiptus, given as Prester John, a mythical medieval figure), are represented standing, some of them holding their respective coats of arms and a scepter.

30 Such figures are fairly common in the works of Pietro and Jacopo Russo, Vesconte and Jacopo Maggiolo, and Battista Agnese, as well as being sometimes found in works by the Prunes, Oliva, Caloiro e Oliva, and Roussin families (*Astengo, 2007: 203*).

Portolan Charts as an Expression of Cultural and Knowledge Exchange

Charts of the Mediterranean were being copied from one to another for four centuries, and as such were not subject to important changes and alterations. Hence, more recent charts of the Mediterranean often had no real advantages over the ones dating from some years earlier. Just the opposite, they were often of poorer quality (*Astengo, 2007: 182*). Constant and repeated copying of templates is the reason why, for most chartmakers, their direct connection cannot be clearly established in terms of influence of one cartographer on another (this is somewhat visible only in their graphic styles). For a long time, Volčić was considered a student of the influential chartmaker Joan Oliva, but a meticulous study by Simonetta Conti showed that, although they were contemporaries and certainly influenced each other, they never resided in the same city at the same time (*Conti, 2001; 176*). Comparing Volčić's charts of the Mediterranean, it is immediately clear that, although they slightly vary in scale, they show the same contours of the coast and islands, and contain the same toponyms, which means that Volčić did not vary his template between 1592 and 1607. The same can be said of his charts of the Adriatic. The Adriatic shown on the detailed maps from 1593 (Helsinki) and 1598 (Harvard) completely coincides (Figures 3 and 8). Yet, one should note that the Adriatic charts were not created by simply enlarging a portion of the chart of the Mediterranean. Even a cursory glance at his detailed charts reveals that the indented coastline of the eastern Adriatic coast is shown much more accurately, with less deformation (compare the Istrian peninsula!), and with much more abundant toponymy. Furthermore, the surface and contour of many islands are drawn completely different than on his charts of the Mediterranean (basically, much more accurately). The same can be said for a detailed chart of the Aegean Sea – its presentation on this detailed chart is not an enlarged view from the map of the Mediterranean. For the representation of the Adriatic and Aegean Seas Volčić must have used other templates than for his chart of the Mediterranean. A careful comparison of the charts of the Adriatic and Aegean Seas, created before 1593, with those by Volčić indicates potential templates. Diogo Homem's chart of the Adriatic (Venice, 1574) makes a perfect match in regard of the content and scale (Figure 9).[31] Small variations are noticeable only in the local toponymy (see

31 [Atlas de la Mer Méditerranée, de la Mer Noire et de l'Océan Atlantique nord-est]. Diegus homé Cosmographus Lusitanus fecit venettis ano apartu Virginis 1574. An atlas with

