THE GREEK PORTOLAN CHARTS
CENTRE FOR NEOHELLENIC RESEARCH, N.H.R.F.

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THE GREEK PORTOLAN CHARTS
15th - 17th centuries

A contribution to the Mediterranean cartography of the modern period

English translation
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This study of the Greek production of portolan charts during the sixteenth and seventeenth centuries does not confine its approach to the conventional national criteria. The Greek portolan charts are treated here, first and foremost, as the contribution made by certain ethnic Greek craftsmen to the Mediterranean attempt to understand and represent the maritime space which, for centuries, has been a peculiar and benevolent opponent of those living around the Middle Sea. The portolan charts made by Greeks are dealt with as a functional part of the overall Mediterranean production of such maps – and, at the same time, as a manifestation of the shared attitudes adopted by the seafaring communities of the Mediterranean in modern times.

I agree with the author of the book that the usefulness of these charts was not the essential factor in their production. Before and after the flourishing of early Mediterranean cartography, the empirical sailors of the Mediterranean, with their profound skill in observation and despite the limitations of their equipment, were masters of the winds and weather and of the sea-lanes; without interruption, they voyaged the enclosed Mare nostrum and passed on from generation to generation an infinite wealth of knowledge and skills. Perhaps it could even be argued that their knowledge and skills are still today a priceless background to the vocational competence of the sailors of the Mediterranean, whose place in the global system of marine communications continues to be a noteworthy one.

I believe that there was a deeper need, a cultural identification, which led the few and isolated Greek chartmakers to take part – creatively, perhaps – in the new culture of curiosity and in maritime cartography, the new empirical and simultaneously scientific discipline that emerged from the waters of the Mediterranean. Greeks and at the same time Italian speakers, the products and the creators of a Mediterranean culture of enclaves and exchanges, the cartographers of this book had firm roots in the lost world of the lingua franca, that most important achievement of the Mediterranean Renaissance which the later national societies were unable to save from fragmentation.

As the sciences of the sea were taking their first steps, the Greek chartmakers demonstrated the ability of their ethnic and cultural group to take part (first as recipient, later as creative producer) in a process which, on other levels and in different ways, is still continuing today: scientific and technical development, then in Europe and the Mediterranean, now on the global plane.

With this book, the scholarly community involved in the study of modern Greek history acquires a new corpus of documentation which will increase its confidence in gaining access to various sectors of historical research. Historical geography and cartography and the study of the developments which occurred in communications,
shipping and the arts and crafts all have to profit from the revival in research into
the history of Greek cartography heralded by this book. Moreover, this new corpus
of documentation will facilitate the study of the skills of the Greeks and their
response to the technological challenges which the innovative sixteenth century
imposed upon the Mediterranean peoples.

Publication of the Greek portolan charts and altases has been an applied research
undertaking funded jointly by the General Secretariat of Research and Technology
of the Ministry of Development and by Olkos Publications, which is responsible for
the commercial marketing of the book. For us, it inaugurates new way of commun­
icating with a wider cultivated readership, one which has sometimes found the pro­
ducts of our research endeavours rather difficult to read. We would like to express
our warmest thanks to all those who have contributed to this volume and who are
mentioned by name, in the appropriate place, by its author, George Tolias. Our
particular thanks, however, go to our friend and colleague Eirini Louvrou, director
of Olkos Publications, for her smooth and creative collaboration.

VASILIS PANAYOTOPOULOS
Director of the Institute for Neohellenic Research, NHRF
The pages which follow are the outcome of research into Greek culture and the ways in which it responded to the evolution of the civilisation of the European West. This publication also stems from the appeal of early maps as complex pieces of evidence that sum up geographical experience while at the same time giving shape to the invisible sequences which, “half real, half spinning in the mind”, serve as links between the human societies and space.

A study of perceptions of space is an essential chapter in the history of ideas – that is, the history of culture – and would not be confined solely to the methods of the history of cartography. The study of early maps, in conjunction always with the exploitation of a wider range of associated material, makes it possible to explore with greater confidence the various kinds of territorial dependence to which human communities are subject.

That is the light in which this presentation of the Greek portolan charts produced mainly in the sixteenth century should be viewed. The fact that some sections of Greek society – never more than limited in size, and sometimes no more than isolated individuals – turned to the hydrographic crafts and arts of the West is evidence of the flourishing state of Greek shipping, a product of the expanding cognitive horizons of the Greeks of the day and an expression of the changes coming about in mentalities and modes of behaviour.

The Greek portolan charts have not been studied. This delay, to my mind, is the result of one of the principal features of their production: the slow progress of linguistic emancipation. The Greek chartmakers adhered closely to the idioms of their Italian models during the first century in which charts were produced. Greek-language charts began to appear in the mid-sixteenth century, but these were anonymous, undated works, and it is only in the early years of the seventeenth century, by which time Greek portolan charts were beginning to disappear, that we find two signed works drawn up in Greek. As a result, the portolan charts produced by hydrographers of proven or even possible Greek origins have tended to be included within the Italian production of the period.

Even where the named Greeks who produced charts in Italian are concerned, confusion reigns. Of the four named Greek chartmakers, only two – Georgio Sideri, Ioannis Xenodocos – are acknowledged as Greeks by the bibliography, while the other two, Antonio Pelekan and Antonio Millo, have so far been taken to have been Italians. This publication provides, I believe, sufficient evidence for the Greek descent of at least one of them (Antonio Millo) and also draws attention to the slight indications that Pelekan, too, may have been Greek. Be that as it may, this book includes the sole surviving chart by Pelekan because it is the only work known to have been produced in a Greek area – Rethymno in Crete – before 1500.
For the reasons already given, very few historians and scholars working in the field have dealt with the Greek charts. However, I must take this opportunity of referring to the bibliographical work done by the lone and pioneering researchers, Spyridon Deviasis, Stephanos Makrimichalos and Antonio Ratti, who were the first to realise the value of this material and to make tentative steps towards exploring the issues it raised.

The purpose of this book is to fill a gap in the bibliography. That fact has been a significant incentive in its composition, but also a major burden. The complete absence of any Greek-language papers on the subject has compelled me to provide a brief overview of the basic historical characteristics of the production of portolan charts and to describe (in much more general terms than is appropriate) the geographical receptiveness of the Greeks during the Renaissance. I hope that well-informed readers will understand my motives and commitments.

The research project would have run aground on the rocks of significant, if not insuperable, obstacles without the (comparatively recent) publication of a number of studies, two of which deserve mention from the start: those of Tony Campbell and Corradino Astengo. Campbell explores a wide range of thorny and obscure questions bound up with the history of the early portolan chart, while Astengo has compiled a systematic inventory of portolan charts produced in the Mediterranean in the sixteenth and seventeenth centuries and surviving in public collections. Without the systematic support of those two works, this book would certainly have been even more incomplete.

This work has relied largely on published sources in an attempt to arrive at a synthesis of the evidence available. However, I nurture the hope that more Renaissance Greek hydrographic works have survived and that this book will serve as a stimulus for the publication of hitherto unknown works.

Any book sails under the flag of the author whose name is on its title page. However, it is also the case that a book is the fruit of all those who with their knowledge, experience and work have contributed to its completion. It is my first duty to acknowledge a debt to Vasilis Panayotopoulos, Director of the Centre for Neohellenic Research of the National Hellenic Research Foundation, who responded enthusiastically to the idea and undertook responsibility for it.

The project was carried out at the Centre for Neohellenic Research of the National Hellenic Research Foundation as part of a programme supported by the General Secretariat of Research and Technology and Olkos Publications, making it possible to meet the requirements of demanding work in a comparatively short space of time.

The task of locating and assembling the material proved to be quite a complex one. My search for the disjecta membra of the Greek charts of the Renaissance period took me to libraries and collections in Italy, Britain, France, Greece, Germany, Austria, Sweden and the United States. Neither research nor publication would have been possible without the positive response of those in charge of the collections, libraries, above all, and museums involved, whose directors and staff I would like to take this opportunity of thanking.

Nikos Panayotakis, whose early death was widely mourned, gave me a cordial welcome at the hospitable Greek Institute of Byzantine and Neohellenic Studies in Venice, and with his customary generosity allowed me to use the material he had collected on Georgio Sideri. Monique Pelletier received me amid a barrage of strike action at the Département des Cartes et Plans of the Bibliothèque Nationale de France.
where I found valuable bibliographical support. Support of a similar kind came from the Department of Maps of the Bibliothèque Royale Albert I in Brussels - to whose director, Professor Hossam Elkhadem, my thanks. Professor Elkhadem also helped me with information and material about the history and use of the astrolabe. Piero Falchetta, in charge of the department of maps in the Marciana Library in Venice, briefed me on the realities of Renaissance chart production in Venice.

Among my friends and colleagues at the National Research Foundation, my first duty is to thank Kriton Chryssochoidis, Eftychia Liata and Evyenia Drakopoulou: our long discussions resolved many questions connected with the palaeographic, archival and illustrative documentation of my work. My thanks also to the historians, researchers and collectors in Athens, London, Berlin, Rome and Venice who contributed in a variety of ways to my researches; I am particularly grateful to Ekaterini Koumarianou and Anna Avramea, Memos Tselikas, Elli Droulia-Mitrakou, Dimitris Loupis, Stathis Finopoulos, Periklis Hantzis, Katja David, Stathis Birtacas and Gerasimos Pangratis.

Corradino Astengo, professor at the Istituto di Geografia of the University of Genoa, to whose inventory I have already referred, had the kindness to grant me access to some of the conclusions of his hitherto unpublished research and to his judgements on some of the debatable points in this study. My work would be poorer without his generous assistance.

In conclusion, I would like to draw attention to the role of David Woodward and the University of Chicago 'History of Cartography' project; they have succeeded, little by little, in creating within the scholarly community a first sensitive and receptive space for communication and exchanges of views among all those who study phenomena connected with the perception and representation of space.

Finally, the publishing side of this undertaking has been inextricably bound up with the experience of Eirini Louvrou and her associates. Our collaboration has been one of the most constructive aspects of the whole project and has strengthened a bond of friendship between us dating back many years.

GEORGE TOLIAS,
April 1999
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The division between Ottomans and Latins of the islands and coasts of the eastern Mediterranean set the official seal on the end of the Greek Middle Ages. The Ottomans received the share to which they were entitled in accordance with the strength of their weapons – that is, the lion’s share. The Latins – principally Venetians – held on for a while to their conquests in Cyprus, Crete and some of the Aegean and Ionian islands. There, in the lands doomed sooner or later to come under the authority of the Sultan, Renaissance Hellenism bloomed for a short time.

The Greeks of the Latin East and the Greek Diaspora of the West cultivated the arts, letters and technology. In the Greek intellectual and artistic life of the period, typography, the theatre, historiography, philology, painting, architecture and even music, we can see the Greek societies responding to the cultural ferment of the Western Renaissance. The arts of perceiving and representing space, which, it should not be forgotten, had been intensively cultivated by Renaissance society, found their place, too, in the interests of the Greeks.

In this field, of course, it has to be admitted from the outset that the Greeks functioned on an average level. There was no one in the sphere of cartography to compare with the figures of Hortatzis, Bessarion or Theotocopoulos in the other arts. The Greeks were slow in entering the international debate, and their position in it appears minor at first sight. It is precisely that phenomenon, together with its composition and dynamics, that we shall be attempting to explore in the pages that follow.

Cartographers of Greek descent are to be found in both the traditions which largely dominated modern cartography: the learned and the empirical. While it may be the case that in the early revival of the learned cartographic tradition the role of the Greeks was a material one, the empirical cartographic tradition evolved far beyond and above Greek initiatives.

Empirical cartography, and thus the production of the portolan charts which are our subject here, is governed by a system of parameters – mostly of an economic or technological nature – which was far from functioning satisfactorily in the collapsing, foreign-ruled Greek world. The development of various strategies for managing space is, above all, a characteristic of dominant, well-organised social and economic systems. Contact with such systems made it possible for the few Greek chartmakers to function, on the sidelines and after delays.

A brief review of the other ways – learned or otherwise – in which the Greeks became involved with the depiction of space seems essential. The
1. Manuscripts of Ptolemy's Geography with maps were circulating in the Arab world as early as the tenth century. Among other information, there is an interesting description of a manuscript of Ptolemy's Geography with maps by the Arab historian al-Mas'udi (1859); see Les Prairies d'Or, edited and translated by Barber de Maynard and Pavet de Courteille, vol. I, Paris 1861, pp. 183 and 204.

2. Maximos Planoudes (1260-1310) managed to locate, and obtain, a manuscript copy of Ptolemy's Geography -forgotten in his day- without maps. He had it copied and the maps drawn in accordance with Ptolemy's instructions. The Emperor Andronikos II Palaiologos admired it, and expressed a wish to have a copy of his own; this led to an entire generation of manuscripts with 26 regional maps. See Germaine Aujac, Claude Ptolémée: astronome, astrologue, géographe, Connaissance et représentation du monde habité, Paris 1993, pp. 165 et seq. See also O.A.W. Dilke et al, Cartography in the Byzantine Empire, in J.B. Harley and David Woodward (eds.), The History of Cartography, Volume One: Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean, Chicago and London 1987, pp. 371-463. Both books contain detailed inventories of the Late Byzantine manuscripts of the Geography.


4. For the reception of Ptolemy, and for geographical curiosity in Florence in the early fifteenth century, see T. Goldstein, 'Geography in fifteenth-century Florence', Merchants and Scholars, 1965, pp. 9-32.

5. In Bibliographie Hellénique, Emile Legrand lists the editions of 1475, 1478, the misdated edition of 1462, and 1514.


Purpose of this introductory reference is not to extol some 'national' contribution on the part of the Greeks to the field of cartography; the facts are stated in order to delineate the cognitive background to Greek geographical culture -and curiosity- in the period in question, and to measure the breadth of the know-how involved. Furthermore, this survey will enable us to explore with greater success the Greek receptiveness to cartography in the sixteenth and seventeenth centuries, when the Greek portolan charts were produced.

Late Byzantine humanism, whose impact was still fresh in the learned centres of Italy, had re-awakened an interest in the geographical and cartographical work of Ptolemy. It is a commonplace to reiterate that the surviving Greek manuscripts of his Guide to Geography, with or without maps, cover a period from the late thirteenth to the late fifteenth century. It is equally well known that Maximos Planudis recovered Ptolemy from obscurity and initiated the tradition of the Greek manuscripts of the Geography, with 27 or 65 maps. What needs to be stressed here is the observation that in order for these maps to be designed in the Greek world (51 Greek copies of the manuscript have survived, 14 of which have maps) there must have been scriptoria or cartographic studios with craftsmen skilled enough to understand the technical system of projections proposed by Ptolemy's instructions and to convert the longitude and latitude figures into map form, as O.A.W. Dilke quite rightly points out.

The Greek contribution to the familiarisation of Western thought with the geographical work of Ptolemy was decisive. Among the mediators in this process was Emmanouil Chrysoloras, who took a copy of the work to Florence in 1400. Even in the sixteenth century, Ptolemy's Geography was still sustaining the learned cartographic performance of the Greeks. Emile Legrand's bibliography lists four editions of Ptolemy's Geography based on the manuscript of Chrysoloras, on which Greek scholars, editors, translators and publishers had worked.

The Geography of Claudius Ptolemaeus is, as its full title suggests, a guide which allowed those who followed the instructions faithfully to reconstruct, in 26 or 64 regional tabulae, an image of the known world in keeping with the knowledge, the means and the capacity of the second century AD. Although the Geography often includes a general map of the Oikoumene, the known world, the detailed geographical information is distributed among the regional maps, thus distinguishing the work from the overall depiction of space to which medieval mankind had become accustomed in the form of the mapae mundi. On the one hand, this 'fragmentation' and, on the other, the restricted and highly specific moment (in the second century AD) at which the various lands were depicted raised a series of problems which the scholars of the age were called upon to solve.

The regeneration of Renaissance cartography brought about in the fifteenth, and even more so in the sixteenth century by contact with the work of Ptolemy was significant, as was the impact of that revitalisation on the shaping of new attitudes towards the description and reconstruction of space.
We shall confine our attention to two cases which are characteristic of the cartographic skills of the Greek scholars of the day.

The first case is that of George Amiroutzes, Protovestiarios and Megas Logothetes of Trebizond, a brief geographical treatise by whom was included in the Latin translation of Ptolemy's Geography published in 1514. In his affectionate and detailed biography of Amiroutzes, Émile Legrand describes the Greek scholar as an "homme remarquable par sa beauté, sa force, sa taille avantageuse et son habilité à tirer de l'arc". Throughout his long life, the energetic sage of the Pontus, who distinguished himself as a partisan of the Union of the Churches at the Council of Ferrara-Florence and later as a familiar of Mehmed II, was prolific, womanising and wily. Amiroutzes spent his last years at Mehmed's court, and Legrand has preserved for us quite a number of scenes from his life there.9

As for the matters which concern us here, the historiographer Kritoboulos of Imbros records an interesting incident: Mehmed II, seeing a Ptolemaean atlas which may have lacked its double general map of the Oikoumene, expressed a wish to see "all the description and extent of the world" in "clearer" and "more legible" form, "on a single sheet and table", rather than "fragmented" and "indecipherable".10

George Amiroutzes took on the task, and in the summer of 1465 compiled, in Arabic, what seems to have been a universal map, since it included "rivers [...] and lakes and islands and mountains and cities and everything executed with simplicity, providing a rule and measures and distances and all the other things required for good knowledge". The Sultan admired the achievement and commissioned from the Greek scholar a translation into Arabic of Ptolemy's text.11

The involvement with cartography of Nikolaos Sophianos, a scholar from Corfu, was of a completely different kind. If it could be said that in his life and work Amiroutzes sums up some of the aspects of the Greek medieval world in its decline, the Corfiot humanist Sophianos represents the emerging Greek element of the years to follow, with all its dynamism and its aspirations. Around 1543, he assembled all the geographical information preserved by ancient geographers and more recent Greek literature, producing a new and original work which transcended the heritage of Ptolemy and 'made history'.12

The map was accompanied by a volume of descriptions and imaginary reconstructions of the Greek cities. Sophianos also published a table —broadsheet, sine loco, sine anno— listing the correspondences between the ancient and modern names for the cities. This must have been an annexe to the map, since each place-name is followed by a number referring to its equivalent on the map.

Sophianos' map together with the broadsheet table recorded the successive steps in the Greek diaspora, from the time of Homer to the late Roman era and modern times. It may be considered the most substantial contemporary Greek contribution to the academic cartography of the Renaissance. His large map, in eight sheets, of totius Graeciae was designed to be displayed mounted on a wall; with all its regional and historical divisions and

7. For the bio-bibliography of Amiroutzes, see Émile Legrand, Bibliographie Hellenique ou description raisonnee des ouvrages publís par des Grecs aux XVe et XVIe siècles .... tome troisième, Paris 1903, pp. 194-206, including the documentary bibliographical sources.
9. He died rather as he had lived: with a terrible grinding of the teeth, while playing backgammon in the seraglio; ibid. 167.
12. For Sophianos and the influence and impact of his map, see Legrand, Bibliographie..., vol. I, 1895, pp. clxxxvii-ccxiv. See also Robert W. Karrow Jr., Mapmakers of the Sixteenth Century and their Maps, Biographies of the Cartographers of Abraham Ortelius, 1570, Chicago 1993, pp. 495-499. For the overall rationale behind the geographical and historical conception of Sophianos and his work on ancient and contemporary Greek toponomy, see G. Tolas, 'Της ευρύχωρου Ελλάδος: η Χάρτα του Ρήγα και τα όρια του ελληνισμού'. Ta Istorika 28/29 (1998), pp. 3-30.
its vast number of place-names, it is the earliest depiction of the historical continuity the Greek presence in the area, the first historical theatre for the ethnological and cultural formation later termed ‘Hellenism’ by the national school of Greek historiography.  

On the rare broadsheet table, the ancient place-names are rendered in Latin and the modern equivalents in Italian; the latter coincide with the names used in the portolan texts and charts of the period. This similarity extends to the geographical terminology: Sophianos uses the conventional abbreviations of the portolan charts to mark his capes (“C.”), rivers (“f.”) and
gulfs or bays ("G."). As well as naming general geographical areas, the Sophianos table gives the names of most of the locations on the islands and along the coasts of Greece. Taken together, this evidence allows us to hypothesise that in compiling his table Sophianos must have relied on a contemporary portolan chart, the only piece of geographical work on the current situation in which he could have had confidence.

The Sophianos table is the link between the academic and empirical cartography of Greece and it introduces us into the sphere of cartography per se – the kind of cartography which does not simply reproduce what could be learned from literary sources. In this field, the Greeks may not have been complete spectators of the events, but their contribution to formulating the situation was a limited one. Until the late nineteenth century, the output of empirical Greek cartography resulted from a mechanism of dependence and reproduction.

There is no shortage of examples to demonstrate the accuracy of this observation, but the clearest proof of all is to be found in the Greek production of portolans charts – the subject dealt with in the present book. However, for the sake of historical completeness let us refer in brief to some of the other – much more meagre – manifestations of the mechanism of dependence and reproduction through which the empirical Greek geography and cartography of the period expressed themselves.

Over and above the academic geographical and cartographical output, which, as we have seen, was closely bound up with the dissemination or improvement of Ptolemy’s work and with the ancient literature of geography, the Greeks of the sixteenth century manifested a low, though interesting, level of receptiveness towards the developments taking place in nearby south-western Europe. Most importantly, that century saw the production of the seven surviving manuscript narrative portolans, compiled in vernacular Greek, and of their printed variant which is known as the 'Tayias Portolan'.

We shall devote a little space to this printed portolan because it reveals some characteristic and, apparently, dominant attitudes towards the spreading of maritime knowledge and in particular about the confidential nature of navigational know-how. In his verse foreword (here rendered in prose), Dimitrios Tayias relates how a manuscript came into his hands and the reasons for which he decided to publish it:

And then I thought that it had never been printed, and that – not to waste words – it should be.
I said, let it be put to the press so that each person can learn about his honour wherever he happens to be. Many people owned one and kept it hidden, safely locked up in the ship’s chest.
Why should only they own one, to make themselves look important, holding it up as if made them look wise? But when it came into my hands, I said, let me put it to the press, so that everyone can have one.

17. The critical edition of the texts of the seven manuscript Greek portolan charts and of their printed version (the so-called 'Tayias portolan') is by Armand Delatte, Les Portulans Grecs, Liège, Faculty of Philosophy and Letters 1947, and Compléments, 1958.
Apart from indicating Tayias’ courage in deciding to share the secrets of the Mediterranean with other seafarers, this text shows us that during the sixteenth century quite a number of manuscript descriptive portolans were kept in the chests of Greek ships (“many people owned one”). Further information is provided by another of the couplets:

*It lacked the Table, but I have included it so that you can easily find what you are looking for*.

It is certainly a most appealing possibility that Tayias’ “table” might be a printed naval chart, now lost. However, the improvements made by the publisher must have been confined to a kind of brief index which accompanied the map.20

The descriptive and narrative portolans were not exactly original works – insofar as one can talk about originality when dealing with empirical, utilitarian and almost popular texts which were widely distributed around the Mediterranean. Apart from the close interdependence among themselves, the Greek portolans have proven similarities to the Italian portolans and to the corresponding Ottoman sailors’ guides.21 More systematic research might reveal still closer bonds in the corpus of the navigational aids to be found in the Mediterranean countries.

As well as the Greek portolans, we should also notice the translation into Greek of some of the geographical works in the Western canon and the penetration of maps into the sphere of post-Byzantine art.

In the first of these instances, the most important event was the translation into Greek of the Liber Insularum Archipelagi of Christoforo Buondelmonti of Florence.22 The translation into modern Greek was produced during the sixteenth century,23 but while four copies of the text have been located, no Greek version of the maps which usually accompanied the original or the translation of the work seems to have survived. An interest of this kind lay behind the addition, by a vulgar Greek sixteenth-century hand, of Greek toponymy to a copy of Bartolomeo dalli Sonetti’s isolario.24

It would be an omission if we were to conclude this brief overview of the receptiveness of the Greeks time towards Renaissance arts and crafts of space without a reference to the work of Georgios Klotzas.25 Klotzas (c. 1530-1608) is better-known as an icon-painter of the Cretan school, as a chronicler and as a miniaturist, whose work introduced the aesthetics of mannerism into Greek religious art. However, he was also an outstanding topographical painter: two works of this nature have survived,26 together with a number of illustrated codices of the second half of the sixteenth century27 with a wide range of subject-matter. Of these manuscript codices, the one of most interest to us here is that kept in the Library of St Mark:28 it contains oracular texts, extracts from the Old Testament, and an illustrated chronicle describing and depicting military events of the time. A significant proportion of these miniatures are works of a topographical and cartographical nature, impressive in their technique. These maps, of an ephemeral and topical nature,29 were influenced by the corresponding manuscript or engraved works of the period.

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20. For this index, see S.J. Makri­michalos, *Συμπληρώματα*, op. cit., plate 10, which shows the last page of the Tayias portolan of 1573 in the annotated copy of Martin Crusius. The page also contains the last entries on the ‘table’, which would not seem to have been in strict alphabetical order.

21. For example, Chapter III of the Tayias portolan is a close translation of paragraphs 11 to 176 of the Rizo Italian portolan (K. Kretschmer, *Die italienischen Portolanen des Mittelalters*, Berlin 1909). The descriptions of the coast of Cyprus of Tayias and on Delatte’s manuscripts A, W, O, V and P are very like the corresponding text in the *Kitab-i Bahriyye* of Piri Reis (1526). My thanks for the comparison between these extracts to Dimitris Loupis, who is preparing a Greek translation of the *Kitab-i Bahriyye*.


23. This was a manuscript Greek translation; Émile Legrand published it in *Description des îles de l’Archipel*, Paris 1897.

24. The Pierpoint Morgan Library, PML 338.

published as loose sheets, as manuscript volumes or bound into atlases such as that of Lafreri and composite books such as those of Bertelli or Camocio.

Although they are the work of a mature artist, Klotzas' map-like drawings are both circumstantial and 'vernacular' in character. As maps, they are directly linked to the texts they illustrate and with the course of the action described there. They might be described as a commentary on the flow of the narrative. The long texts at the top of the sheets usually conclude with the semi-colon typical of references: "Here is the island of Zante, reached by the armada and burned by it:"

Below is the topographical map, usually adorned with reconstructions of dramatic scenes and incidents from the battle, the siege, the sack of the

26. The scene showing the Battle of Lepanto (attributed to Klotzas and now kept in the Historical and Ethnological Museum, Athens, see Hatzidakis and Drakopoulou, op. cit., p. 88) and the panorama of Mt Sinai (also attributed to Klotzas and in the Musée d'Art et d'Histoire, Geneva, ibid., p. 89). Hatzidakis and Drakopoulou also refer to another topographical work by Klotzas (ibid., p. 88) showing the Battle of Lepanto; this was kept in the old Museum on Zakynthos and was destroyed in the fire that followed the earthquake of August 1953.

27. For the Klotzas codices, see Hatzidakis and Drakopoulou, op. cit., pp. 89-91.


31. For isolarli of the Camocio type, see G. Tolias, 'To βιβλία των νησιών', Τεχνογνωσία στην Λατινοκρατούμενη Ελλάδα, Gennadeios Library, American School of Classical Studies, ETBA Cultural Foundation, Athens 1999.

32. For a definition and history of the topographical maps, see P.D.A. Harvey, The History of Topographical Maps, Thames

33. Holy Monastery of Iviron, Mount Athos, Η δια θαλάσσης έλευσις της Παναγίας Πορτατίσσης (eighteenth century).

34. My thanks to Anna Avramea for this piece of information.


37. The map entitled ‘Pianta dell’isola di Corfu con parte della Grecia’ included in Della Historia di Corfu descritta da Andrea Marmoras nobile coriense... 1672. The map takes as its source an earlier representation of Corfu published in Civitates Orbis Terrarum by Braun and Hogenberg, 1572-1618.

38. The 18th International Conference on the History of Cartography (Athens, July 1999) included papers presenting unpublished material of this kind: a map of Cyprus in an icon of St Barnabas of the seventeenth century, and maps in icons of the Monastery of the Holy Cross and the Monastery of St George in the Old City of Jerusalem. See the detailed programme of the Conference.

dental, sacred space since the map usually records a field in which divine intervention has taken place – in other words, the location of a miracle.

The interest which manifested itself in Western maps of the islands; the circulation of narrative portolans in manuscript and printed form and the perceptible participation of Greeks in the production of manuscript portolan charts; the remarkable degree of involvement, by the standards of the time, in academic cartography, and the marked receptiveness towards innovative cartographic representations on the part of milieux in which very old and unshakable technical traditions predominated – all these factors are indica-
tive of the new attitudes being adopted, giving us a picture of a society making a hesitant opening towards new technologies and new approaches: towards new perceptions of space. These attitudes are further confirmed by the circulation in Greece of ‘Western’ printed maps and globes, as one can conclude from the requests for such items to be found in the correspondence of Greek scholars during the seventeenth century.40

The various Greek communities of the sixteenth and seventeenth centuries, all under foreign rule and without cohesion, seem to have manifested a fragmentary yet perceptible geographical curiosity. That curiosity was strong enough not to be completely eradicated by the seventeenth century, a dark era for the Greeks; after the early eighteenth century, modern Greek geographical and cartographic literature flanked and supported the growth of national self-awareness, manifesting itself with distinctive variety of expression.

40. Which also includes the manuscript Greek translation of the Theatrum Orbis Terrarum of Ortelius, a seventeenth-century work, in the National Library of Greece.
PORTOLAN CHARTS

MORE THAN ANYTHING ELSE, sea charts are representations of the sea, of the uniform liquid element that covers the greater part of the globe. The chartmaker described the sea from its extremities, from the coasts and islands, the only constants capable of giving substance to its continuous flux and of generating a readable written image of it. He then filled the void between with the creations of his mind—of his reason, his imagination and his experience—so as to make it less alien and in some sense safer. These would include wind roses, compasses, scales in nautical miles, indications of geographical latitude and longitude and rhumb lines. Then he would ornament it with ships and sea creatures; last of all, he would paint the headlands and islands in vivid colours and illustrate the reasons for which people might wish to travel across the sea: at first, the cities where Mediterranean trade flourished, and later the treasures and wonders of the Orient or the New World.

The Greek portolan charts presented in this book are inextricably bound up with Mediterranean portolan chart production, all of whose characteristics they retain. For that reason, it is necessary that we now define in brief the character of that distinctive cartographic literature and provide a summary review of its history.

Portolan charts were originally practical aids to navigation which drew on, and in turn supplied, a shared stock of accumulated empirical knowledge. Towards the end of the period during which they were produced, the portolan charts came gradually to be works of art, elaborate and precious artifacts destined for the hands of demanding collectors. The production of manuscript sea charts died out in the early eighteenth century and seems to have begun in the late twelfth. The earliest surviving examples of the genre date from the closing decades of the thirteenth century, but we now possess evidence which suggests convincingly that similar works had been in existence a hundred years earlier41

This cartographic production has many interesting features: the empirical composition of the wind rose and the rhumb lines along which ships might travel, the wealth of toponymy, divided into primary and secondary locations, the codified ornamentation full of succinct hints about the lord and master of each area, the elements by which the natural environment—the flora and the fauna—might be recognised, and even the appearance of the most important cities. However, the most fascinating feature of all about the first portolans is the remarkable accuracy with which they convey the islands and coastlines of the Mediterranean and the nearby shores of the Black Sea and 41. Patrice Gautier Dalché, Carte Marine et Portulan au XIIe siècle: le Liber de existencia riveriarum et forma maris nostri mediterranei, Rome 1995.
the Red Sea. This refinement in the depiction of the broader Mediterranean area presupposes the existence of a deeply-rooted tradition in navigation and also in cartography. Such startling precision, manifest even in the earliest surviving portolan chart, does not permit us to hypothesise that it could have stemmed from the work and observations of a single individual starting out from nothing.

This is not the place to embark upon a detailed presentation of the history of the manuscript portolan charts. In any case, researchers now have at their disposal a basic reference tool on the history of the genre. For that reason we shall confine ourselves to a brief reminder of its fundamental characteristics.

Portolans were drawn on an entire animal skin, one side of which, corresponding to the neck of the animal, is narrower than the other. When the portolan charts were bound so as to form an atlas, the shape of the vellum sheet would be simplified to a rectangle – or, as was more common practice, the chart would be drawn afresh on parchment.

Portolan charts trace the outlines of the coast in the area described. On to this tracing, the place-names of the various locations were entered in red or black ink: red for the places of primary importance, black for the secondary locations. Particular significance was attached to capes and islands, to places which might serve as waystations, and to the locations necessary for seafarers to orientate themselves, all of which were magnified – with a degree of exaggeration – and highly coloured. After a certain point, important coastal cities, harbours and the metropolises of the hinterland received special visual treatment. They might be shown surrounded by walls, and stylised, easily-recognised architectural features would be emphasised.

Although portolan charts always have markings to show North and South, place-names are written over the hinterland in a uniform direction - that is, at right angles to the coastline. To prevent confusion, the names of islands are written in the opposite direction. Black, and later red, crosses mark places where there was a danger of ships being sunk or running aground: rocks, reefs, and shallows.

All the island and coastal space shown on a portolan chart is integrated into a mesh of notional lines (the rumb lines), which correspond to the conventional directions of the winds and which – in units of 12 or 32, depending on the density of the mesh – intersect at points all over the map to form a dense network. Compasses or wind roses were often drawn at the points where the lines of the network intersected. A scale bar giving distances in miglia would be included, in a prominent position. After the early sixteenth centuries, the portolans also had a graticule to indicate geographical latitude, with the scale of longitude making its appearance around 1520.

In the early period, the portolan charts showed outlines of the coasts of the Mediterranean and its vicinity. These single-sheet maps have been described as 'normal-portolans'. Later, the portolans kept pace with explorers' discoveries and included the coastlines of the African continent, south-east Asia, and (after the end of the fifteenth century) what was called the New World.
Between the time of the earliest surviving sea chart, the Carte Pisane, and the early eighteenth century, when the production of portolan charts ceased, the genre progressed in an interesting manner. In the early centuries, portolan charts encapsulated pioneering technology in the field of hydrography, adopting or even proposing innovative solutions to the problems of representing space: the use of latitude, the scale bar for distances, proposed courses for seafarers, etc. During the sixteenth century, the portolan charts and atlases responded to the general geographical crisis of the time caused by the new discoveries and the problem of how to produce a flat representation of a spherical reality. Furthermore, their contents were enhanced, the breadth of their subject-matter was extended, and portolan atlases came to foreshadow the cartographic unification which printed world atlases would bring. In their closing centuries, in contrast, portolan charts were gradually sidelined into the sphere of art, giving way to printed hydrographic...
maps and atlases through which the new geographical knowledge and cartographic techniques were accessible to a wider public. In other words, the course taken by portolans was the reverse of that taken by printed maps, in which the artistic element gradually gave way to the technological aspect.

The relative delays in updating the geographical information and in incorporating modern methods of surveying and projection which are observed after a certain point are easier to understand when it is remembered that most of the chartmakers who produced these works lacked theoretical training and both perpetuated and expressed centuries-old traditions which were tried, tested and resistant to change. The renewal in the techniques of hydrography which took place after the late sixteenth century was largely the result of progress in astronomic measurement, of the more precise calculation of latitude and longitude, of the use of loxodromy and, later, of the invention of the chronometer. In other words, the progress of hydrography relied more on the work of scientists than it did on the empirical observations of navigators, as had been the case during the first three centuries in which portolan charts were produced.