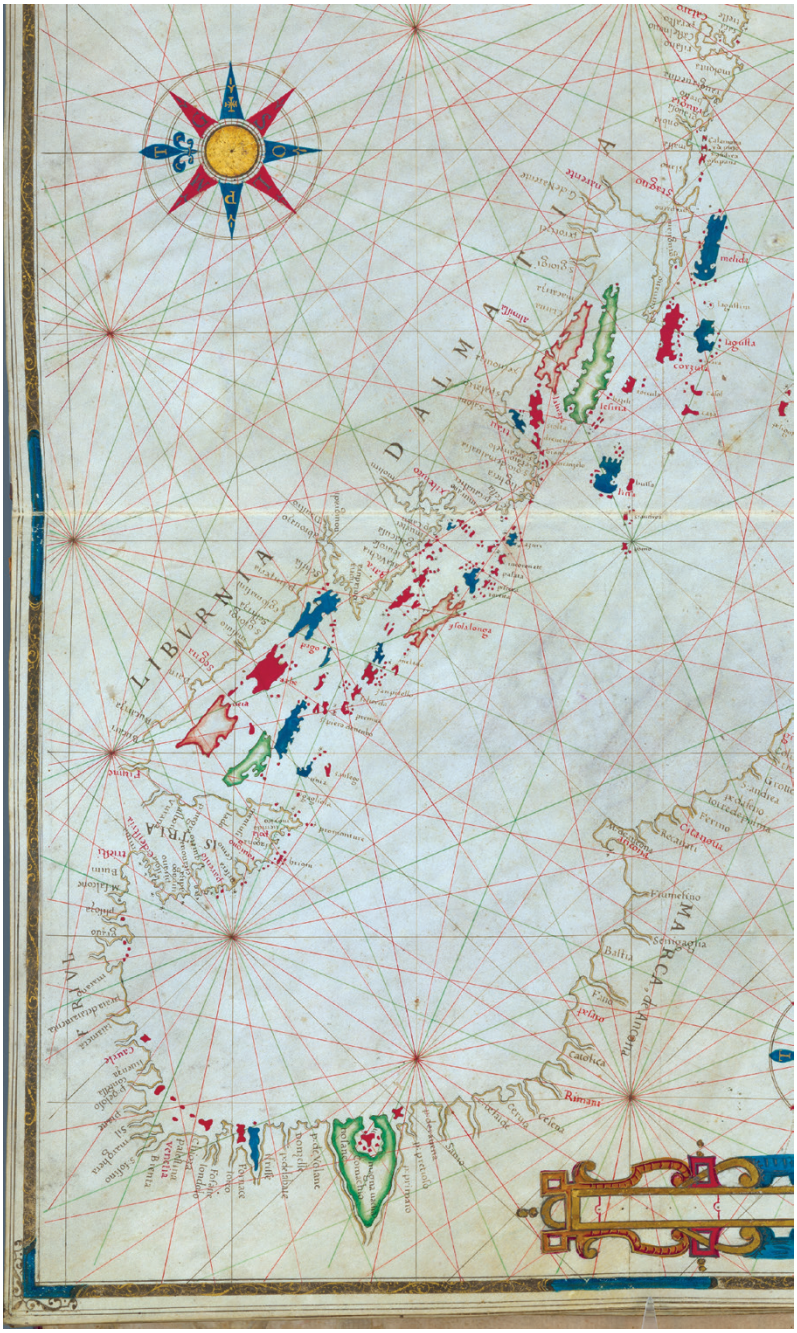

Fig. 8 A portion of a chart of the Adriatic by Volčić, drafted in Livorno in 1598 (Houghton Library, Harvard).

Fig. 9 A portion of a chart of the Adriatic by Diogo Homem, drafted in Venice in 1574, which Volčić probably used as a template (Bibliothèque nationale de France).

Appendix II), while a variation is visible in the shape of several islands.[32] In this regard, we can conclude with high probability that Volčić used Homem as his template for the chart of the Adriatic. The possible use of additional Portuguese templates can be assumed from Volčić's toponomy in which x is often used (e.g., Xibenico for Sebenico).

7 manuscript charts on parchment, 53.5 x 66.5 cm. Bibliothèque nationale de France, département Cartes et plans, CPL GE DD-2006 (RES).

32 Volčić's toponyms used on his charts of the Adriatic that refer to its eastern coast show a very slight variation in phonetics. A deviation occurs only in the names for regions whose names can vary (e.g., in a 1593 chart, Dalmatia is marked as Illyria). According to conventions, on this type of a map, place names are always written perpendicularly to the coast, in black or red, according to the importance of the harbor. This system is applied consistently by Volčić as well. For analysis of Volčić's toponyms used on his detailed chart of the Adriatic for its western coast see *Mori, 1908, 286–290*, and *Baldacci,1988: 48–49*. For a list of place names along the Adriatic coastline in the fourteenth and fifteenth centuries see Piero Falchetta, *Periplus Adriaticus* ("Elenco comparato dei toponimi costieri dell'Adriatico (isole escluse) di quarantacinque carte e atlanti nautici italiani manoscritti dei secoli XIV e XV / https://www.maphistory.info/NamesExplan.html.

At the same time, for a detailed map of the Aegean, Volčić does not use Homem, but a much better template, a portolan by the Greek chartmaker Antonio Millo, who made a separate map of the Aegean Sea for his 1582 *Isolario* (*Tolias, 1999: 40–43*). The same templates can be recognized in his charts of the Mediterranean. We can thus conclude that Volčić combined several different templates, though they mostly originated from Venetian workshops. Both Homem and Millo were active chartmakers in Venice in the 1570s and 1580s, and were the only ones who, in the period from 1570–1590, besides standard charts of the Mediterranean, were also producing detailed charts of the Adriatic, Aegean, and Black Seas. Yet, the background of Homem and Millo speaks in favor of a much more diverse origin of their knowledge, which goes far beyond Venice. The Portuguese Diogo Homem (fl. 1550–1576), a son of a famous chartmaker Lopo Homem, due to a legal dispute, left Portugal in 1544 and continued his work, at first in England and then in Venice, where he achieved a certain fame for himself. Homem obtained a Padrón Real in 1547, meaning that he also had privileged access to a vast Portuguese geographical knowledge, transferring it into his Venetian charts (*Astengo, 2007: 217*). Antonio Millo (fl. 1567–1580), author of a number of charts, atlases, and treatises on navigation, originated from the Greek island of Millo. He worked in Venice, but also served in naval service across the eastern Mediterranean (*Tolias, 1999: 36–38*). Thus, by using Homem's and Millo's charts as his templates, Volčić incorporated a whole mixture of knowledge originating from different parts of the Mediterranean.