The absence of evidence as to the origins of the genre has, quite naturally, led experts to the most labyrinthine of hypotheses. In his own painstaking examination of the question, Tony Campbell reviews all the theories put forward before drawing the conclusion that since no properly-documented arguments can be advanced, there is for the time being little point in seeking the origins of the genre in much earlier periods. Portolan charts are of their very nature bound up with exchanges among the mercantile urban centres which emerged as the Middle Ages drew slowly to their close and with the learning of those trading cities, where geographical information – theoretical and practical alike – gathered and was distributed.

Research has, to date, discovered no specific facts about the precise process by which the first portolans were produced. If, however – as the researches of Patrie Gautier Dalché have recently demonstrated – the question of the stages in production is ignored, there is a certain amount of evidence about the relations and affinities between the genre and earlier navigational aids.

This is not the place to dwell on the speculations in which the experts have engaged about the beginnings of the techniques employed by the genre. Let us note in passing, however, that most specialists side with the view that the earliest portolan charts were not the outcome of any system of projection but are more likely to have been records of empirical facts known to sea-farers. Although the controversy over this point is both sharp and long-standing, most of the evidence seems to suggest that the portolan charts were not directly connected with the ancient cartography and that their initial design was preceded by the drafting of the coastline on the basis of the network of rhumb lines criss-crossing the map.

In contrast, we know quite a lot about the procedure by which these maps were copied in the sixteenth century – the period of special interest to us here, since it was then that the Greek cartographers produced most of their


51. See O.A.W. Dilke, Greek and Roman Maps, London 1985. For a summary of the views for and against a link between ancient cartography and the portolan charts, see Tony Campbell, 'Portolan charts...'; op. cit., pp. 380-381.
work. In order to copy a portolan-chart, the cartographer drew (on the vellum or parchment he had prepared in advance) two axes at right angles to one another, intersecting in the middle of the map. These represented the North-South and East-West axes, and they divided the surface into four quadrants. From the centre point, between 12 and 32 lines radiated out uniformly in all directions, corresponding to the various winds. From the fundamental points on the horizon, more lines radiated outwards, once again corresponding to the winds. Once this was done, the preparation of the map was complete and the rhumb line network—the distinctive feature of the sea chart and the foundation for copying it—was ready. Using calipers, the copyist would transfer the exact distances between points from the original and trace the coastline. Then the map would be ornamented, and the place-names written on it.

The manner in which the portolan chart was used on board ship was quite simple. Having first selected his course on the map, by identifying the rhumb line marking the shortest route between his starting-point and his destination, the ship’s captain would then rely on his compass to ensure that he did not deviate from it. He could calculate the distance he had covered using a special table which converted sailing time into leagues; the calipers would then be used to plot the distance covered on the map, and this would yield quite an accurate estimate of the ship’s position.

As long as the voyage stayed within the familiar waters of the Mediterranean and the Atlantic coasts adjacent to it, the portolan charts were adequate for the needs of shipping. Their ‘errors’—caused by the flat representation of a spherical reality, without the use of any system of projection, and the merely approximate determination of the vessel’s position by the stars—would not create major problems. Voyages over the open sea lasted two, or at most three, days, and the flat representation of sphericity would not lead the vessel far astray across maps which dealt with comparatively limited areas.

During the sixteenth century, however, the new sea routes, the much longer voyages and the newly-discovered lands brought about a profound crisis in maritime cartography. Portolan charts were able to adapt, to some extent, to the needs of the new era, but they remained primarily empirical tools and would never be a satisfactory solution to the problem of voyages on the open sea.

To say that manuscript sea charts were copied from one another is certainly not to say that they are all identical. Apart from their differences in colouring, ornamentation and design, the portolans differ markedly in their range of place-names. As Tony Campbell puts it, “Now that we can point to a process of continual toponymic revitalization [...] the portolan charts must be reinterpreted as a living record of Mediterranean self-knowledge, undergoing constant modification”.

The fluctuations and alternations in place-names on the sea charts do not, however, always reflect the true situation. When a city changed its name or when a new city was founded, there would be a long delay before this ap-
5 G. Sideri, portolan chart of the Western Mediterranean coast from the atlas of 1537.
peared on the portolan chart, as there would also when a coastal city was laid waste or abandoned. This applies also to the flags used to indicate the sovereignty of the various places: Constantinople continued to be marked with a Christian cross on works down to the seventeenth century, and the colours of the Knights of St John were almost always used to designate Rhodes on the portolan charts of the period.\footnote{56}

Manuscript portolan charts were not intended only for seafarers. The era in which they appeared was one of prosperity and of intense commercial activity in the Mediterranean, most of it in the hands of the Italian and Catalan cities. As has been pointed out,\footnote{57} the portolan charts served two complementary purposes, at least in the early period of their production, meeting, on the one hand, the needs of sailors (supplementing and reinforcing their empirical knowledge of the sea-lanes) and, on the other, those of ship-owners, capitalists and investors in distant commercial enterprises. Capitalists who engaged in trade— but who rarely travelled in person— would certainly have a need for such visual representations of the far-off lands into which they were channelling their investments. Such a use is suggested at a comparatively early date by the existence of the portolan atlases, in dimensions smaller than the charts, with opulent ornamentation, and in formats which would allow the work to be fitted on to the shelf of a bookcase. The portolan charts themselves tended to be larger, were mounted on cylinders, and could be unrolled on a table so as to allow them to be studied from whatever angle. The edict of the King of Arragon, dated 1354, by which each galley was obliged to equip itself with two portolan charts, can also be interpreted in reverse: that is, it may have been the case that captains and pilots, loyal to the traditions of their ancestors, viewed with contempt the prospect that they might make use of these complex and abstract navigational aids.\footnote{58}

We have already referred to the practice of binding manuscript charts into volumes, enabling them to be stored easily on shelves and at the same time making it possible to cover the coastlines and islands in greater detail.\footnote{59} Portolan atlases appeared at almost the same time as the ordinary portolan charts: the earliest signed and dated portolan atlas is that consisting of six maps by Pietro Vesconte, produced in 1313.\footnote{60} It seems reasonable to hypothesise that more manuscript maritime atlases have survived than ordinary portolan charts. There are two reasons for this: first, atlases are better protected than unbound sheets, and second, at an early date atlases began to be kept in libraries and collections and would thus not have been exposed to all the hazards of the sea.

The manuscript portolan atlases were also to play a role of a different kind in the history of cartography. In the late Middle Ages and early Renaissance, they were the geographical genre from which the most complete, positive and detailed image of the known world could be obtained, and they were among the first modern visual aids to contain a cartographic representation of the hinterland. Although the principal purpose of making portolan charts was to meet the needs of sailors, their designers developed an interest in rendering the hinterland at quite an early date. That interest, most evident in the work

\footnote{56. Similar delays are noted by P.D.A. Harvey, \textit{Medieval Maps}, The British Library, London 1991, pp. 48-49.}

\footnote{57. Pastoureau, \textit{Voies Océanes...}, op. cit., p. 15.}

\footnote{58. See G. de Reparaz, \textit{L'activité maritime et commerciale du royaume d'Aragon au XIIIe siècle et son influence sur le développement de l'école cartographique de Majorque}, \textit{Bulletin Hispanique} XLIX (1947), pp. 421ff. Tony Campbell points out that the sources assign the decree to different years and also that the nautical decree of the King of Aragon of 1331 contains no such provision. See Campbell, \textit{Portolan charts...'}, op. cit., p. 440, note 486.}

\footnote{59. In the sixteenth century, a proposal was made—though never implemented— that portolan charts should be replaced by atlases, especially for voyages in the Atlantic. The reason for this was that the breaking down of the space into many smaller maps might help to avoid the errors caused by the defective measurement of geographical latitude at the time. See Randies, \textit{De la carte-portulan ...'}, op. cit., p. 131.}

\footnote{60. Bibliothèque Nationale de France, Rés. Ge. DD 687.
of the Catalan chartmakers, soon led to the production of elaborately illustrated sea charts which also provided information about the geography, history, ethnology and economy of the known world. One of the most elaborate and sophisticated is the Catalan Atlas, kept in the Bibliothèque Nationale in Paris; this work, of 1375, by a Jewish cartographer of Majorca whose name has not come down to us, covers Europe, North Africa and the greater part of Asia from the Mediterranean to the coast of China and from southern Siberia to the Indian Ocean. This map, which has all the characteristics of a portolan (rhumb lines, scale bar and wind rose), illustrates the hinterland in detail and, indeed, elevates it to the main subject of the work.

The Catalan Atlas is undoubtedly exceptionally rare as a portolan chart in that it depicts the hinterland in such detail. Even so, most of the chartmakers of Majorca and many others who were inspired and influenced by their iconographic style continued for some centuries to produce portolan charts whose interest focused equally on marine and inland areas. The hinterland of less well-known areas inevitably lacked the precision and fidelity with which the coastline is rendered. When cartographers drew the hinterland, they combined an inclination towards ornamentation with the inclusion of mythological elements and the stereotypes deeply rooted in the consciousness of the people of the time. Nonetheless, the evolution of cartography owes much to the manuscript sea atlases.

During the sixteenth century, illustrated and ornamented sea atlases for more general use circulated in considerable numbers. In some cases, these atlases were destined for the collections of princes; in others, they would form part of the libraries of wealthy merchants, or be kept in the houses of the prosperous bourgeoisie. They differ in terms of their art, their 'up-to-dateness', and their structure. Sometimes they contain introductory instructions on navigation or on the construction and use of navigational instruments; sometimes they go beyond the strict specifications of the art of the portolan, lying closer to the isolarlo (from which they borrow material) or covering parts of the hinterland in encyclopaedic style. What has to be borne in mind about the products of this renewal in the geographical, commercial and political horizons of the sixteenth century is that they played a part in the developments of the age, that they communicated creatively with the evolution of printed cartography, and that they led to a revitalisation in the geographical spirit later expressed in the publication of world atlases.
THE GREEK CHARTMAKERS
WORKS AND DAYS

THE TRADITION OF MANUSCRIPT sea charts died out two hundred and fifty years ago, and could thus be described as a genre which is technically and functionally dead. As a result, a greater and greater distance is opening up between us and the world which produced and sustained works of that kind, and we should not be surprised if many things which were once everyday items for certain groups of the society have now been forgotten. There is much that we no longer know about the methods by which manuscript sea charts were made, about how they were used, about issues connected with their marketing and distribution, about the everyday lives of their makers, and about the ways in which those lives were integrated into the functions of the social fabric.

The maps themselves, of course, have survived, fragments of a largely enigmatic past, though there are certainly far fewer of them than there once were. We also possess a few names of chartmakers, and, very occasionally, dates and brief dedications. Of all the Greek portolans produced, a few unsigned works in Greek have come down to us, together with a slightly larger number—most of them signed—in Italian. History, on its part, has preserved four names in Italian and one in Greek: Antonio Pelekan, Ioanis Xenodocos, Georgio Sideri Callapodha, Antonio Millo, and Nicolaos Vourdopoulos (Νικόλαος Βουρδόπουλος).

To ask whether these five named makers of sea charts were Greeks is to embark upon a quest for a definition of what ‘Greek’ meant in the fifteenth and sixteenth centuries. To adopt a modern-day approach to that question would be to fall foul of the extreme regionalism of how descent was perceived, a regionalism which also applied, broadly speaking, to the ‘Italians’, ‘Egyptians’ or ‘Spaniards’ of the same period. This study has no intention of losing its way along such obscure paths. However, we do need to inquire into the ethnic origins of the cartographers in question, since that will provide a methodological starting-point for our overall approach to the subject.

At first sight, three of the five chartmakers—Sideri, Vourdopoulos and Xenodocos—give rise to no questions, although we know nothing more about Xenodocos than that his name is Greek in form and that he came from Corfu. As for the other two, Antonio Millo and Antonio Pelekan, the international literature takes them to be Italians, although there is no documentation of this hypothesis. We have no documentation, either, in the full sense of the word; but we do possess some pieces of evidence, which we shall be examining below, for rather a different hypothesis of our own.
The literature on the lives and work of the Greek hydrographers of the Renaissance is meagre. The general reference works, bibliographical compilations and encyclopaedic reviews of hydrographic and cartographic history have very little to say about the Greek practitioners. The Greek literature of the nineteenth century makes no reference to them at all: the energetic Greek scholars of that period took very little interest in the specialised bibliography of geography and cartography, while the general literature ignores them altogether. Sathas may or may not have known of these chartmakers, but he certainly did not mention them in his *Modern Greek Literature*, although he does cover the Greeks who designed and published topographical maps.

The international cartographic literature of the nineteenth century refers to the Greek chartmakers only selectively and incidentally. In their fascinating bio-bibliographical study of the history of cartography in Italy, Uzielli and Amat di S. Filippo take Antonio Millo and Pelekan (whose name is copied, erroneously, as Antonio Pelegan e Miraro di Resina) to have been Italians, while Sideri and Xenodocas are regarded as “foreigners”. As for Vourdopoulos, the literature down to the end of the nineteenth century completely ignores him as a producer of original maps. The entry on the only signed work by him, found in a public library towards the end of the nineteenth century, views Vourdopoulos as having been merely the copyist of the map, which is recorded as “Portulanus Mediterranei Maris, lingua greca Vulgari. XVIe siècle. Copié par Nicolas Bourdoupolos de Patmos”.

The Greek literature which specialises in the Greek hydrographers of the Renaissance follows the foreign-language sources.Spyridon Deviazi, the first researcher into the Greek production of manuscript sea charts, referred to the existence of the material in an early paper. Sixty five years of silence followed before the publication of a paper by Stephanos Makrimichalos, who refers only to Sideri and Xenodocas. Antonio Ratti and his wife, Paola Ratti-Vidoli, worked exclusively on Sideri. With the encouragement of Nikos Panayotakis, then director of the Institute of Modern Greek Studies in Venice, the Ratts undertook to produce a first systematic inventory of the work of Sideri, which was published in the Institute’s journal.

Vourdopoulos, otherwise overlooked, had in fact made his appearance in the literature as a maker of Greek manuscript sea charts as far back as 1898, in an article by Alberto Magnaghi published in the *Rivista Geografica Italiana*. In 1947, the Belgian scholar Armand Delatte focused attention on him once again, publishing the map in the Bibliothèque Nationale as the appendix to his edition of the Greek narrative portolans.

In 1972, Anna Avramea referred to Xenodocas, Sideri and Vourdopoulos. In her introduction to an overview of the mapping of the islands and coasts of Greece, the same author referred once more to these three cartographers and revived the question of the Greek origins of Antonio Millo. In the meantime, Andreas and Judith Stylianou had already dealt with Antonio as a Greek in their extensive presentation of the cartography of Cyprus, citing F.W. Hasluck, who as far back as 1906 had identified an early literary reference to the cartographer’s Greek ancestry. Nonetheless,
Antonio Millo is even today considered a Venetian. Where his work is concerned, it is strange to find that interest has focused much more on his late and comparatively simple inventories of islands rather than on the precious atlases which he produced with such skill.

The published documentation of the lives and activities of the Greek chartmakers is even scantier than the literature about them. All the scholars who have involved themselves with the field have come up against the paucity of the source material and have encountered countless—often insuperable—obstacles on the level of archival documentation. We know very little indeed about the lives of most of these cartographers, about the way in which they produced their maps and about how their work was linked to the artistic, technological and economic functions of the time. The indifference displayed by history towards these people, who in most cases have vanished without trace, is both characteristic and indicative. The works, of course, remain, incontrovertible proof of intensive and fruitful work, but it would be no exaggeration to say that they are islets of reality amid an ocean of uncertainty.

If the evidence at our disposal is not sufficient to reconstruct with certainty the reality of how portolan charts were produced in the major hydrographic centres of the period, such as Venice and Genoa, with their abundance of production and their exhaustive archival systems, then matters become still more different when we turn our attention to the dislocated Greek world of the fifteenth and sixteenth centuries.

In fact, we know almost nothing about the production of manuscript sea charts in Greece. No documents have survived to confirm the existence and operation of even one cartographic workshop—view of which, until archival research brings fresh evidence to light, we shall have to view the Greek production of maps as the work of individuals who may not even have worked in Greek areas at all. In the case of the oldest map which seems to have been produced in a Greek area, that of Antonio Pelekan, our knowledge goes no further than the information provided by the chartmaker himself, on his single work:

antonio pelekan admiralio de retymo o fato questo cholfo 1459 ano 4-lujo

The historical archive of Rethymno was destroyed when the town fell to the Ottomans in 1646, and so it is impossible for us to find any trace of the cartographer. All we know is what he tells us: that in 1459 he was an official in the port of Rethymno, quite possibly the chief pilot. We do not know where the atlas by Ioanis Xenodocos of Corfu was produced. This elegant atlas of the Mediterranean on three sheets, the only work by Xenodocos to have survived, uses Venetian place-names and the representations of Genoa and (in particular) of Venice are comparatively accurate. The faithful depiction of the campanile of St Mark, carrying the pyramid added when it was reconstructed after the devastating earthquake of 1511, has led many scholars into advancing the view that the map was drawn in Venice. In fact, Xenodocos cannot have been a permanent resident of Venice, or even have stayed there very long, since a check of the membership of the Greek
fraternity of St Nicholas revealed no trace of him. What seems most likely is that Xenodocos was a Corfiot sailor, merchant or ship-owner whose voyages involved frequent stays in the metropolis for longer or shorter periods.

Of the prolific production of Georgio Sideri, which covers the period from 1537 to 1565, only his first and last works seem to have been made at Candia in Crete. On his atlas of 1537, he signs himself:

*Georgio Challapoda Chandioto composuit Chandia anno domini MCCCCXXXVII*

We can say with some certainty that his last signed and dated work, the portolan chart of the Mediterranean now in the Bibliothèque Nationale in Paris, was also made in Crete – more specifically, in Candia the capital of the ‘kingdom’, since Sideri seems to have been permanently resident on the island from 1564 to his death in 1581.

Very little is known about where Antonio Millo produced his works. From the particulars provided by the cartographer in his ‘island books’, we can hypothesise that the isolario of 1590 was drawn on Zante and an *Art of Navigation* of 1591 at Candia. Other documents enable us to state tentatively that the isolario of 1582 was produced in Venice. As for his larger-scale works, the portolan charts and the unusual sumptuous atlases, it seems likely that these, too, were made in Venice, where Antonio lived before being appointed to the post of ‘Armiraglio’ to the ports of the Venetian colonies in the East.
Nothing is known with certainty about the place where the two surviving portolan charts of Nicolaos Vourdopoulos were made. However, it is possible that the portolan chart of 1608 was made on the island of Patmos, since there is evidence that Vourdopoulos was there the very next year.95

Any attempt to reconstruct the lives and activities of the Greek chartmakers encounters the same obstacles. In the case of Pelekan and Xenodocos, we know no more than they themselves tell us in their works, which we have already reviewed. We cannot even be sure about the ethnic origin of Pelekan, whose name might be either Greek or Venetian. However, 'Pelekanos' is found as a Greek family name in Rethymno after the early fifteenth century,96 and the fact that the cartographer spelled it with a 'k' rather than the 'c' or 'ch' which would have been more natural for a Venetian lends some support to the hypothesis that he was of Greek descent.

More is known about Georgio Sideri, thanks to extensive and fruitful research in the Venetian archives. His name was actually Zorzi Sideros, and he belonged to a well-known Cretan family with kinship relations among the Venetians.98 His works bear dates from the period 1537-1565, and the archival evidence about the cartographer himself is almost exactly contemporaneous with the maps. Between 1538 and 1554, Zorzi Calapodan was a frequent visitor to Venice as the master of a merchant ship, and he may have lived there from time to time, since we find him paying his subscription to the Greek fraternity.99 However, we cannot state with certainty his place of permanent residence, where he would have produced his maps, with the exception—as we have seen—of the beginning and end of his life. After 1564, Sideri was a permanent resident of Crete, as we know from a recourse he submitted.100 In 1568, fresh recourses101 are evidence that he was still in Crete. After that point, archival documentation follows his career through the public positions he occupied: until 3 April 1573, Sideri was Deputato alla Spina,102 and from December 1575 to his death shortly before 25 August 1581 he was Deputatio al datio del comerchio.103

Despite this wealth of archive material surrounding the public life of Georgio Sideri, nothing has yet been found which has any bearing on his cartographic career. Perhaps, however, there is one piece of evidence which may shed some indirect light on those activities: the command issued by the Duke of Crete on 18 August 1568 ordering the merchant Manolis Dacypris, also known as Mazapeta, to deliver up to Georgio Sideri, whose name was actually Zorzi Sideros, and he belonged to a well-known Cretan family with kinship relations among the Venetians.98 His works bear dates from the period 1537-1565, and the archival evidence about the cartographer himself is almost exactly contemporaneous with the maps. Between 1538 and 1554, Zorzi Calapodan was a frequent visitor to Venice as the master of a merchant ship, and he may have lived there from time to time, since we find him paying his subscription to the Greek fraternity.99 However, we cannot state with certainty his place of permanent residence, where he would have produced his maps, with the exception—as we have seen—of the beginning and end of his life. After 1564, Sideri was a permanent resident of Crete, as we know from a recourse he submitted.100 In 1568, fresh recourses101 are evidence that he was still in Crete. After that point, archival documentation follows his career through the public positions he occupied: until 3 April 1573, Sideri was Deputato alla Spina,102 and from December 1575 to his death shortly before 25 August 1581 he was Deputatio al datio del comerchio.103

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De 18 soprascritto [augusti 1568]. Fanurio Scienza, comandatore, refferito de ordine del clarissimo signor Duca ad instantia di ser Zorzi Sidero detto Calapoda, haver intimo et fatto comandamento a ser Manoli Dacypri detto Mazapeta, che, in pena de yperperi cinquanta, il debba in termine de giorni tre prossimi futuri dar et consignarli li disegni gli furno dati a
According to this source, the journey of Leonclavius (Loewenklau) (1533-1593), see Lichtenstein and Leonclavius took place 1820-1824, vol. IX, pp. 169-171.


Archive, Register 1, registro 134, f. 6v.

Symmeikta νεοκρατία (13ος - 17ος αι.), non-Italian origin.

Indeed, the fact that the cartographer he-sited, even if only briefly, over the spelling is a support for our explanation of a toponymical root of the name. In Italian, the island of Milos is usually spelt 'Millo', or more rarely 'Milo'.

Our information about Antonio Millo is more limited. The surname Millo or Milo, derived from the name of the island of Milos, was quite common in the Venetian-occupied areas and especially in Crete and is found in Greek in a number of variant forms, such as Milios, Miliotis, Damiolo, Melo, Mello, Miglioti, and so on. The cartographer and the sailor Antonio da Millo who appears in the archives of the Greek community in Venice after 1571 must be one and the same person.

In all the works identified to date and signed, Millo signs himself “Antonio Millo” — with two widely separated exceptions in which he refers directly to his place of origin and the derivation of his name. In his earliest dated work, the sea chart of the Mediterranean of 1567 (now in the Newberry Library, Ayer MS map 15), he signs himself “Antonius de Melo”, and the dedication to the last dated work, the isolario of 1591 (now in the British Museum, Add. 10365), he signs himself “Antonio da Millo”.

Antonio Millo must have been born in the late 1540s, at the latest, in order for him to be over the age of 20 in 1567, the year of his first dated work, and must have died after 1591, the year given on his last dated work. If they are correct, then Antonio must have been born in the early 1530s, at the latest, and have produced the greater part of his work at quite an advanced age. There is some testimony to the effect that Antonio enjoyed an unusually productive old age. The German scholar and historian Johannes Leonclavius, in his Pandectes Rerum Turcicarum, has something to say of Antonio Millo. When he visited the Near East in 1582, accompanying the Imperial Ambassador Lichtenstein, he met Antonio and travelled with him for a while. Leonclavius describes him as “senex mul-tatum rerum peritus, Antonius Meliensis, Graeco parte natus in Melo insula, Venetia, da maestro Menegin Thetocopulo, per consignarli al predetto ser Zorzi. Altramente gli sera levata dette pena, oltra ch'el sera astretto a sattisfargli con tanto ch'el appreca detti disegni. Verum et cetera.”

The text does not make clear the nature of the sketches which Sideri had ordered from Theotocopoulos. But the cartographer’s determination to lay hands on them — as witnessed by the mere fact that he appealed to the courts — allows us to assume that they must have had something to do with his cartographic pursuits. Here, the production of a new work seems to have been based on preliminary sketches (the parchment base for a portolan chart, perhaps, with the rhumb lines drawn in, or a ‘mute’, unsigned portolan?) which could be obtained in Venice. Unfortunately, the document does not state the value of the sketches, but the fine is a far from inconsiderable one.

However the case may be, Sideri seems to have collected both the fine and the value of the sketches from the merchant who acted as go-between, since no work by him dated after 1565 has survived. His recourse to the courts over the sketches sent by Theotocopoulos from Venice and appropriated by Dacypris remains an isolated reference, and a rather enigmatic one at that.

104. The command was discovered by Marie Constandoudaki and published in 'Dominicos Thetocopulos...', op. cit., pp. 292-308.

105. At this time, the hyperpyron was an accounting unit of currency in Crete. In the 1560s, 17.5 hyperpyra were worth 3 tsenina, thus making 50 hyperpyra worth about 3 tseninia or 25 lire. In terms of purchasing power, this was no mean sum: 3 tseninia was enough to set up, on a limited scale, in one of the manufacturing occupations. See Eftychia Liata, Φλωρία δικαστήσαρα στένου γραφία σαφένα, η κυκλοφορία των νομισμάτων στον βενετο­

κρατούμεν και τουρκοκρατούμεν ελλη­

It may well be that the German scholar had seen none of the Greek's work, in view of the rather vague wording (ut index itineris esset), but however laconic the reference may be it is of value for two reasons: it confirms his Greek origins (Greco parte natus) and it explains the derivation of his surname from the place-name (Antonius Miliensis).

Biographical information about Antonio Millo can also be deduced from his work, and in particular from the lengthy titles of his 'island books' and the manuals of navigation in which he specialised during the last years of his life. In 1582, the year in which he compiled his first dated isolario (now in a private collection), Antonio may have been in Venice, without an official post. However, it may have been in precisely that year that he took up the position of Armiraglio -port official- in Venice, given that in the same year Leonclavius refers to him as Navarcho. And since the scarcity of evidence is compelling us to make one hypothesis after another, let us suggest one more: that the isolario of 1582, unusual in that it is coloured, and in the dedication -extremely rare in a book of such a kind- to the Illustissimo et Eccelenissimo Signor Sforza Palavicino Marchese di Corte Magiore, may in some way have been connected with Antonio's appointment to his new post. In the isolario of the Library of St Mark he appears as Armiraglio dal Zante, a point which strengthens the hypothesis that the rank of Armiraglio was hardly or (more convincingly) a chief pilot, not simply a title referring to what Antonio had been in the past but actually meant that he was still an active member of his profession between 1582 and 1591. On the last dated isolario by Antonio, of 1591 (now in the British Museum), he refers to himself as Armiraglio di Candia.

This meagre evidence does not allow us to reconstruct the life and activities of Antonio. The Venetian archives and the lists of various officials in the Ionian Islands and Crete make no mention of our cartographer -at least under that name. Nor does Antonio himself provide any more information in the terse texts of his isolarii, although it has to be said that he treats the island of Milos in a manner rather different from the other islands. The difference lies in the key position which he awards Milos, placing it first among the islands of the Aegean, and in the phrase with which he introduces it:

"Millo è isola molto più nobille del mar egeo";

What we know of Nikolaos Vourdopoulos, the last of the Greek portolan-makers whose names we know and the only one to have compiled signed charts in Greek, once again comes from what he himself tells us. On the undated chart in the Bibliothèque Nationale in Paris, the mapmaker states that this is:

the work of nikolaos vourdopolos of patmos, reader

A reader was a minor church official, often merely a monk and sometimes a layman, whose task it was to read from the sacred texts - the equivalent of the epistoler in the Western Church. The role of readers in the society of Ottoman times was not inconsiderable, which explains why this
A seemingly minor post is mentioned on the chart in the Bibliothèque Nationale. However, a second signed and dated work by Vordopoulos, formerly in a private collection at Volterra, does not mention the post of reader. As described by Magnaghi, the work is signed:

*Work of the hand of Nikolaos Vourdopoulos of the island of Patmos in the year 1608*

[Έργον χειρός Νικολάου βουρδόπολου εκ νέου Πάτμω εν έτει 1608]

Two conclusions can be drawn from the date: either that Nikolaos was appointed reader after 1608, or that he drew the Volterra map after the one in the Bibliothèque Nationale and had by that time a different ecclesiastical or monastic rank. If he took monastic orders in the Monastery of St John on Patmos, he might be identified with the monk Ioasaph Vourdis who, according to the *Brabeion* of the monastery, died in 1622, or with the deacon Ierotheos or Gerotheos Vourdis who, with the priest-monk Christophoros of Mytilene, leased one of the dependencies of the monastery on 6 August 1639.

The first possibility is supported by a published document of the Monastery of St John dated 30 August 1609, which refers to Nikolaos Vourdopoulos by name. In it, Vourdopoulos is a signatory to a joint resolution of the inhabitants of Patmos to secure the fortifications of the monastery in view of an impending pirate raid: “Having heard that the sea robbers, the offspring of Hagar, wish to plunder the islands of the Aegean Sea”, the Patmians resolved, for reasons of security, to demolish all the private and ecclesiastical buildings “abutting on the walls of the Monastery”.

The order of signature of this document, indicative of the social stratification of the island in the early years of Ottoman rule, is as follows: first the abbot, then the priest-monks and fathers of the monastery, the priests of the parishes in the town, the illiterate commissioner of the Capudan Pasha, and, at the end, the “most honourable ship-owners and the others” – the last of whom is our Nikolaos Vourdopoulos.

The only positive information to be deduced from this document is that Nikolaos Vourdopoulos was resident in the vicinity of the monastery in 1609 and that in that year he held no ecclesiastical or monastic office. What is not clear is whether he was one of the “ship-owners” or the “others”.

Last come the anonymous Greek chartmakers – those who did not sign their works. Among the scores of anonymous Italian portolans, it certainly seems likely that some were made by Greek hands, given that far and away the greater part of the production of the Greeks who are our subject here forms part of that culture and linguistic expression. There are also, however, a very few anonymous portolans with Italian nomenclature which have been attributed to Greek chartmakers. They include the anonymous Italian sea atlas in the Correr Museum, which is attributed to Antonio Millo; the fine Italian portolan chart in the National Library of Austria in Vienna, also attributed to Millo; and, possibly, the anonymous Italian atlas now in a private collection in Canada, attributed either to Georgio Sideri or the hydrographer Conte Ottomano Freducci of Ancona.
The other category, that of anonymous works with Greek toponymy, is larger, since most of the charts produced in Greek are undated and unsigned: the atlas with six maps in the State Library of Lucca,\textsuperscript{132} the Greek atlas with seven maps in the Brooklyn Museum,\textsuperscript{133} the anonymous portolan chart of the Mediterranean in the Correr Museum\textsuperscript{134} (attributed to Sideri since it resembles a chart by him in the same collection),\textsuperscript{135} the anonymous Greek portolan chart auctioned by the Italian firm Hoelpi in 1942,\textsuperscript{136} and, lastly, the anonymous Greek portolan chart recently acquired by the Benaki Museum.\textsuperscript{137} It seems likely that we shall never discover anything about the people who made these charts.

However scarce the information we have obtained so far about the lives and careers of the Greek portolan chartmakers may be, their works remain – testimony to the flourishing of Greek shipping in the sixteenth century and to the active participation of Greek sailors in the hydrographic practices of the Mediterranean. Research has produced rather more than at first seemed likely. For that reason, as noted in the introduction, this book may prove to be the stimulus that was needed for the discovery of more Greek works, by known or unknown chartmakers. Given that our bibliographical research was based almost exclusively on published sources, it may well be that more portolan charts are located in public or private libraries which have never published catalogues of their collections.

Another factor has to be dealt with in identifying the unsigned works: although it is possible to locate the production of the Greek portolan chartmakers who signed their works or the production of works in the Greek language, it is much more difficult to identify as the work of Greeks anonymous works produced in Italian.

Unsigned works by Georgio Sideri or Antonio Millo are comparatively easy to identify because the works of these two chartmakers have certain distinguishing features. In the later and most productive period of his career, Sideri used some standard decorative characteristics in his maps. His colouring and his wind roses are recognisable, as is the way in which he depicts inland mountain ranges. In Sideri's maps, relief takes the form of sharply-marked, continuous mountain ranges lit by the setting sun. The works of Antonio Millo can be recognised by their wind roses and their characteristic circular compasses with orientation signs typical of the central and eastern Mediterranean. Another of the features by which Antonio's maps can be recognised is their titles, which are inscribed in a unique wavy or semicircular band.

The identification of works on the basis of their handwriting is more difficult, since by the fifteenth and sixteenth centuries traditions in this field had stabilised and become standard, making conclusions based on palaeographic evidence unsafe. The instance reviewed below illustrates just how misleading palaeography can be. In his monumental work –one which laid the foundations of the modern approach to the history of chartmaking– Nordenskiöld cites (without adopting) the view of Fischer\textsuperscript{138} that the Greek cartographer Ioannis Xenodocos made four of the nine works comprising the little atlas in the Ambrosian Library, Milan.\textsuperscript{139} The first five maps in the atlas

\textsuperscript{132} Lucca, Biblioteca Statale, MSS. 1898.
\textsuperscript{133} New York, Brooklyn Museum of Art, 36.203 (1-7).
\textsuperscript{134} Venice, Museo Civico Correr, Port. 33.
\textsuperscript{135} Venice, Museo Civico Correr, Port. 8.
\textsuperscript{136} Information received from Corradino Astengo. It was auctioned by the Italian firm Ulrico Hoepli, Monumenti di Cartografia antica manoscritti e a stampa (sec. XV-XVII).
\textsuperscript{137} Athens, Benaki Museum, cat. no. 36215.
\textsuperscript{138} Nordenskiöld, op. cit., p. 588, and Theobald Fischer, Sammlung Mittelalterlicher Welt- und Seekarten, Italienischen Ursprungs..., Verlag von Ferdinand Ongania, Venice 1886, p. 150.
\textsuperscript{139} Milan, Biblioteca Ambrosiana. SP.10.29. The two diagrams with the lighthouse of Genoa and St Mark's Cathedral are also published in Tony Campbell, 'Portolan charts...', op. cit., p. 398, fig. 198.

141. Facsimile delle carte nautiche di Francesco Pizigani dell’anno 1373, illustrate da Teobaldo Fischer..., Ferdinand Ongania, Venice 1881, plate VI.


143. Uzielli and Amat di S. Filippo, op. cit., no. 410.


146. Nordenskiöld, op. cit., p. 66a and plates XXV-XXVI.


148. Bagrow and Skelton, op. cit., for Sideri, see pp. 118 and 238, and for Antonio Millo, see pp. 118, 261. Pelekan, Xenodocos and Vourdopoulos are not mentioned at all.

149. Corradino Astengo, Elenco Preliminare di Carte Atlanti Nautici Manoscritti Eseguiti nell’area Mediterranea nel periodo 1300-1700 e conservati presso enti pubblici, Instituto di Geografia, Genoa University, Genoa 1996.

150. Ibid., ItVe24.

151. Ibid., FrP15, ItVe11, ItVe12, ItVe31, ItVe32, ItVe33, ItVe34, ItVe35, SvS1, UKE1, UKL19. Corradino Astengo was kind enough to inform me of the mistaken attribution to Sideri of the anonymous double atlas in the Stockholm Archives (Sklosteraml I, fol. 182, SvS2 in Elenco). He are by the Venetian hydrographer Francesco Pizigano (1373), while the remainder of the book consists of a portolan chart of the Aegean (VI, 6), two astronomical tables including depictions of the lighthouse of Genoa and St Mark’s cathedral (VI, 7), a table giving the phases of the moon (VI, 8) and a portolan chart of the north Adriatic (VI, 9). Noting the characteristic rounded script of the last four works, Fischer ventured to hypothesise that they might have been created by Xenodocos. Although there is a similarity between the two works, it allows us only to hypothesise that Xenodocos relied partly, in his atlas, on fourteenth-century models. As Nordenskiöld points out, the script is characteristic of the works of this period. A more recent reading of the four supplementary leaves in the Ambrosian Library atlas has shown that the astronomical tables concern the events of 8 August 1381. However, the representation of St Mark’s church in Venice in the supplement to the Pizigano atlas is quite similar to that in the Xenodocos atlas, which shows the church with the new campanile, topped with a pyramid, built after the 1511 earthquake.