The insistence on copying as the main skill of chartmakers should not prevent us from recognizing the multiple origins of the material they fused into a coherent picture of their worlds. Volčić, however, was not just a copyist. He sought to improve geographical data from various sources, making his charts a compendium of knowledge. An analysis of his chart of the Adriatic, an area he undoubtedly knew the best, shows his clear intention to check and supplement the data. The number and diversity of these sources speak in favor of a more extensive cultural and knowledge exchange. In updating the presentation of the Adriatic, he especially relied on Venetian isolarios published in the 1570s. Besides those by Antonio Millo's, which he used to advance the presentation of the Aegean Sea, when it comes to the Adriatic, he mostly relied on *Isole famose* by Giovanni Francesco

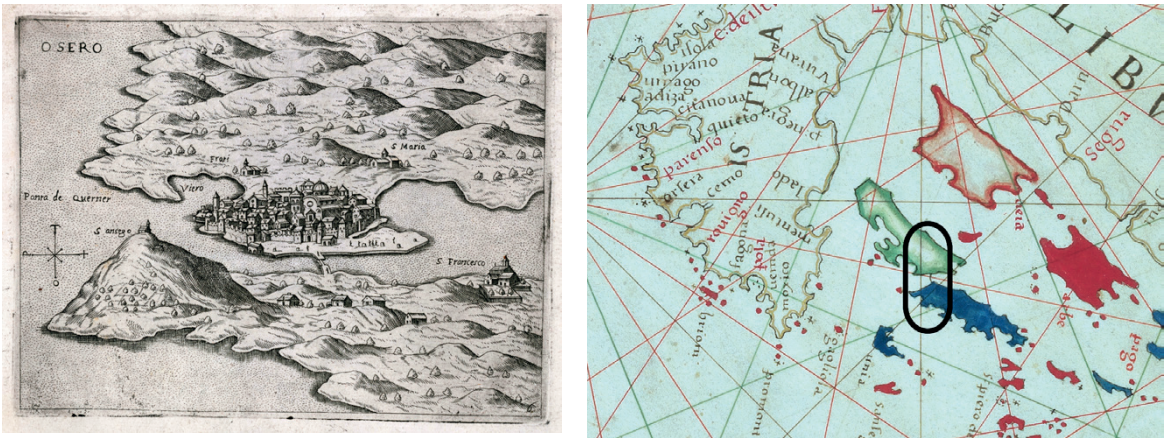

Fig. 10 A comparison of the presentation of connections between the islands of Cres and Lošinj in Camocio's *Isolario* (Venice, 1571) and Volčić's chart of the Adriatic (Livorno, 1598) (New York Public Library, Haughton Library, Harvard).

Camocio (Venice, 1571).[33] The views of the eastern Adriatic coast and cities were mostly prepared by Croatian authors working in Venice, Božo Bonifačić (Natale Bonifacio) and Martin Rota Kolunić (Martino Rota). Connections between the islands of Cres and Osor (present-day Lošinj), as well as between the island of Čiovo (Isola de Bua) and the city of Trogir (Trau; on mainland), represented in the form of small bridges, are first presented in Camocio (see views of Osero and Trau) and taken by Volčić (Figure 10). The same connections are not present on Homem's charts, and thus reflect the original Volčić's update.

The name for the coastal part of the city of Macarsca that appears on Volčić's chart marked as Craina is also taken from Camocio (see the view of Macarsca; the harbor is marked as the Riviere de la Craina). The information about the existence of salt works near the town of Pag (island of Pag), discreetly indicated only as a closed bay, was also undoubtedly taken from one of the isolarios. There are also indications that he consulted Kolunić's maps *Zara et Contado* and *Sebenico et Contado* from Camocio's isolari for his presentation of the Zrmanja and Krka

33 Isole famose porti: fortezze, e terre maritime sottoposte alla Ser.ma Sig.ria di Venetia, ad altri Principi Christiani, et al Sig.or Turco nouamẽte poste in luce/ Giovanni Francesco Camocio, (Venice, first edition in 1571). Rare Book Division, The New York Public Library, *Digital Collections*. https://digitalcollections.nypl.org/items/68f16ba0-f304-0135-b21d-2725c36c5a63.