The bibliographical inventory proved to be a rather complex undertaking as the earlier bibliographies do not always agree with each other or with their more recent counterparts. It would seem that until the mid-nineteenth century portolan charts were not regarded as monuments to technological and maritime history, and for that reason they did not receive the protection they deserved. That may explain the extreme ‘mobility’ of many manuscript charts, whose moves from collection to collection make it difficult to compile an inventory of them.

Among the most reliable inventories of the nineteenth century, Uzielli and Amat di S. Filippo credit Ioannis Xenodocos only with the atlas now familiar to us, while presenting Sideri and Antonio Millo as more productive: Sideri, according to their reckoning, created seven works and Antonio Millo six.

Nordenskiöld follows Uzielli and Amat di S. Filippo very closely where Xenodocos is concerned. As for Sideri, the Swedish historian credits him with eight works, adding to those already known the atlas of 1552 in the State Archives of Stockholm, which he published in full and in colour. In the case of Antonio Millo, however, things become a little more complicated, as Nordenskiöld attributes to him three of the six works listed by Uzielli and Amat di S. Filippo, plus one additional map.

The task of inventorying the works has not made much progress since that time. In their History of Cartography (1964), Leo Bagrow and R.A. Skelton reiterate more or less the same information. While we still await the Renaissance volumes of the History of Cartography project under way at the University of Chicago, the Institute of Geography of Genoa University published (1996) a preliminary catalogue compiled by Corradino Astengo, Professor in the Institute. It covers the portolan charts of the Mediterranean produced in the sixteenth and seventeenth centuries and kept in public collections. This praiseworthy assembly of the currently-known material has significantly rectified the numbers. Subject to the restrictions of the catalogue, Astengo inventories one work by Xenodocos, eleven by Sideri, five
by Antonio Millo,\textsuperscript{152} one by Vourdopoulos\textsuperscript{153} and two anonymous Greek atlases — a total of nineteen works.

If we add to this corpus the Greek portolan chart recently acquired by the Benaki Museum and those which fall outside the constraints on the Astengo catalogue (such as works in private collections, the isolarii of Antonio Millo, and works of a more topographical nature by Greek practitioners), we arrive at a grand total of 39 works containing more than one hundred maps, and these are described in detail in the appendix to the present book. They include the portolan chart of the Adriatic by Antonio Pelekan, who regardless of his uncertain ethnic origins remains the only hydrographer of the early period to have produced a manuscript portolan chart in a Greek area. We have also included in the corpus some other works whose existence is clearly witnessed but which it has proved impossible to locate, and some unsigned works attributed, with certain reservations, to Greek cartographers.\textsuperscript{155}
A 'mute' portolan chart of the sixteenth century.
SEa CHARTS ARE DIRECTLY BOUND UP with the development of shipping. They first appeared and flourished in the urban centres of seaborne trade, meeting the practical and cognitive needs of a wide range of people whom commerce caused to have contact with distant places. Sea charts, the creations of commercial sea voyages, were addressed first and foremost to those who kept merchant shipping alive and were in turn sustained by it.

The period of interest to us here (1460-1610) seems to have been one of comparative prosperity for Greek merchant shipping in the areas under both Ottoman or 'Latin' rule. That phenomenon, paradoxical at first sight in view of the state of deeper and deeper crisis into which the fragmented and subjugated Greek society was sinking, has not to date been the subject of a composite study.156 However, we do possess enough documentation to give us a picture of the Greeks engaging in comparatively intensive commercial activities at sea in the period in question.

Georgios B. Leon, in his historical review of Greek merchant shipping during the Ottoman period, observes that the Pax Ottomanica which obtained during the period of expansion of the Ottoman Empire (1453-1566) generated conditions favourable to the growth of a merchant class. The political unification of the area, “peace and security in an [area] in which anarchy and constant war had been a scourge for centuries”,157 improved living conditions and revived the exhausted societies of the Empire.

The Latin presence on the southern and western fringes of the Greek East seems to have had a similarly dynamic effect on Greek merchant shipping. Greek sailors had little difficulty in fitting into the well-developed shipping system of the Italian cities, in particular,158 and this brought them into contact with Western maritime know-how.

The growth of shipping, even on a limited scale, was certainly a condition for the introduction of the use of charts in the Greek world. It was not, however, an essential condition. For centuries, the sailors of Byzantium had been travelling the seas of the eastern Mediterranean without using aids of this kind, as can be deduced from the extreme rarity of texts, handbooks or other aids to navigators, which on the everyday utilitarian level were almost non-existent.159 In the Middle Byzantine period, the lack of navigational aids was overcome by the use of pilots familiar with the area, whose presence on ships was recommended. Moreover, the Greek seas are full of islands, and voyages towards empty horizons never last long.

Some of the practical conditions, especially those connected with know-156. G.B. Leon, 'Ελληνική Εμπορική Ναυτιλία (1453-1850)', in Papadopoulos (ed.), Ελληνική Εμπορική Ναυτιλία..., op. cit., pp. 13-48. For the role of merchants and general economic structures in the Ottoman Empire, the basic source is still an article by Halil İnalcık, 'Capital formation in the Ottoman Empire', Journal of Economic History XIX (1969), pp. 97-140.


158. Ibid, pp. 14-20. Also of interest is the study by Krista Panayotopoulou, 'Ελληνες ναυτικοί και πλοιοκτήτες από τα παλαιότερα οικονομικά βιβλία της ελληνικής αδελφότητας Βενετίας (1536-1576', Thisavrismata II (1974) pp. 284-352. During the period in question, this author identified 400 Greek sailors and shipowners who had dealings of some kind with the Greek Fraternity in Venice.

how, were essential. In order to use the portolan chart correctly, the sailor had to possess a knowledge of certain technical questions of greater or lesser complexity as well as his empirical skills. He had to be able to use a compass and reduce things to scale, and he needed to calculate the distance he had sailed and geographical latitude and longitude. The latter questions were the most complicated, because they necessitated the use of special tables and the sailor would have to procure or make an astrolabe. As early as 1542, \(^{160}\) Nikolaos Sophianos had published, in vernacular Greek, a brief handbook on the subject entitled *Treatise on the construction and use of the armillary astrolabe*. \(^{162}\) In Sophianos' letter of dedication to Pope Paul III, the author describes the instrument as "extremely useful in measuring time by night and by day and in calculating the longitude and latitude of places". \(^{163}\)

The astrolabe, a very ancient instrument invented in the second century BC, was indeed useful in calculating the time, as Sophianos tells us, and in measuring geographical longitude and latitude. It was widely used by Greek and Arab astronomers, \(^{164}\) and it operated by measuring the height of the stars above the line of the horizon. The maritime (armillary or ring-mounted) astrolabe was a refinement introduced by the ocean-voyaging Portuguese in the late fifteenth century. It consisted of a wooden disc hanging from a ring. Around the perimeter of the disc were marked the subdivisions of the circle, and on it was mounted a sight revolving around a central axis. Using the sight, the navigator isolated the sun or a star and the marking on the astrolabe disc would correspond to the position of the heavenly body.

Once what had formerly been an astronomical instrument for use on land had been converted into a ship's instrument, it could be used under conditions at sea and was a rough, though valuable, way of calculating the ship's position. Even so, down to the late seventeenth century the sailors of the Mediterranean felt themselves under no compulsion to know their co-ordinates in waters with which they were perfectly familiar. \(^{165}\) Sophianos' text, written in the vernacular Greek that sailors of the time would be able to understand, is an interesting attempt to modernise the Greek maritime arts and should probably be seen in conjunction with the growth of Greek shipping and its expansion in waters beyond the Mediterranean. The astrolabe, viewed with contempt in the familiar Mediterranean, would have proved irreplaceable once the ship was out in the open sea. \(^{166}\)

We have no evidence to support the hypothesis that Greek sailors used astrolabes. However, the extreme rarity of Sophianos' leaflet may tell us something about the extent to which it was read. As for the use of portolan charts in the Greek world, very little documentation has survived; what we do have, however, is interesting and it confirms the hypothesis that the Greek sailors of the sixteenth century used manuscript portolan charts on their voyages.

The first piece of evidence is a small Italian atlas dating from around 1550 and now in the British Museum. \(^{167}\) It consists of three maps (Britain and the coasts of Western Europe, the central and western parts of the Mediterranean, and the east Mediterranean with the Black Sea) and its cover bears
an illustration of the Virgin and Child and a note stating that it belonged to
Nikolaos Kanakis, a pilot from Patmos:

E chesto libro sta di Nicolo Canachi dell' Isola di Sa.
Giovani de Pattino, pillotto di mare /
E touton ta chartey enai tou Nikoloi
Kanaki tou Patioi to opou ste i sti na Legyno

Further evidence comes from the existence of Italian portolan charts and
other navigational aids with emendations, additions or notes in Greek. Works
of this kind are very rare, but they demonstrate that the aids in question
were used by Greeks.168

Allusions to the use of portolan charts by Greek sailors are to be found in
other contemporary sources. In his edition of the Greek narrative portolans,
Armand Delatte publishes a short note which he found bound with a
manuscript Greek portolan of the late sixteenth century. It bears the heading
that it is intended “for those who wish to become perfect sailors”169 and it
describes the apprenticeship of a seaman, all the way from learning how to
row and tie knots to the complex knowledge required to navigate a ship. On
the question of navigation, the note says that:

...before long he will begin to learn the winds and the weather and how
to steer, and then he will find on the map [charti] which they call the [ana-
βιγάρι], which is a sailing instrument [ναντολογικόν], how to arise and go
from one port to another and from place to place, and if the wind and bad
weather are against him and turn, so that he knows where he is and where
to go to save himself from the perils of the sea...

As we have seen, the “charti” used by the pilot Nikolaos Kanakis of
Patmos was an Italian atlas with three portolan charts of 1550. The anony-
mous author of the late sixteenth-century note gives us the specific name by
which the portolan chart was known in the vernacular Greek maritime ter-
minology of the period: it was the χαρτί αναβιγάρι, a Greek corruption of
the carta del navigar. The note describes in brief the usefulness of the porto-
lan chart: it places emphasis on the directions of the wind shown on the map,
and the fact that it enabled the sailor to correct errors in his course or save
himself from “the perils of the sea”. It is important, too, in its expression of
a conviction that navigational aids are essential for safe sea voyages.

No other references to the dissemination and use of portolan charts in
Greece have as yet come to light. Research into the published notarial re-
cords has borne no fruit of that kind. The few surviving wills of sailors and
ship-owners make no reference to ships or their equipment, which means
that the Greek ship-owners passed on their vessels inter vivos, and possibly
outside Greece.

Artistic and technological skills were needed also to make a portolan chart.
The technique of copying a portolan chart, as described in a previous section,
is simple enough to enable such tasks to have been carried out by anyone
with adequate skills in drawing. It is therefore not hard to hypothesise that
the Greek portolan charts—or at least those which use Greek toponymy—

168. Apart from the isolario of
Bartolomeo dalli Sonetti to which we
have already referred (see note 24), I am
informed by Corradino Astengo that
there are additions in Greek to the plani-
sphere of the sixteenth-century Italian
atlas attributed to Maggiolo Vesconte;
British Library, Eg. 2803.
169. Delatte, op. cit., pp. XIII-XIV.
The Intercession of Ioannis Raphos and a votive scene, seventeenth or early eighteenth century.

were made in Greece. This reasonable hypothesis is supported by a rare document directly connected with the questions investigated by this book: to the lower part of a late seventeenth-century or early eighteenth-century icon of Our Lady in the Byzantine Museum of Athens, the painter has added a band illustrating the activities of the person who dedicated the icon. Depicted at prayer, this was a sailor called Ioannis Raphos from Seriphos, a ship-owner and possibly a chartmaker, who is surrounded by the tools of his trade: a parchment on which he has already drawn the rhumb lines and the wind rose, a pair of compasses, and another instrument which might be a kind of small astrolabe.

The ‘paternity’ of the manuscript portolan charts is a matter of some complexity. Since no documentation has yet come to light of the existence of cartography workshops before the early sixteenth century or of the distri-
bution of the various tasks required by the production of a portolan chart, we can go no further than to make hypotheses. In all probability, the production of charts will have followed the stages in the production of manuscripts, although we cannot be sure that there were hydrographic workshops operating along the lines of the scriptoria. However, the differences to be observed on occasion among works signed by the same chartmaker allow us to hypothesise that—as a possibility, and in certain circumstances—maps may have been ornamented by a different hand from that which carried out the cartographic work per se, the designing of the rhumb lines and the coasts. The inscribing of the place-names may have been a separate, third, phase in production.

The fact that a significant proportion of the works is unsigned and, a fortiori, the existence of portolans which are complete but 'mute'—entirely lacking in place-names—permits us to hypothesise that, after a certain date at least, the manufacturing of such works became systematic and detached from the commissions of clients. There were, of course, the sumptuous, elaborate and precious portolans and altases, highly artistic in character,  which were made to special orders from rulers or the important merchants or officials of the time or were commissioned with such collections as their destination. But we cannot rule out the possibility that there may have been a stock of the kind of maps used by sailors from which ready-made finished charts could be bought, and, indeed, there is some evidence pointing in this direction.

After the sixteenth century, the production of manuscript portolan charts must have been largely standardised. In 1508, the first hydrographic office was set up at the Casa dela Contratación in Seville: its job was to control the manufacturing of portolans and be responsible for the production of a standard model, the padrón general or padrón real. A similar system was applied in neighbouring Portugal. As we have already seen, at quite an early date all Spanish ships were obliged to equip themselves with such maps, and it was the custom for Ottoman sailors to make a presentation of a portolan chart when they were promoted to higher ranks in the navy.

In at least some cases, the strictly utilitarian parts of the map, such as the place-names or the marking of rocks and reefs, must have been supplemented in collaboration with the sailor who was to purchase the map. This hypothesis is strengthened by the presence on quite a number of signed charts of the date: not just the year, but also the month and the day. Although in the scribal tradition and in the icon-painting of the date it was common practice to insert the date of completion of the work, in the case of portolans it may not have been inscribed by the practitioners, who would have spent weeks or even months on completing and decorating them. It seems more likely that the date was inscribed by a sailor who might have taken a few hours, or at the most a few days, to record his own valuable empirical knowledge on the ready-made cartographic background or to dictate it to a scribe. This possibility cannot be precluded. In the case of Sideri, a superficial palaeographic examination allows us to hypothesise that in at least one work different hands were responsible for the place-names and the 'signature'.


174. See, for example, S. Soucek, 'The Ali Macar Reis atlas and the Deniz Kiti: their place in the genre of portolan charts and altases', Imago Mundi 25 (1971), pp. 17-27. The author believes that the portolan atlas of Macar Reis (1567) was made in Venice and shipped, complete but 'mute', to Constantinople, where the place-names were added in Turkish.


177. See Ali Macar Reis atlas and the Deniz Kiti: their place in the genre of portolan charts and altases'.
11 G. Sideri, detail from the altas of 1563.
No documentation to support these views has survived. However, the argument that after the sixteenth century at least such manuscript portolan charts as were destined for use by sailors had entered a stage of standardised production and that the work was often signed by the sailor who owned it (who himself, at the end of the chain of production, entered information about coastlines), is reinforced by a number of pieces of evidence. Apart from the positive evidence to which we have already referred, there is also negative evidence.

The relative rarity of corrections and additions to the surviving portolans strengthens our hypothesis: if a sailor obtained a chart which was already complete, he would surely, even if only sporadically, have had to correct the depth figures, which were subject to fluctuation. This would apply to the majority of the portolan charts which were used on board ship for any length of time.  

A second piece of evidence is provided by the observation that the names of the signatories of the portolan charts are not mentioned on the surviving lists of members of the guilds of craftsmen and artists. Recent archival research into the production of manuscript portolan charts in Venice during the fourteenth and fifteenth centuries has produced interesting information about the professional activities of these chartmakers. Seventeen names of Venetian chartmakers in the fourteenth and fifteenth centuries have come down to us. Of the seventeen, the occupations of six are unknown; one was a monk, a second was an officer, a third may have been a physician, and the other eight were all sailors – the majority of them captains. The same is true of the Ottoman chartmakers, most of whom were naval officials (Reis).

Of the chartmakers of Greek origin, three of the five whose names we know –Antonio Pelekan, Giorgio Sideri-Callapoda and Antonio Millo– are referred to as sailors. We do not know the occupations of the other two, one of whom was a minor church official who would have had to engage in some other occupation. At that time, cartographic skills may have been part of the expected ‘job profile’ of sailors, who would naturally have an empirical knowledge of the sea-lanes and the appearance of the coastline. If those who made the charts and those who used them were the same individuals, many of the problems facing researchers, especially in the obscure period when the genre first appeared, would be solved along with the questions surrounding the anonymity of most of the charts produced. However, the high artistic quality of many works, the proven existence of cartographers who were not sailors, and, above all, the considerable periods of time required to complete the works (especially the altases), make this convenient solution less likely and point us in the direction of some form of collaboration between the –often anonymous– artist/cartographer and the named sailor.  

182. Apart from the instances noted here, some other works with emendations or updating have survived. See Almagià, op. cit., vol. 1, pp. 43-44. Alberto Magnaghi believes that the sailors must have made their corrections, calculations and comments on the portolan charts in pencil, later erasing them carefully so as not to damage such precious aids to navigation (see Alberto Magnaghi, ‘Nautiche Carte’, Enciclopedia Italiana di Scienze, Lettere ed Arti, vol. 24, pp. 323ff). The fact that many portolan charts bear perforations caused by compasses does not necessarily mean that they were used on board ship and may be connected with the way in which they were designed. See M. Cortès, Arte di Navigation, ms 1551. fol. Lvi v. (note 185). This reference is cited by Tony Campbell (op. cit., p. 391, note 187), who discusses the question of the absence of portolans with emendations or additions in the light of whether or not the surviving works were used at sea (op. cit., pp. 440-441).


185. Ibid., p. 68: in other words, seafars represented a percentage of 47% of the grand total of chartmakers and 72% of the chartmakers of known professional occupation.
Wind roses from Greek chartmakers.
THE ART OF NAVIGATION
AND THE CULTURE OF CURIOUSITY

A GOOD SAILOR has his own body to tell him precisely where his ship is located. He knows how to read the colour of the sea and make deductions from the smell of the wind. He knows the meaning of every cloud, each of the stars, all the plants and birds of the sea. He recognises the shape of the coastline just as a city-dweller knows the tall buildings and bell-towers that are the landmarks on his everyday horizon.

In view of that, the question arises of how, and by whom, these charts were used. Although at first glance that appears to be a naive question, it may shed light on some aspects of reality. A sea chart would certainly be useful to any sailor when a storm has blown his sailing-ship off course, out of familiar waters, or to sailors travelling for the first time in unknown seas; the officers of warships in times of peace would need charts, too, and so would apprentices learning their craft.

Sea charts were also used by people who were not sailors. As we have already seen, they met the varied needs of a complex world revolving around sea voyages: of bankers, merchants and investors, state functionaries and the employees of the larger, 'international' commercial firms, colonial officials. Side by side with these figures was a wider public which wished to imitate or resemble them, or which was simply interested in exotic geographical information and armchair travelling. In the pages which follow, using the scanty information we can deduce from the material, we shall try to build up a picture of those to whom the Greek portolan charts were addressed.

The manuscript hydrographic charts and atlases made by Greeks in the sixteenth and early seventeenth centuries have at first glance one unusual feature: although the chartmakers were of Greek origin, the language of the charts is usually Italian. This does not mean that the works were destined exclusively for Italian-speaking recipients. The Greeks of Cyprus, Crete, some of the coastal towns of the Peloponnese, the islands of the Ionian group and quite a number of the Aegean islands lived under Italian (usually Venetian) rule, and as can be seen from the archival and notarial documents of the period, those who were literate were quite familiar with the language of administration. Furthermore, some of the works in question were destined for Italian users, and this applies in particular to those dedicated to various Venetian officials.

There were also charts in Greek, however. They represent a small proportion of the total production of charts: of the thirty-nine works by Greek chartmakers identified to date, only seven - around twenty per cent of the
total— are in Greek. Signed works in Greek are even more rare. Only Vourdopoulos signed his two portolan charts, while the other Greek works—three charts and two atlases— are by unknown hands. The characteristic anonymity of the Greek-language portolan charts is accentuated by the fact that the only unsigned work that can safely be attributed to Sideri is also the only known work by the Cretan cartographer in Greek.186

The works of the Greek chartmakers are representative of the Mediterranean hydrography of the sixteenth century, and for that reason their styles, modes of presentation and hydrographic genres vary. The two main currents in Mediterranean hydrographic production, those known conventionally as the 'Italian' and 'Catalan' styles187—as they took shape down to the sixteenth century— are equally represented. However, the tendency to repeat Catalan models does seem to have been more marked, and we shall be dealing with this point later.

The manuscript portolan charts of the Greeks are sometimes plain, after the manner of the Italian craftsmen in the field, and sometimes more elaborately ornamented in the Catalan style. Some are independent works on a single sheet of parchment or a number of leaves bound together to form a simple atlas for use at sea or as a source of information; others are made into elaborately ornamented atlases destined for demanding collectors. The other genres of sixteenth-century marine cartography, too, are represented in the cartographic production dealt with here. Navigational manuals, with or without illustrations, and isolarii, simpler in their concept and structure, were made by the Greek hydrographers of the period, producing, as it were, samples of their skills.

There is also considerable variety in the geographical scope of the Greek hydrographic works. Most of the production covers the Mediterranean and consists of traditional portolan charts and atlases dealing with that sea and the areas around it. Next come charts of the coastline of Europe, and the smallest group consists of maps of the Western hemisphere and world portolan charts and atlases.

We should note at this point the absence of separate portolan charts confined exclusively to areas outside the Mediterranean. Even in the case of atlases, the material is unevenly divided and most emphasis is placed on the Mediterranean and its coastline.

Another characteristic of a considerable proportion of the material under consideration here, and in particular of the work of Sideri and Antonio Millo, the most prolific of the Greek chartmakers, is that they do not confine themselves to drawing manuscript sea charts. On occasion, they also made works which fall within both the hydrographic approach and that of the production of manuscript topographical maps.

The Catalan models by which the Greek chartmakers were often influenced undoubtedly had an impact on stimulating this interest in depicting the hinterland. However, the decorative character of this treatment of areas lying behind the coast is manifest and the pictorial elements refer more to political, economic or ethnographic states than to the purely geographical situation.

By way of contrast, in the maps of various islands by Sideri, in the two

186. The unsigned and undated Greek portolan chart in the Correr Museum (ca. 1560, Port. 33).
187. For the impact of the two styles on the Greek production, see Mollat du Jourdin-Monique de la Roncière et al., Les Portulans..., op. cit., p. 25.
maps of 1540 and 1551, and in the maps of land areas interpolated into Antonio's atlases we can detect a predominant wish to convey a complete, documented and detailed picture of the mainland. These maps differ from the aesthetic and ornamental mapping of the hinterland which was the objective of the 'Catalans' and more closely resemble the techniques by which the topographical maps of the period were made. In these maps, too, the way in which coastal and maritime space is handled lies closer to the art of the portolan chart.

Here we should be looking rather for influences from the Venetian production of manuscript atlases and in particular from the extensive work of Battista Agnese, the most prolific maker of manuscript atlases in his own and, quite possibly, any other period. Considerable similarities can be observed between the eighty or so atlases which came from his workshop and the corresponding atlases of Sideri, especially, but also of Antonio Millo. The introductory oval or sometimes heart-shaped cosmographic maps, with the heads of personified winds blowing from outside and around the map, are common to both and can be traced back to Ptolemaic cartography. Also shared is the integration into the corpus of sea charts of a number of topographical maps, which, as we have seen, retain elements from the art of the portolan chart. As Henry Wagner observes in the period immediately after 1545 Agnese began to add geographical maps of Scandinavia and Palestine to his atlases, further supplementing them later with maps of Spain, Russia and Tartary, of the Po valley, of Crete, of Cyprus and of Sicily. The same components are also to be seen in the atlases of Sideri and Antonio Millo. This phenomenon, indicative of a geographical production which was adopting more of a 'popularising' approach and aimed at a wider public, should be interpreted in parallel with the publication of Venetian composite atlases at the same period. Our cartographers can be assumed to have been influenced by those works and to have tried to compete with them.

Still greater care was taken over the depiction of the geographical physiognomy of the hinterland in the maps of islands so characteristic of Sideri's work and even in portolan charts of wider areas or world maps and atlases. Antonio Millo produced elaborate atlases with many leaves which are indicative of the changes coming about in cartography as the sixteenth century drew to its close.

Of the Greek cartographers, Antonio responded most effectively to the scientific developments in cartography in his day. A critical mass of new facts had been assembled, and it dictated the revisions and rearrangements to be made. Throughout the century, Ptolemy's Geography —now in printed form— was supplemented with new maps, many of them showing completely new areas. In mid-century, Sebastian Münster of Basle had embarked on the renewal of the old cosmography, working on a considerable volume of positive data provided by a wide network of informants. Regional topography had produced maps notable for their accuracy and detail, and composite atlases and 'island books' were growing in number and heralding the unification of cartography that printed universal atlases would bring. When Antonio Millo was drawing his elaborate atlases, Ortelius was integrating all the


192. See Numa Broc, La géographie de la Renaissance, Paris 1986, pp. 61-120.
material then available before publishing the first printed universal atlas, the *Theatrum Orbis Terrarum*. Mercator, on his part, was to publish the first original world atlas just at the time when we lose track of Antonio: his *Atlas sive cosmographicae meditationes de fabrica mundi et fabricati figura* of 1593 established both a new cartographic perception and the title for works of that nature.

The atlases of Antonio Millo are interesting hybrids, combining theoretical texts on navigation with hydrographic and topographical maps and with simple narrative descriptions, half-maritime and half-cosmographical. The elaborate world atlas of 1586 sets out as an *arte de navigar*, providing instructions as to how to calculate one’s position and information about the phases of the moon among other matters connected with navigation. In this introductory section, Antonio provides an interesting illustration of the ocean (*Mare Occeano*) and three sophisticated astronomical tables. Next come two sea charts of the New World, with lengthy texts about Cuba, ‘Hispaniola’, Jamaica and Peru. From this point on, the atlas is a mixture of maps and narrative descriptions devoted in equal proportions to coastal and mainland areas and including land-locked countries such as Switzerland.

The isolarlo was a distinct geographical genre introduced around 1420 by the Florentine scholar Cristoforo Buondelmonti. At first, works of this kind consisted solely of maps and descriptions of the Greek islands and were scholarly and ‘cosmographical’ in character in the sense that the information they provided was primarily encyclopaedic, historical and mythological. Manuscript isolarli proliferated rapidly during the fifteenth century, evolving notably as they did so. In around 1490, Henricus Martellus Germanus produced the first isolarlo of the Mediterranean, the Anonymous of 1500 composed the first world isolarlo, and in 1528 Bordone brought out the first printed universal cosmographical isolarlo.

While this process was going ahead, a more practical and utilitarian version of the isolarlo was taking shape. After the publication of the *Isolario di Bartolomeo dalli Sonetti* in around 1485, nautical isolarli became aids to navigation. The most significant landmarks in this separate tradition— to which the isolarli of Antonio Millo belong— were the *Kitâb-i Bahriyye* of the Ottoman naval cartographer Piri Reis (1520-1526) and the *Islario general de todas las islas del mundo...* of Alonso de Santa Cruz (1560). If Piri Reis, in his work, took the detailed cartography of the Mediterranean coastline and islands as far as was possible at the time, the Spanish cosmographer and sailor Alonso de Santa Cruz succeeded in combining narrative description and maps...
13 Antonio Millo, the way out into the Atlantic Ocean, illustration on the first leaf of the 1586 atlas.
to produce a concept which, although not the first world atlas, is certainly very close to it.  

This is the maritime tradition to which the ‘island books’ of Antonio Millo belong. The main corpus of the isolario remains the old and familiar core of the Mediterranean, which Antonio often preceded with descriptions (though not maps) of the islands of the Indian Ocean and the Caribbean. The isolario per se sometimes begins with a treatise on navigation containing the data which a sailor would need to calculate the position of his ship, the distance he had sailed, or where he was on the map, while in other cases it includes a brief narrative portolan giving the distances between various positions and islands in the Mediterranean. The works are written in a vigorous Venetian dialect and are clearly less sophisticated works than the portolan charts. They are drawn (and written) on paper and their appearance is plain, with rudimentary colouring (red ink is sometimes used, and gilt decoration in rarer cases).

Nine, or possibly ten, of these manuscript isolani by Antonio Millo have so far come to light, and more may have survived. In essence, they are variations on the same theme – though made by the cartographer himself, not by copyists. They usually consist of about 75 maps and descriptions of Mediterranean islands. The handbooks of navigation which often accompany Antonio’s isolarii (and the world atlas of 1586) were aids to sailors, and they are of great interest because they provide us with a summary view of the average technical knowledge possessed by sailors of the late sixteenth century. These illustrated manuals often contain instructions for calculating the time and the distance covered, on how to use the sea chart and the astrolabe, and on how to calculate geographical latitude and longitude and magnetic declination. What is important to note here, however, is the comparative uniformity of the work of Antonio Millo. Both in his atlases and in his less sophisticated isolarii, Antonio sets about his cartographic work with care.

If Antonio’s work can be said to possess a degree of uniformity, the same is not true of the work of Sideri. He put his signature to two works which are so different, and different in so many ways, from the rest of his oeuvre that one might assume them to have been drawn by another craftsman. The portolans in question are those of Europe and North Africa of 1541 and of the Western hemisphere of 1550.

These two works do indeed stand out. The quality of their information and of their technical execution make them among the finest of the production we are examining here. Ratti expressed the view that the 1541 portolan chart was based on (or was copied from) a lost geographical map by Fra Mauro, handed down by Andrea Bianco. This may well be the case. What seems sure, however, is that the map in question was the basis of Sideri’s next work, the portolan of the Western hemisphere of 1550, as can be seen from a mere juxtaposition of the two. Sideri’s oeuvre also contains a third work which differs considerably from the main corpus of his production: the 1537 atlas in the Library of St Mark, the first work dated and signed by him, which A. and P. Ratti dismiss with the comment that Sideri had merely signed the work of another cartographer.
These observations raise once more the question of the models for the portolan charts we are describing. As we have seen, portolan charts are a homogeneous corpus which draws on the accumulated empirical knowledge of sailors. The cartographic background is often shared, especially when the Mediterranean and the seas adjacent to it are being depicted. Diversification enters, and the search for models can begin, when the charts deal with the North Sea, southern Africa and, above all, the New World. As we have also seen, there was a very widespread tradition of copying portolans, and it would seem most likely that Sideri copied various works until his own preferences had crystallised. In the period after 1552, we can observe a high degree of aesthetic uniformity in his work.

However much it may have relied in general on other works, one part of Sideri’s production is comparatively original. These are the maps of Crete which he drew either separately or as part of atlases. Even here, however, Sideri relies on earlier cartographic work, such as the map added to the expanded versions of Buondelmonti’s manuscript isolario, and on Venetian material, which he enhanced, corrected and updated. The maps of other Greek areas—such as Rhodes or Cyprus—in Sideri’s atlases are less original, and the borrowings from Agnese and the other Italian cartographers are obvious. Mention should be made at this point of the fact that with the exception of one maritime and topographical map of Crete, no separate works devoted exclusively to Greek subjects have survived.

The identification of special features in the way Greek areas are treated in the general production of the Renaissance chartmakers who were of Greek origin is undoubtedly a challenging task. For example, the geographical terms selected for inclusion in the Greek hinterland would be a reliable indicator of the consciousness of the cartographers in question. The term Grecia, when not completely absent, is applied only to Thrace or to what is now called Central Greece; the term Albania is more frequently used for the northern parts of Greece (and sometimes for the entire Greek peninsula), although terms such as Tesalia, Macedonia, etc. are also found.

Whether the Greek lands are shown on portolans of the Mediterranean or in atlases, their depiction is in line with the stereotypes of the fifteenth and sixteenth century portolans, without notable deviations or improvements. A comparison between the toponymy used for the Greek areas by the Italian portolans and that of the charts of Xenodocos, Sideri, Antonio Millo, Vourdopoulos and the anonymous cartographers of the three Greek portolans continues to be indicative of the shared nautical tradition of the Mediterranean in the sixteenth century.

There are, however, some differences in the marking of the Greek areas by comparison with the portolan charts produced elsewhere in the Mediterranean. The differences are very slight on the portolan charts which cover large areas, and more marked on the specialised charts of parts of the Aegean. Sideri, for instance, marks and depicts the Monastery of St Catherine on Mt Sinai in one of his works, while Vourdopoulos includes a view of Thessaloniki surrounded by its walls and Antonio puts Milos, his home island, first in his description of the Aegean or signs and dates the leaf depicting Greece in an atlas.

205. For the outline of the island, Sideri is using the model of an unsigned printed Italian map of 1551. See also Antonio Ratti, ‘Le carte geografiche di Candia del Museo Civico Correr’, Bollettino dei Musei Civici Veneziani 24 (1978), pp. 90-91.

206. Bibliothèque Nationale de France, Cartes et Plans, Rés. Ge D. 4497. However, even chartmakers who were not Greeks emphasised the Monastery of St Catherine on Mt Sinai, perhaps thinking of it as the last bastion of Christianity in the Islamic world. See, for example, the elegant and ‘classic’ portolan chart of Angelo Freducci, dating from 1547, in the Bibliothèque Royale Albert I in Brussels (II 292CP), which depicts only Venice, Cairo (“Babylonia”) and the Mt Sinai Monastery.

207. Bibliothèque Nationale de France, Ms Suppl. Gr. 1094.
The work of the Greek cartographers remains dependent to the extent to which this was necessitated by the homogeneity of the Mediterranean production of portolan charts as a whole. In other words, its geographical value is proportional to the success with which the cartographers selected their sources and models from the material available at the time.

In areas outside the Mediterranean, the handling of the British Isles and Scandinavia remains characteristic. In the former case, the physical distinction between England and Scotland is of particular interest. Sideri, in harmony with the dominant trend of his times, usually shows the two countries as separate islands. As M.C. Andrews observes, although down to the end of the fifteenth century there were various ways of marking the England-Scotland border, the portolan charts do not usually depict the countries as separate. That treatment of the area appears towards the close of the fifteenth century, becoming more widespread in the sixteenth, and as Andrews argues, was probably the result of careless copying of older maps and does not mean that Scotland was believed at the time to be an island.

Sideri’s map of Iceland in the 1563 atlas of the Library of St Mark relies on the same model as was used by the unsigned engraved maps of the island to be found in composite isolarli such as that of Camocio. The model common to all these cartographic depictions of Iceland is the large and much more informative map of the island drawn by Olao Magno (1490-1557) and published in Venice in 1539. A simpler and smaller version of this map had been published in Paris by G. Gourmont in 1548. Lafreri, too, published a map of Iceland in Rome in 1572. The maps of Lafreri and Camocio are almost identical to that of Sideri.

Scandinavia and the Baltic were even less well-known. Indeed, the Baltic is often completely missing from the portolan charts produced in the Mediterranean workshops of the sixteenth century, while Scandinavia, when not depicted in an entirely imaginary manner, is shown as joined to Russia.