Rivers (note the mills on the Krka on Volčić!). He also made a special effort to improve the presentation of the territory of the Republic of Dubrovnik, possibly based on Ragusan sources, or on his own first-hand knowledge. He designated a cove located in the SE of the Pelješac Peninsula, regularly marked on charts as Prepo, in its original Slavic form – Prapratna. Yet, strangely enough, while Homem marked Volčić's home city as Ragusia, Volčić denotes it somewhat carelessly as Rausa. Volčić was well acquainted with Ortelius's *Theatrum Orbis Terrarum*. Besides Volčić's direct reference to Ortelius by inserting the map *Typus Orbis Terrarum* in the chart of the Mediterranean kept in Heidelberg, Volčić also consulted his maps related to the Adriatic region. In that regard, Volčić's exaggeration of the mouth of the river Mirna (Quieto) in Istria is influenced by a map of Istria by Pietro Coppo which was published in Ortelius's atlas. The appearance of the names of inland political entities, such as Serbia, Bosnia, Transylvania, Hungaria, Polonia, and Walachia, show the awareness of Ottoman conquests over those regions that is noticeable on the charts by both Homem[34] and Volčić.[35]

Due to multiple copying of charts through the centuries, the sources of data should not be sought only in contemporary but in the medieval sources as well. For their presentation of the eastern Mediterranean, Homem and Volčić both relied on information that came from Arab scholars and European travelers, and whose information was transferred into charts earlier and then copied by them. The transfer of medieval knowledge is particularly noticeable in ethnonyms and choronyms in the eastern Mediterranean (Fig. 4). When presenting the Black Sea, they both mentioned Cumania as a Latin exonym for Cuman-Kipchak, which was a tribal confederation that existed north of the Black Sea in the tenth to the thirteenth century, and was later integrated into the Mongol Khanate. Information about it came to Europe by Marco Polo, who mentioned it in his *Book of the Marvels of the World* and *Il Milione*, c. 1300, and, respectively, appear on a 1311 Pietro Vesconte's chart. East of the Sea of Azov Homem and Volčić denoted Mingrelia (Mengleria), a part of the Kingdom of Georgia, from 1568 a vasal state of the Ottoman Empire. The name is also mentioned by Marco Polo, but as the name appears on charts much later (c. 1570), this information was most probably

34 See Homem's chart of the Mediterranean, Black Sea and western Europe, c. 1570. British Library, EG 2858.

35 See Volčić's charts of the central and eastern Mediterranean kept in the National Library of Madrid.

taken from the Venetian traveler Josaphat Barbaro, who traveled the region in 1436–1452. His accounts were published by his son in 1545 and, in 1559, included in Giovanni Battista Ramusio's *Collection of Travels*.[36] Volčić designated the southern portion of Anatolia as Caramania, named after the Karamanidas, a historical dynasty that ruled the state in the region between the late thirteenth and late fifteenth centuries. When Volčić's chart appeared, the region was annexed to the Ottoman Empire, but the glory of its name was kept on the chart as a reminder of their former power in the control of the Eastern Mediterranean.

Instead of Conclusion

Using the example of the work of Dubrovnik chartmaker Vicko Dimitrije Volčić, we wanted to shed light on the period of the late sixteenth and the first half of the seventeenth centuries, when, for the first time in its history, Tuscany became an important center of portolan production. The militarization of Tuscany, the strengthening of its maritime orientation, and the wars at sea, in which the Order of San Stefano played a significant role, encouraged the production of portolan charts. The new trends in Tuscan territorial expansion and domination at sea were soon embodied in the Livorno cartographic workshop, which was established by Francesco I de' Medici in Livorno in 1592. The Livorno workshop and their chart production was not only determined by the geopolitical purposes of the Medici's Tuscany, but also by the exceptional multiculturalism of Livorno's newly established harbor, which soon became the center of vivid cultural and scientific exchange. As a close ally of the Ottoman Empire, the Republic of Dubrovnik and its skilled navigators made a significant contribution to the success of the Livorno workshop, implementing into it the best from the West and the East.

Although this research did not find confirmation on Volčić being the formal initiator of this workshop, his influence on the establishment and development of the Livorno school was certainly of great importance. His successors, Joan Oliva, Giovanni Battista Cavallini, Pietro Cavallini, and Robert Dudley, also benefited from and relied on Volčić's work. In fact, not only was Volčić one of the first to

36 Giosafat Barbaro, *Viaggi fatti da Vinetia, alla Tana, in Persia, in India, et in Costantinopoli,…*[Journeys made from Venice to Tanais, to Persia, to India, and to Constantinople, ...], Venice: Aldus Manutius, 1545.

establish himself as a major chart supplier of the Order of San Stefano, but his maps were also used as a source of information for other cartographers. In that sense, a reflection of Volčić's charts can be found in Joan Oliva's charts of the Mediterranean.[37] The same can be said for Joan Oliva's charts of the Adriatic, on which clear evidence of Volčić's (and Homem's) geographical knowledge can be read.[38]

The coats of arms we find on some of Volčić's portolans speak in favor of the fact that users / purchasers of his charts were very diverse, ranging from members of Tuscan noble families to high-ranking members of the Order of San Stefano to middle-class merchants to travelers whose copies did not carry heraldic features. The good preservation of Volčić's portolans, as well as the fact that half of them were bound into very luxurious leather bindings, confirm that portolans were no longer primarily used as an aid for navigation, but as an expression of privilege and a reflection of high social status.

Volčić's charts are not only a state-of-the-art cartographic product, but also a fascinating compilation of knowledge and cultural heritage. The results of this research strongly suggest that Volčić and other chartmakers had access to visual material from several cultures around the Mediterranean, and that they cooperated creatively with members of larger social, economic, and cultural networks. Consequently, the content and style of his charts reflect different practices and cartographic traditions. Although the analysis of Volčić's charts confirmed a predominant influence of authors active in Venetian workshops, most notably Diogo Homem and Antonio Millo, both of the identified sources originated from other countries (Portugal and Greece), thus bringing with them the knowledge and traditions of both the eastern and the western Mediterranean. Utilizing their geographical data, Volčić's charts became a compendium of knowledge that represented the achievements and practices of different Mediterranean cultures.

Furthermore, the myth of simply copying the maps of predecessors is somewhat debunked here. Volčić proved to be a very well-informed cartographer who

37 E.g., compare Oliva's chart of the central Mediterranean from 1594 (Newberry, Ayer MS Map-24) with Volčić's charts of the same region, or Oliva's chart of the Mediterranean from 1595 (Bibliothèque nationale de France, Sgy 705 Res) with Volčić's charts of the Mediterranean.

38 See Oliva's chart of the Adriatic from 1632, which is kept in the National Maritime Museum of Greenwich, Call number P/5.

not only used the charts of his contemporaries, but also the maps from Ortelius's *Theatrum Orbis Terrarum,* the maps and views from Venetian isolarii, as well as information from maps and travel reports from the East. His effort to update his charts with more recent and accurate data is particularly evident in the depiction of the eastern Adriatic coast, the region of the Mediterranean he knew best.

Volčić's charts strongly reflect the multiculturalism of Livorno and the exchange of knowledge and practices of different areas of the Mediterranean, which are here examined by using a specific approach. The processes of cross-cultural exchange and the appropriation of knowledge have too often been studied merely as the results of textual and philological phenomena. The study of the portolan chart proved that boundaries between local and regional communities were highly permeable (*Brentjes, 2015: 79–80*). This especially refers to chartmakers who were also navigators on a frequent move. Their constant mobility in combination with multicultural environments such as Livorno and Dubrovnik enabled them to fuse a wide knowledge into a coherent picture, making their charts an expression of cross-cultural exchange. In that sense, this case study proved that portolan charts should not be studied as an act of a series of isolated workshops and cultures, but as a product of space inhabited by numerous local and regional communities involved in processes of ever-shifting allegiances, connections, and orientations.

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APENDIX I

CHRONOLOGICAL LIST OF VOLČIĆ'S CHARTS
(28 charts, 4 atlases)

I – NAPLES, FERURARY 1592, four charts

BIBLIOTECA NACIONAL ESPAGNA, MADRID (BNE) (4):

Atlas with four charts:

[Mare Oceano: Eastern Atlantic] [Material cartográfico] / Vincus. demetrius voltius Raguseus fecit Neapoli die 28 februari 1592. Manuscript map on parchment, in color ; 36,5 x 104,8 cm. Biblioteca Nacional Espagna, MSS/17818

[Central Mediterranean with Adriatic Sea] Vincus. demetrius voltius Raguseus [Neapoli, 1592]. Manuscript map on parchment, in color ; 36,5 x 26,2 cm. Biblioteca Nacional Espagna, MSS/17818

[Eastern Mediterranean and Black Sea] Vincus. demetrius voltius Raguseus. [Neapoli, 1592]. Manuscript map on parchment, in color ; 36,5 x 26,2 cm. Biblioteca Nacional Espagna, MSS/17818

[Eastern Atlantic and Western Mediterranean] [Neapoli, 1592]. Manuscript map on parchment, in color ; 36,5 x 26,2 cm 36,5 x 26,2. Biblioteca Nacional Espagna, MSS/17818

II – LIVORNO, AUGUST 1592, 1 chart

UNKNOWN COLLECTION (1)

[Chart of Mediterranean]. *Vincentius Demetrei Volcii Rachuseus fecit in terra Liburni die 26 Augusti 1592.* Map manuscript on parchment, in color; 60 x 90 cm.