The main body of the African continent—that part of it not washed by the Mediterranean—began to take shape on the charts produced by the cartographers of Majorca or the Catalan workshops in the early fifteenth century. The rounding of the Cape of Good Hope by Bartolomeu Dias and the voyages of Vasco da Gama led gradually to the revision of the Ptolemaic geographical rendering of Africa. The east coast, however, remained largely unknown and the depiction of it is more distorted than that of the rest of the continent. Among the various works produced by Greeks, that which is of primary interest for the cartography of the African continent is the portolan chart by Sideri of 1550, based on Catalan models of the period, such as those of Juan de la Cosa, Diego Ribeiro, or Homem. Of interest also, but to a lesser extent, are the maps of Africa included in the atlases of Antonio Millo. One of the characteristics of the mapping of Africa is the colouring red of the Red Sea. Under the influence of the great Jewish cartographers of Majorca, some of the Greek chartmakers even go so far as to copy the white line across the northern part of the Red Sea where Moses is supposed to have crossed it.

The cartographical rendering of America on the universal portolans and
atlases of Sideri and Antonio Millo is representative of the hesitancy and inconsistency of the sixteenth century where the issues raised by the discovery of the new continent were concerned. The controversy was heated, and its echoes continued to reverberate through geographical debates into the eighteenth century. The first views expressed were as follows: one school of thought believed that the new-found island of Hispaniola was the legendary Antilla, others— including Columbus— maintained that it was the east coast of Asia, a third group identified it as a far-flung member of the Canaries group, and there were also those who saw it as a new continent.

This question, too, was solved gradually by empirical exploration. The first theory to be disproved was that America was joined to (unknown) Australia; later it became clear that it was not joined to Africa, either. In 1514, the Portuguese reached China by sea, and Magellan set out to circumnavigate Africa in 1519. The question of the hypothetical link between America and Asia was to concern cosmographers and cartographers throughout the sixteenth century.

Antonio Millo was more fortunate than Sideri where the selection of models was concerned. He was further assisted by the fact that he worked in the late sixteenth century, by which time answers had emerged to many of the problems which Sideri failed to resolve. In mapping the Americas, Antonio succeeds in depicting the northern part of the continent more accurately, though he often shies away from committing himself as to whether the New World and the Old World were joined. He is also more exact in depicting the British Isles and the northern parts of Europe.

The point which has to be made about the models and influences present throughout the work of Antonio—in his portolan charts, his atlases and his isolarii—is the obvious effect on him of printed cartography. The influence of the printed maps published in Italian cities is manifest and lasting in his work; of particular importance are the Venetian publishers, such as Gastaldi, Bertelli and Camocio. The work of the Flemish publishers also influenced him, but in a rather more indirect manner.

The manuscript portolan charts we are examining here have an aesthetic side to add to their technological character. Without wishing here to approach these artefacts of marine technology as art works, it would be an oversight not to mention this facet of them.

Ioanis Xenodocos of Corfu certainly produced beautiful work. His aesthetics is balanced and measured, his ornamentation is delicate and free of excess, and his colours are discreet and harmonious. However, there can be little doubt that Antonio Millo is the Greek Renaissance hydrographer who possessed the highest artistic skill in the overall composition—in terms of colour as well as more generally of decoration—of his works. They are examples of the high Venetian aesthetics to be found in quite a number of similar sixteenth-century works. Antonio's small output of portolans, and in particular his large atlases, were designed for the collections of princes.

Although Antonio's atlases were intended for princes or high officials, his simpler manuscript isolarii were certainly made for more humble owners.

215. See Randles, De la Terre plate..., op. cit., and particularly Chapter III (pp. 69-86), dealing with the incorporation of the new facts produced by the discoveries of Columbus into the system of traditional knowledge of the time.

216. See Fredi Chiapelli (ed.), First Images of America (two vols.), University of California, Los Angeles 1975.63
One of them—the first in the series—bears a dedication to Signor Sforza Palavicino Marchese de Corte Magiore ... di Venetia. In a private collection, this work seems to have been prepared with greater care than was applied to the other, later, isolarii by the same cartographer. According to the description, it has gilt capitals and ornamentation in red. The more inconsistent Sideri, on his part, dedicated some of his works—mostly atlases but also occasional portolans of more careful style and painstaking execution—to Venetian patricians and nobles.

As we have already seen, another and parallel use of portolan charts began at an early date and, over time, gained ground. This was the use of manuscript portolan charts and atlases on land, by people who, though not sailors themselves, were nonetheless involved with sea voyages and the seaways. Merchants, investors, administrative officials, colonial employees, book-lovers and the merely curious: all these people constituted an ever-growing public which sought information, descriptions and documentation of the most far-flung and exotic parts of the world. It was to people such as these that the portolan charts and atlases of Sideri and Antonio Millo, with their wealth of facts about the hinterland, their informative ‘ornamentation’, and their luxury of materials and manufacture, were intended.

The manuscript portolan charts and atlases of the sixteenth century occupy an essential position in the urban cultivation of curiosity which was one of the central cultural axes of the period. They provided information not only about the spectacular expansion in the geographical horizon being caused by successive discoveries of new routes and new lands, but also a remarkable volume of purely encyclopaedic facts. Their pictures and place-names, their comments and ornamentation, supplied the inquisitive user with a wide range of particulars about life at the four corners of the globe: views of cities, information about the houses in which people lived and the way they dressed, about their customs, about the flora and fauna of the various countries, about types of sailing-craft and about the stranger aspects of nature. These portolan charts and atlases are summary illustrated encyclopaedias, brief ‘theatres’ of the world with information of a geographical, historical and political nature. They are not composed in a static, integrated manner, as was the case with the textual works and the cosmographies, proposing instead a partial and continuous process of discovery, the open horizon and unexplored areas which, little by little, were being conquered, the slow piecing together and re-arrangement of geographical knowledge by way of numerous and successive voyages, discoveries and technological applications.

The portolan charts and, in particular, the atlases which were so abundantly present during the sixteenth and seventeenth centuries were addressed precisely to the demand created by the insatiable thirst for encyclopaedic knowledge of the time. With the luxury of their materials and the artistry put into their production, they became precious artefacts worthy of a place next to the natural curiosities collected by those of an inquiring spirit—public figures, patrons of the art and ordinary citizens—after the late fifteenth century. As Renaissance thought proceeded along various paths towards the over-
all reconstitution of knowledge, the collections of books and curiosities tended to create familiar microcosms, small, symbolic and structured entities in the image of the natural world. The collections of books and other items whose formation was encouraged by the humanist consciousness, known as ‘theatres of the memory’ and later ‘theatres of the world’, made systematic and secular the medieval summae or ecclesiastical collections of sacred relics. Maps and geographical or cosmographical material would certainly have been of interest to the observant explorers of knowledge. The mere fact that the first systematic collection of maps, the atlas of Ortelius, was published under a title borrowed from the ‘cabinets of curiosities’ of the time.

221. Ibid, pp. 122-130.
222. See Nils Büttner, ‘Abraham Ortelius comme collectionneur’, *Abraham Ortelius... op. cit.*, pp. 169-180. The author quotes from the interesting description of Ortelius’ Museum given by F. Sweerts, his first biographer. It contained “paintings, statues, Greek and Roman coins in gold, silver, lead or copper, shells from the Indies and the Antipodes, marble items of all colours, and turtle-shells large enough for ten people to sit round them and drink and as small as thimbles. His library, one of the most extensive, contained books on all subjects and so his house could be described as a laboratory for all the sciences, to which those interested in such matters made their way from all over the world, just as in former times they went to the Lyceum of the Peripatetic Philosophers or Plato’s Academy” (see also F. Sweerts, *Insignium huius aevi poetarum lacrymae in obitum Cl. V. Abrahami Ortelii Antwerpiani*, Antwerp 1601, f. 36r).

223. The study by Julius von Schlosser, *Die Kunst- und Wunderkammern der Spätrenaissance*, Leipzig 1908, remains a classic in its definition of the relationship between encyclopaedic humanism and the private collections.

224. For example, the otherwise excellent studies by Adalgisa Lugli, *op. cit.*, and Horst Bredekamp, *Die Geschichte der Kunstkirchen und die Zukunft der Kunstgeschichte*, Berlin 1993, and the outstanding collection of studies by Krysztof Pomian to which we have already referred.


227. Numerous paintings took as their theme these cabinets or collections of rare and wonderful objects. Suffice it here to mention only two, which include depictions of maps, atlases or globes: Frans Francken the Younger, *Collection of Rare Items*, Historisches Museum, Frankfurt, and Jan van der Heyden, *Interior with Rare Items*, Szépmüvészeti Museum, Budapest.

228. The precious atlas of Lopo Hörnern may have been produced for King Emanuel of Portugal, later coming into the collection of Catherine de’ Medici, and the elaborate atlas of Francesco Gisolfo may have been commissioned as a gift to the Grand Duke of Tuscany (*Te Cosmo Cosmu Cosmon Francisce donanus*), but numerous other manuscript portolan charts and atlases were produced for less sublime personages. Of course, not all the works of this kind are equal in the up-to-dateness of their geographical information, in their wealth of illustration or in their artistic value. Knowledge, financial resources and the demands corresponding to them always spread across a wide spectrum.

This, then, is the direction in which we are led by the dedications —rare though they may be— of the Greek manuscript portolan charts. The recipients of Sideri’s dedicated maps are a former Duke of Crete, a counsellor to the

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The central role occupied by cartographic material in these private ‘theatres of the world’ can be seen, too, in the iconography of the period. Some of the all-inclusive private museums, such as the *studioi* of Cosimo de’ Medici, were decorated with fresco maps. Naval charts, atlases, globes and spheres of the heavenly bodies, astrolabes and sextants were often depicted among the artefacts and curiosities assembled by those thirsty for encyclopaedic knowledge. Depictions of these private temples to curiosity, still lifes, portrayals of bourgeois interiors and the critical illustration of such attitudes and forms of behaviour —allegorical representations of worldly vanity— frequently include cartographic material. It would be interesting to study this symbolic function of maps, in a society which cultivated a love of curiosity and encyclopaedic knowledge, in conjunction with the revision of knowledge itself brought about by the spectacular expansion of the geographic and economic horizons in the sixteenth and seventeenth centuries.

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Duke of Crete (rather like a modern-day Minister\textsuperscript{235}), a Venetian patrician sent on a diplomatic mission to the Crimea,\textsuperscript{236} and the noble Venetian family of Emo.\textsuperscript{237} We have already seen that Antonio Millo dedicated some of his isolarii to Venetian officials. The dedications of these works take us away from their use at sea and turn us towards uses for information and by book-lovers - in other words, to library uses.

Sideri’s other atlases and simple portolans, usually less skilful and even crudely-made, would not have been suitable for the refined aesthetics of an aristocratic collection. For that reason, we have to hypothesise that they were intended for people who were able to afford the price of an illustrated atlas with many pages drawn on parchment but did not possess the experience which would have generated sensitivity towards the genre. The poor quality of the geographical information on these maps, in conjunction with their crude Gothic aesthetics, suggests that their purchasers were men of limited culture and boundless aspirations – perhaps parvenu investors in colonial trade.

In some works of Sideri, curiosity is certainly catered to more effectively than in others, and the curious and remarkable particulars of nature or human beings are emphasised more strongly. For example, in the map of Iceland which forms part of the atlas of 1563 in the Library of St Mark, of which we have already spoken,\textsuperscript{238} Sideri can be seen to have transferred from his original all the marvellous and exotic world of the ice-bound island: bears fighting, active volcanos, hot springs and towers of gold, troglodytes and two black holes in the ground next to which is inscribed the word \textit{Chaos}. Other maps by Sideri contain more sporadic information of the same kind: they include the hydrographic and topographical maps of 1541,\textsuperscript{239} with much mythological and ethnological information in note-form, and even the portolan chart of 1550 in the Correr Museum, with comments on the savage, naked inhabitants of Central Africa.

The two surviving anonymous portolan atlases with Greek nomenclature are radically different from one another. The Anonymous of Lucca, a fine, ‘classic’ atlas of the Mediterranean and adjacent coasts with six maps, is a work for a demanding customer. The script reveals a learned, practised hand, the cartographic work and the structure are reminiscent of Antonio Millo (and in particular of the unsigned atlas in the Correr Museum), and the rich ornamentation is similar at many points to the work of Vourdopoulos. This atlas does not seem to have been made to be used by ordinary sailors. In the sixteenth century, there were certainly prosperous – extremely wealthy, even – Greek merchants in Venice and Constantinople\textsuperscript{240} who were involved in the trade of the Mediterranean and the Black Sea and who might have owned valuable items such as manuscript portolan atlases of this kind.

The Anonymous of New York, on the other hand, is a small-format atlas, also covering the Mediterranean and its surroundings, with seven extremely rough maps. The hand is vulgar, the cartographic work is rudimentary, and the maps are simplified in the extreme. Like the simplest nautical isolarii of the period, the maps have a central compass rather than a network of rhumb lines. This atlas is one of the rare examples of the cheapest, simplest

\textsuperscript{228}\textsuperscript{228} Material of this kind is included in the depictions of the Museum of A. Kirchner, the Kunstkammer of the Dukes of Wurtemberg, the Kunstkammer of Duke Johann Septimus Jörger, and the Museum of Jacob de Wilde. See Lugli, \textit{op. cit.}, pp. 81, 92, 127 and 179, respectively.

\textsuperscript{229} For example, a single general-interest work on the subject (Norbert Schneider, \textit{Les Natures Mortes, réalité et symbolique des choses}, Benedikt Taschen, Cologne 1990) contains four paintings with maps and cartographic material.

\textsuperscript{230} Including Pieter Boel, \textit{The Grand Still Life of Vanity, Musée des Beaux-Arts, Lille, or Antonio de Pereda, Allegory of Old Age, Kunsthistorisches Museum, Vienna}.


\textsuperscript{232} According to the dedication by the Grifonis. The atlas is now in the Bibl. Ricardiana, Cod. 3616.

\textsuperscript{233} See Wallis, ‘Sixteenth-century maritime...’, \textit{op. cit.}, note 65.

\textsuperscript{234} The portolan chart of 1561 by Sideri is in the Correr Museum (Portolani 8) and was dedicated to Antonio Calbo, Duke of Crete.

\textsuperscript{235} The portolan atlas of 1563 by Sideri is in the Bibl. Naz. Marciana, Ms. It. IV. 148 (=5451), and is dedicated to I. Michiel, Adviser to the Duke of Crete.

\textsuperscript{236} The nautical and topographical map of 1541 by Sideri, now in a private collection, is dedicated to Francesco Zeno the Elder, who in 1537 was sent to the Crimea to ransom Janus Bey, envoy of Suleyman the Magnificent, who had been taken prisoner by the Tartars.

\textsuperscript{237} The atlas made by Sideri in 1562 and now in the British Museum (Ms Egerton 2856). Its dedication is as follows: “\textit{attinentia a soggetti della nobile famiglia Emo veneta per il suo passaggio a Constantinopolis}”.

\textsuperscript{238} Supra, p. 62.

\textsuperscript{239} See Antonio Ratti, ‘A lost map...’, \textit{op cit} (note 204). The author, backed by a considerable body of evidence, believes that Sideri’s notes convey information from the lost map of Fra Mauro.

\textsuperscript{240} For example, S. Gerlach, in his \textit{Dalmatinisches Tagebuch} (Darmstadt 1940), mentions the case of the extremely wealthy Greek merchant and banker Michail Cantacuzenos of Constantinople.
15 The Anonymous of Lucca, the ornamentation of the North African hinterland, detail from the atlas of the first half of the sixteenth century.
navigational aids, and it would have been intended for use at sea – a hypothesis supported by the additions and re-writings of place-names and the careful noting of points where sailing was dangerous.

The anonymous Greek portolan charts, like the maps of Vourdopoulos, are altogether more modest works. They were intended for simple people of moderate means and they provide the navigational information which would be of direct use to Greek merchants, ship-owners and sailors in the sixteenth and seventeenth centuries. The anonymous Greek portolan chart of the Mediterranean in the Benaki Museum is also utilitarian in character. To facilitate the user, especially in areas where the islands are so closely crowded together that the chart is difficult to read, the cartographer introduced an interesting innovation: on the map, the locations are numbered only, and the place-names are given, with their numbers, in five marginal tables. Even so, the cartographer did not ignore the visual aspect of his work, adding – apart from representations of some of the principal cities of the Mediterranean and the Black Sea – portraits of six throned Mediterranean princes and two soldiers. The colouring is harmonious and rather reminiscent of the portolan chart by Vourdopoulos in the Bibliothèque Nationale. However, this similarity should not necessarily lead us to the hypothesis that Vourdopoulos might have been the anonymous chartmaker, since the techniques of the two maps differ. It seems more likely that the similarity is the result of the kind of paint which it was possible to obtain in Greece in the early seventeenth century.

The Greek portolan chart of the Mediterranean by Vourdopoulos is a work with highly artistic elements. Care was taken over the cartographic part of the work, although the cartographer made an error with his martelogio and had to erase – rather clumsily – one of the directions in the south-east part of the map. It seems highly likely that Vourdopoulos was relying on a Portuguese model – a hypothesis strengthened, inter alia, by the crucifix at the top of the portolan, a feature which was a kind of trade-mark of Portuguese maps. Vourdopoulos had quite a refined sense of colour, and the colouring of this map is both harmonious and discreet.

Despite its notably ‘folk’ character, this map, too, belongs to the ‘culture of curiosity’ of the Renaissance and Classical age. As well as the illustrations usually included in Mediterranean portolans, with multicoloured wind roses and representations of cities, Vourdopoulos also illustrated the hinterland of the African continent with specimens of its fauna and flora, painting in palm trees, a dromedary, a loaded elephant and a deer with the direct and simplistic technique of the vernacular artist.