Known only from Mori (1908) description.

III – NAPLES, 1593, seven charts

HELSINKI UNIVERSITY LIBRARY (3):

Atlas with three charts

[Carta marina Mediterraena: western Mediterranean and Atlantic]/: Vincus Demetrius Voltius Ragusens fecit in civitate Neapoli die 19 Augusti 1593. Manuscript map on parchment, in color: size unknown. University Library Helsinki, Nordenskiöld Collection, No 342, 103a

[Carta marina Mediterranea : Golfo di Venetia and eastern Mediterranean]/ Vincus Demetrius Voltius Ragusens. [Neapoli, 1593]. Manuscript map on parchment, in color; size unknown University Library Helsinki, Nordenskiöld Collection, No 342, 103b

[Carta marina Mediterranea: Golfo di Venetia] Vincus Demetrius Voltius Ragusens [Neapoli, 1593]. Manuscript map on parchment, in color: size unknown. unknown. University Library Helsinki, Nordenskiöld Collection, No 342, 103c

ETON COLLEGE (3)

Atlas with three charts:

[Chart of the eastern Mediterranean and Black Sea]/ [Vincentius Demetrius Voltius Ragusanus]. [Naepoli, 1593]. Manuscript map on parchment, in color: 49 x ca. 36 cm. Eton College Library, MS 216

[Chart of the central Mediterranean Sea with Adriatic Sea]/ [Vincentius Demetrius Voltius Ragusanus]. [Naepoli, 1593]. Manuscript map on parchment, in color: 49 x ca. 36 cm. Eton College Library, MS 216

[Chart of the western Mediterranean and the Atlantic coasts of Europe and north Africa, with the British Isles]/ [Vincentius Demetrius Voltius Ragusanus]. Vincentius Demetrius Voltius Ragusa[nus] fecit in ciuitate Neapoli die 16 septembrii 1593. Manuscript map on parchment, in color: 49 x ca. 36 cm. Eton College Library, MS 216

NEWBERRY LIBRARY, CHICAGO (1):

[Portolan chart of the Mediterranean and Black Sea Sea]. Vicentius Demetrius Volcius. Neapoli, 1593. Manuscript map on parchment, in color: 48,2 x 78,4 cm. Newbery Library, Edward E. Eyer Collection, Ayer MS 25

III – ELBA 1595, 1 chart

PRIVATE COLLECTION, GREECE (1)

[Portolan chart of Aegean Sea] /Vincus demetrei volcius Raguseus fecit portu feraio die 2 martij 1595. Manuscript map on parchment, in color: size unknown. Private collection of Margarita Koutsogiannopulous

IV – LIVORNO 1598-1601, thirteen charts

HOUGHTON LIBRARY, HARVARD (5)

Atlas with 5 charts:

[Western Mediterranean and British Isles].[Vincus demetrei Volcius Rachuseus]./ [Livorno, 1598]. Manuscript map on parchment, in color: 45x37 cm.

Hougton Library, Harvard University, MS Typ 160

[Western Mediterranean and Adriatic Sea] Vinc.us demetrei Volcius Rachuseus Fecit in terra li Burni [Livorno], die 18 Iulii 1598. Manuscript map on parchment, in color: 45x37 cm. Hougton Library, Harvard University, MS Typ 160

[Adriatic Sea].].[Vincus demetrei Volcius Rachuseus]. [Livorno, 1598]. Manuscript map on parchment, in color: 45x37 cm. Hougton Library, Harvard University, MS Typ 160

[Eastern Mediterranean] /[Vincus demetrei Volcius Rachuseus]. [Livorno, 1598]. Manuscript map on parchment, in color: 45x37 cm. Hougton Library, Harvard University, MS Typ 160

[Aegean Sea] /[Vincus demetrei Volcius Rachuseus]. [Livorno, 1598]. Manuscript map on parchment, in color: 45x37 cm. Hougton Library, Harvard University, MS Typ 160

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[Carte nautique de la Mer Méditerranée et de la Mer Noire] Vintius Demetrei Volcius Rachuseus. Fecit in Terra Li Burni Mensis / Februari 1598. Manuscript map on parchment, in color: 84 x 50 cm.

Bibliothèque nationale de France, département Cartes et plans, GE C-5095 (RES)

UNIVERSITY LIBRARY OF HEIDELBERG (1)

[Chart of the Mediterranean, Black Sea and west coast of Europe], [S.l, ca 1598]. Manuscript map on parchment, in color: size unknown. Call numer unknown.

UNKNOWN COLLECTION (1)

[Chart of Aegean Sea]. /attributed to Volcius. [S.l, ca 1598]. Manuscript map on parchment, in color: 68,5x84 cm

BAVARIAN STATE LIBRARY (1)

[Chart of the Mediterranean, Black Sea and west coast of Europe, with the British Isles]. /Atrubuted to Volcius. [S.l, ca 1600]. Manuscript map on parchment, in color: size unknown. Cod. Icon. 140 f. 81

HISPANIC SOCIETY OF AMERICA, NEW YORK (1):

[Medieterranean and western Atlantic] Vinc. Demetri Volcius Rachuseus fecit in terra Liburni die 12 Januari 1600. 1 map : manuscript, color, 46,7x85 cm. The Hispanic Society of America in New York, K12

BIBLIOTECA MUNICIPALE MAGNANI, BOLOGNA (1):

[Eastern Medierranean with Aegean Sea] Vincentius Demetrici Vollius Rachuseus fecit in terra Liburni die 24 Majus, 1601. Manuscript map on parchment, in color: 62x93 cm. Biblioteca municipale Magnani, Bologna, Sala XVI, degli Incanabuli.

BEINECKE LIBRARY, YALE (2):

[Portolan chart of the Mediterranean Sea]. Vincus demetrei Volcius Rachuseus, fecit interra Liiburni die 24 Maius 1601. Manuscript map on parchment, in color: 109 x65 cm . Beinecke Rare Book and Manuscript Library at Yale University, Manuscript 49cea 1601

[Fragment of a chart of the Mediterranean and western Europe] [Vincentius Demetrius Volcius Rachuseus].[S.l, s.a]. Manuscript map on parchment, in color: 66,5 x 75 cm. Beinecke Rare Book and Manuscript Library, MS 1191

IV - NAPLES 1605-1607, two charts

BIBLIOTECA APOSTOLICA VATICANA (1):

[Portolan chart of the Mediterranean and Black Sea Sea]. Vincentius Demetrius Volcius Rachuseus fecit in civitate Neapoli, 15. Julii 1506 (sic)actually 1605. Manuscript map on parchment, in color: 68,5x100,7 cm.

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ARCHIVIO DI STATO FLORENCE (1):

[Portolan chart of the Mediterranean Sea]. Vincentius Demetrius Volcius Rachuseus fecit in Civitate Naepoli die XVII Februarii 1607. Manuscript map on parchment, in color: 50,5 x 70,5 cm. Archivio di Stato, Firenze, Carte nautiche 19

APENDIX II

Comparison of toponyms from portolan chart of Adriatic by Diogo Homem (1574) and Vicko Dimitrje Volčić (1593) referring to the eastern coast of Adriatic. Underlined names are marked in red on the charts

PLACE NAMES		
Homem 1574	*Volčić 1593*	*Current name*
Trieste	Triesti	Trieste
Muia	Muia	Muggia
C. de Istria	C. de Istria	Koper
Isola	Isola	Izola
Umago	Umago	Umag
Daila	Adiza	Dajla
Citanuoa	Citanoua	Novigrad
Quieto	Quierto	Mirna (river)
Parenzo	Parenso	Poreč
Orsera	Osera	Vrsar
Lemo	Lemo	Lim (river)
Roigno	Rouigno	Rovinj
Fagana	Fagana	Fažana
Pola	Pola	Pula
Veruda	Vernda	Veruda
Promontori	Promontore	Kamenjak (cape)
Moxico	Moxica	Mužilj (cape)
-	Mentusi	Medulin or Marlera (cape)
Lado	Lado	Porto Largo de Larsa (Raški zaljev)
C. Negra	P. Negra	Crna punta (cape)
Albon	Albon	Labin
Urana	UUrana	Vrana
Fiumi	Fiumi	Rijeka
Bucari	Bucari	Bakar
S. Martin	-	Martinšćica
Bucariza	Bucariza	Bakarac

Chotor	-	Kotor (Crikvenica)
Dorni	Darn	**Žrnovnica?**
Molini	-	**Žrnovnica**
Segna	Segno	Senj
Maluioni	Maluio	Malin (cove)
S. Zorzi	S. Giorgi	Sv. Juraj
Sestriza	Sestriza	?
Eglomasini	Eglomanisi	?
P. Imperial	P. Imperia	Malta ? (cape)
S.Chisa	Schica	Karlobag
Abrouazo	Abrouazo	Obrovac
Claustro	Da?	Kaštel **Žegarski**
Nouegradi	Nouigradi	Novigrad
Nona	Nona	Nin
Pa. Dura	Uanta Dura	Vir, otok
Zara	Zara	Zadar
-	Zaravechia	Biograd
Seurose	Seurose	Crvena luka
P. Roso	-	?
Galaueza	Galacula	Gradina?
Murtari	Murter	Murter, otok
P. Cain	P. Cain	Sovilje
Scardona	Scardona	Skradin
-	Molini	Mills on Krka river
Sebenico	Xibenico	**Šibenik**
Castelo	-	Fort of St. Nicola?
Murari	Morinie	Morinje
P. Caulaer	P. Caulaier	Rogoznica
P. Cesta	P. Cesta	Primošten
Cap'arna	-	Artur? (cape)
-	C. Figheri	Bay of Rogoznica
P. S. Joã	S. de la Malvasia	S. Giovanni detto della Malvasia
Cezaro	Cesaro	?
S. Arcã	S. Arcanzelo	Sv. Arhanđel
Traur	Trau	Trogir

Salona	Salona	Solin
Spalato	Spalatro	Plit
Sernoscichi	Xernouiza	**Žrnovnica**
Almisa	Almissa	Omiš
Sinchso	-	Velika luka?
-	Craina	Krajina (Makarska, port)
Macarischa	Macariza	Makarska
S. Giorgi	S. Giorgi	? stream
Perozitel	Perotizel	? stream
B. denartenta	B. denartenti	Neretva, cannal
-	Narenti	Neretva
-	C. Cumano	Lovišće
P. Juliana	Giugliana	**Žuljana**
Prepo	Prapatno	Prapatno
Stagno	Stagno	Ston
Sasabichi	Slano	Slano
-	Malfa	Zaton
Mardomba	Onbla	Ombla
Graosa	Grauosa	Gruž
Ragusia	Rausa	Ragusa
-	Breno	Srebrno
Ragusiavecha	Rausauechia	Cavtat
-	Molunta	Molunat
Castelnouo	Castelnouo	Herceg-Novi
Risano	Rissano	Risan
Perast	Priasto	Perast
Cataro	Cataro	Kotor

ISLANDS (those lettered on the sea)		
Homem 1574	*Volčić 1593*	*Current name*
Brioni	Brioni	Brijuni
Galiola	Galiola	Galijula
Vegia	Vecia	Krk
Arbe	Arbe	Rab
Pago	Pago	Pag
Cherso	-	Cres
Ossero	-	Lošinj
Nia	Nia	Unije
Sansego	Sanseco	Susak
Nieme	San Piero de Nembo	Ilovik
Lagrua	-	Grujica
Premua	Premua	Premuda
Scerda	Scherda	**Škarda**
Zainuntelo	Zaniputello	Zapuntel (strait)
Melata	Melada	Molunat
I. grossa	Y. Longa	Dugi otok
Toreta	Torreta	fort on Dugi otok
Peschera	Peschera	Piškera
Pasara	Pasara	Purara
Incoronata	Incoronate	Kornat
Azuri	Azuri	**Žirje**
S. Arcanzelo	S. Arcanzelo	Arkanđel
Dreuenigo	Dreuenico	Drvenik
Solta	Scolta	**Šolta**
Labraza	Braza	Brač
Lessina	Lesina	Hvar
Lissa	Lissa	Vis
Busso	Busso	Biševo
S. Andrea	S. Andrea	Svetac
Pomo	Pomo	Jabuka
Torcula	Torcula	**Ščedro**

Casa	Caza	Sušac
Casiol	Casol	Kopište
Pelagosa	Peligosa	Palagruža
Corsula	Korzula	Korčula
Lagosta	Lagosta	Lastovo
Agostini	Lagustini	Lastovnjaci
Melida	Melida	Mljet
Zuana	Giupana	**Šipan**
I.Demezo	Isola Demenzo	Lopud
S. Andre	S. Andre	Sveti Andrija
Calamata	Camalmota	Koločep

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