241 Bagrow and Skelton, op. cit., p. 113.
The Anonymous of Lucca, the Peloponnese with Cephalonia and Zante, detail from the atlas of the first half of the sixteenth century.
THE 'GREEK SCHOOL'

NOW WE CAN MOVE ON to an appreciation of the entire production of portolan charts made by Greeks in an attempt to distinguish the shared constants which may define it. This last undertaking is essential if we are to reach a conclusion about whether the maps which we have been examining in detail so far can be seen as a discrete and uniform entity within the general production of portolan charts; in other words, whether we can talk of a 'Greek school'.

In terms of the language used, the material consists of works which mostly use Italian toponymy but also include those with Greek place-names. There is an obvious similarity between the Greek-language manuscript portolan charts and the narrative Greek portolans (the portolan texts), of which they seem to be a composite and summary visual rendering. The Greek portolan charts do not appear simply to be translating the foreign models on which they were based: they also use Greek place-names which were extant, established and are also found in the Greek narrative portolans.

This observation is explained, first and foremost, by the long nautical tradition of the coastal and island societies in the Greek lands – a tradition, which, however, was also a constraint where the matters of interest to us here are concerned. Long-held empirical knowledge tended to make aids of any kind redundant, thus explaining why there are so few manuals of navigation, maps and aids in the Greek language dating from early times. Only a tiny number of texts of this kind have survived from the Byzantine period, and O.A.W. Dilke conflates them with the later Greek portolans. As we have already seen, those texts are not early specimens: the earliest dates from 1534, and all the rest from later in the sixteenth century.

Needless to say, the similarities of toponymy and its rendering are not confined exclusively to the narrative portolans and the manuscript portolan charts written in Greek. A brief comparison of the place-names for the same area in narrative portolans and portolan charts from the different linguistic cultures of the area will be sufficient to demonstrate the profound reciprocity of the various ethnic manifestations of the common nautical tradition.

The table which follows shows the strong toponymic bonds between the Greek portolan charts and narrative portolans and those of Venice. These bonds confirm the interdependence of the navigational aids, whether in narrative or visual form, used by the various nautical traditions of the Mediterranean. The area on which the example focused, the coast from Alexandria in Egypt to Tripolis in Syria, was chosen so as to lie outside the Greek or Venetian areas, where the rendering of place-names was of necessity influenced by the linguistic identity of those who compiled the maps. The


243. Dilke, 'Cartography in the Byzantine Empire...', op. cit., pp. 259-260. All the Greek portolan charts, whether in manuscript form (those published by De-latte) or printed, bear the title 'πορτολάνος'. Furthermore, the author persists in using the Hellenistic term periplus despite the fact that the Byzantine manuals of navigation have titles connected with the Byzantine ways of measuring distance: 'σταδιασμός', 'αναμέτρησις', 'σταδιοδρομικόν'.

This similarity in the expression and rendering of place-names which reflects the uniform and functional maritime tradition of the Mediterranean during the sixteenth century also leads us to some other hypotheses. Undoubtedly we are dealing here with the lingua franca, the common sailors' language

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<tr>
<th>[SIDERI], 1560</th>
<th>GREEK PORTOLAN, 1534</th>
<th>AGNESE, 1536</th>
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which, as far back as the fifteenth century, had begun little by little to give shape to a background of communication and meaning shared by all sailors, especially in the eastern Mediterranean. Yet apart from this linguistic convergence, the dense network of interdependence to be seen in the manuscript portolan charts of the Mediterranean strengthens our initial inclination to see the whole of the production of the Mediterranean as a single and functional mesh.

There are certainly differences, both in the rendering of place-names and in the cartographic conception and execution of the works. If we wished to do so, these differences could be identified, illustrated dramatically and used as methodological boundaries for our inquiries. The existing bibliography, moreover, was prepared on criteria which are usually of a 'national' nature and predispose us towards methodical approaches of that kind. However, it might be more useful to treat the undeniable differences as technical and stylistic variations on the same theme. As we have already noted, for example, the 'Italians' sought to attain aesthetic and cartographic simplicity, preferring broadly-marked coastlines and delicate gradations of related colours, while the 'Catalans' strove to create more impressive works by using bold contrasts of colour. The 'Italians' rarely describe the European hinterland beyond the Danube, while the Catalans delighted in a usually labyrinthine portrayal of the relief and the rivers and lakes of the European, Asiatic, African and later American hinterland. The 'Italians' ornamented their maps with elegant depictions of a very small number of cities (usually Genoa and Venice), while the 'Catalans' indulged in stylised representations of many cities, fortresses and monuments of all kinds. They were also in the habit of inserting brief or much longer explanatory notes on their maps, a practice stemming from a strong desire to convey information to the user which manifested itself in a number of ways: with the flags and emblems of the rulers in every area, types of clothing or house, codified markings to indicate the customs or activities of the local people ('savages', 'cannibals', etc.), the characteristic flora and fauna, the products or the natural resources of each area. To sum up, a portolan chart of the 'Catalan' type tended to be a brief geographical encyclopaedia, while its 'Italian' counterpart was prepared with the wise artistic temperance of the Italian Renaissance. The other Mediterranean 'schools' range across the spectrum between these two styles, sometimes placing more emphasis on particular colour-schemes or ornamental motifs and on particular geographical areas.

However, these differences are not inflexible limits. Tony Campbell notes that in the period to which his detailed study is devoted, many cartographers on either side of the Tyrrhenian Sea worked creatively in both styles: "Chartmakers give frequent proof of both versatility and a desire for variety".

The manuscript portolan charts published in this volume are an organic part of the production of this period. The fact that they are signed by Greeks, and that in some cases they were destined for Greek users, does not necessarily mean that they constitute a distinct group, a uniform and functional corpus of maps, to an extent that would enable us to talk of a 'Greek school'.

248. For the lingua franca, see H. Kahane and A. Tietze, The Lingua Franca of the Levant. Turkish Nautical Terms of Italian and Greek Origin, 1958, and the more recent work by J. Wansbrough, The Lingua Franca in the Mediterranean, 1996.

249. Most of the bibliographical reviews are based on 'national' criteria, and the same applies to the history of the genre. The approach used by Tony Campbell in 'Portolan charts...', op. cit., is a conscious exception.

250. Ibid., p. 393.
From the advent of the fourteenth century to the dawn of the eighteenth, manuscript portolan charts are beyond doubt a distinct, largely autonomous, or even independent cartographic genre cultivated first in the Mediterranean shipping centres (and later in the corresponding centres of the Atlantic seaboard) by Christian, Jewish and Muslim maritime chartmakers. Within the uniform and functional entity of Mediterranean production, certain centres stand out and were from time to time predominant. According to the genealogy of portolans, the ancestor of the race saw the light of day in Pisa, with branches appearing almost simultaneously in Majorca and Genoa, and a little later in Venice. Roger Hervé, compiler of the heraldry of hydrography, distinguishes some 25 interdependent national or local 'schools', including a 'Cretan school' whose principal representative was Georgio Sideri and which covers the period from 1537, the year of Sideri’s earliest dated work, to 1620, roughly the time of the last chart of Vourdopoulos. In their monumental historical presentation of the portolans, Michel Mollat du Jourdin and Monique de la Roncière extend the geographical boundaries of the 'school', referring to the "Greek (and Cretan) school".

The criteria for regarding the portolans produced in an area as belonging to a distinct national or local 'school' are comparatively slack. However, in arranging and classifying the production of portolans we can, if we wish, bear in mind certain common characteristics: the descent of the cartographers, linguistic homogeneity, affinities in terms of the cartographic and aesthetic quality of the works, and, lastly, the question of whether or not the charts were produced systematically, in workshops which went some way towards standardising production and ensured that it continued by training apprentices and continuators of the established tradition.

As we have seen, no 'national' production of manuscript portolan charts satisfies all those criteria simultaneously. What has to be emphasised, however, is that the works assembled in this volume cannot safely be said to meet any of the criteria. Where the first, that of the common ethnic descent of the cartographers, is concerned, we have no evidence to prove the Greek origins of Antonio Pelekan, though we believe that the Greek descent of Antonio Millo has been adequately documented. As we know, however, the ethnic origins of the chartmakers did not prevent them from producing works which met the specifications of quite a different 'school'. There are cases of Italian or Catalan hydrographers who produced works using different techniques, and there are even local 'schools', such as that of Genoa, which retained elements from both sides.

The question of national origin and national identity in the sixteenth century is in any case complex and fluid. Although at that time racial and religious identities and differences sustained and nurtured fierce and often bloody conflicts, the everyday aspect of such matters may well have been different. Fernand Braudel notes that the period was one of remarkable movements of population around both the western and the eastern Mediterranean basins. He believes that both areas saw "true admixtures of populations, which broke down racial, cultural or religious barriers". However the case may be, the attitudes and forms of behaviour of Mediterranean sailors in the...
sixteenth century do not appear to have been systematically defined by constraints of this kind. Let us not forget that these sailors worked out and used a common language of communication, that the crews even of ocean-going vessels would often be composed of sailors from different parts of the Mediterranean, and that the population of Algiers consisted of Berber, Andalusian, Greek, Turkish and Italian corsairs cohabiting in a state of comparative harmony.

Where the second criterion, that of a common language, is concerned, most of the works receiving our attention here are in an Italian dialect and only six or at the most seven of the maps or atlases known to us have Greek place-names. This certainly has to be seen in conjunction with the conditions in which the Greek populations lived at that time. After 1461—that is, after the overthrow by the Ottomans of the Empire of Trebizond, the last Greek-speaking and Greek Orthodox state entity—the Greeks lived under foreign rule and were profoundly influenced by it.

Most of the cartographers whose work we have been examining lived in Venetian-occupied Greek areas and were often part of the Venetian naval or administrative hierarchy. Their works bear place-names and additional notes in Italian, demonstrating the deep—catalytic, one might say—penetration of the Venetian maritime culture into the Greek areas and also the integration of the Greek seafaring population into the Venetian nautical order. Only the anonymous cartographers of the mid-sixteenth century and Nikolaos Vourdopoulos, himself almost anonymous, in the early seventeenth century compiled portolan charts with Greek place-names. It is interesting to note that the Ottoman capture of the island of Patmos and the corresponding withdrawal of the ‘Latins’ from it led to the production, there at least, of the only signed works in the Greek language.

Here we have to state a reservation: it may be that there were many more Greek works which have disappeared, following the Greek merchants and sailors of the period into the economic decline which overcame Greek shipping in the period down to the early eighteenth century. Such libraries as continued to operate in the Greek lands were usually in monasteries, and since the works we are focusing on here are utilitarian—when not prohibitively expensive—it is unlikely that they would often have found their way into the hands of monks with limited resources and equally restricted secular interests.

Nonetheless, it has to be borne in mind that although the greater part of the Greek lands was in Ottoman possession, we are not aware of any surviving works in Turkish by Greek hydrographers—and that despite the fact that the Ottoman state, a new entrant into the affairs of the sea, had displayed hydrographic curiosity and taken various and notable initiatives. Let it not be forgotten that as far as cartography, at least, was concerned, some Greek scholars put up little resistance to integration: the case of George Amiroutzes, to which we have already referred, is characteristic. This is further borne out by the fact that Sultan Bayezid enlisted Greek pilots to serve in the Ottoman fleet of the Aegean, and thanks to their experience and skill was able to subjugate the eastern Mediterranean in the early sixteenth century.

255. To give just one example, in 1526 a Spanish ship set sail with a cargo of Negro slaves and a crew consisting of Greeks, Frenchmen, Italians and Majorcans. Ibid., p. 134.
257. The collections of the Greek monasteries contain a very small number of more recent works of geographical interest and still fewer cartographic works. Most of the old geographical works of the Greek monasteries are manuscripts or printed editions of ancient geographers, especially of Ptolemy, Strabo and Eustathios.
These facts support the view that the Ottoman authorities were largely receptive to the cartographic and maritime skills of the Greeks and pursued collaboration with them.

Another of the conjectures to explain why the Greek chartmakers did not integrate into the Ottoman production of the period may be the empirical nature of the works. Portolan charts are drawn up in the living language of sailors with little or no formal education, and the language barrier between Greek and Ottoman sailors may have had a constraining effect, to begin with at least. Furthermore, the Ottoman portolans were, as a rule, compiled by naval officers, and the Greeks did not penetrate into that particular hierarchy. A third possible explanation, and one which is certainly more interesting in the context of this study, lies in the considerable possibility that there were no Greek workshops producing manuscript portolan charts in the Greek lands which, one after another, came under Ottoman sovereignty between the fifteenth and the seventeenth century. The exhaustive inventory of Tony Campbell, which deals with the first period in the history of naval charts, identifies only one signed and dated portolan chart made in a Greek area: the map of Antonio Pelekan, included in this book largely for that reason. During the sixteenth century, we can say with some certainty that only two works by Sideri and the two isolarii of Antonio Millo were made on Greek soil, under Venetian rule, as, possibly, were the works in the Greek language.

Turning to the criterion of cartographic and aesthetic affinity, we can note at once the unusual variety and widely-ranging influences characteristic of the portolan charts produced by Greek cartographers. We can be certain, as Michel Mollat du Jourdain points out, that the art of portolans came into Greek waters from Genoa, Venice and Messina, where, quite naturally, it mixed with and received influences from the art of the Majorcan cartographers. We thus find works made, or possibly copied, by skilled Greek hands which remind us sometimes of the sparer art of the Italian cartographers and sometimes of the more elaborate aesthetics of the 'Catalans'. However, the influence of the style of Majorca is too clear, at least in the work of Sideri and Vourdopoulos, for us to be able to talk only of indirect influences transferred via Italian works. Direct contact seems more likely, possibly with the production of Messina, or even -why not?– via the Jews who moved to the cities of the Ottoman Empire when they were driven out of the Catholic realm of Spain.

It is difficult to discern any particular aesthetic and technical affinity running through the works of the Greek hydrographers. The earliest surviving work, that of Antonio Pelekan (if it is Greek), is a simple, utilitarian portolan chart similar to the minor hydrographic works of the fifteenth-century Venetian chartmakers. Xenodocos, on his part, created a small-scale work of art which is fully in accordance with the high cartographic and aesthetic standards of the Venetian 'school'. Sideri, as we have seen, is inconsistent: his signed ōeuvre contains maps which tempt us to think they were produced by two hydrographers, one Venetian and one Catalan, and a designer of geographical maps who specialised in representations of the hinter-

259. See Svat Soucek, 'Islamic charting in the Mediterranean', ibid., pp. 265-266.
land. Antonio Millo has left us some of the most artistic manuscript geographical atlases of the sixteenth century, together with a number of simpler and more modest works, mainly manuals of navigation and isolani.

This variety makes the rationale of a uniform functional entity, of a national cartographic ‘school’, less feasible, as does the absence of any evidence as to the existence of a Greek cartographic workshop in the area – ultimately, our ignorance of the places in which most of the works were produced.

If we were to accept the existence of such a national cartographic or hydrographic ‘school’, it would doubtless be a composite formation subject to a wide range of defining parameters. To our mind, two of those parameters are supreme: the will of the state, on the one hand, and the organised interests of various social and economic groups, on the other. During the sixteenth century, both parameters functioned in a rather unusual manner in the Greek lands. The Ottoman and Venetian sovereignty to which the Greek islands and coastal areas belonged both had their own highly effective mechanisms, and it is precisely the contact between those mechanisms (especially the Venetian mechanisms) and the trading and seafaring society of the Greek coasts and islands that provided the stimulus and the context for the Greek production of manuscript portolan charts.

That observation explains the two fundamental characteristics of the Greek production of portolans: variability and dependence. The extreme variability of the material we have been examining is characteristic and predominant in all aspects of its production: variability in style, in aesthetics, in the selection of models, in the quality of the information provided, in the linguistic medium of expression.

As we have already noted on a number of occasions, the tradition of manuscript chartmaking is a uniform and largely solid entity in the Mediterranean basin as a whole, while its living, manuscript form avoids the standardisation which printed cartography would bring. The quality of dependence on foreign models is also characteristic. The greater part of the Greek production is conspicuous for its lack of proposals and innovations, either on the level of geographical information or on that of graphic execution. It seems to have been completely absorbed by the Venetian or Catalan models within whose context it falls.

Nonetheless, the Greek portolans exist. They were drawn by Greeks, and some of them are in the Greek language and were thus intended for Greek users. The rarity of the Greek-language works and the effective anonymity of their compilers help us towards a clearer understanding of the dynamics governing the Greek societies during the years of foreign rule: original compositions become less common, the people of the sea, always energetic, are abandoned to the lingua franca or to the language of their neighbours, ambitions become more moderate, and the general tone is lower. The equally anonymous narrative portolans, in their seven surviving copies, are composed in the Greek language full of half-assimilated borrowings from other languages; they reinforce our gloomy conclusions and herald the introversion of Greek society in the seventeenth century, as its intellectual and economic worlds turned in upon themselves.
THE WORKS
The purpose of publishing, in the pages which follow, reproductions of works by Greek portolan chart and atlasmakers is to convey as clear an idea as possible of the range of their production. This is the light in which the self-contained portolan charts are published, while characteristic samples of the atlases are included in greater or lesser numbers, depending on the importance which the editor attaches to them.

The two unsigned Greek-language portolan atlases (those by the Anonymous of Lucca and the Anonymous of New York) are published in full, as is the atlas of Ioannis Xenodocos, the only known work by the Corfiot cartographer. Also published in full is the anonymous atlas in the Correr Museum, here attributed to Antonio Millo; a very few characteristic samples of his 'twin' atlases are included in view of the fact that one of them (the atlas of 1586) was recently published in a facsimile edition.

Maps included in isolarii, fragmentary works, and charts in private collections which it proved impossible to locate have, likewise, not been included in this part of the publishing endeavour. Nor are there any of the charts from the atlas by Georgio Sideri, made in 1552, kept in the Swedish Royal Archives. There are two reasons for this: first, the work was published in full by Nordenskiöld, and second, it proved impossible to establish communications with the owners of the atlas.

The works are published in chronological order, and the maps are numbered continuously. The code number under which the works are cited in the Descriptive Catalogue which supplements the text is given in brackets; the Catalogue describes in detail all the works which were located and contains additional illustrative documentation.
1 Antonio Pelekan, the Adriatic, 1459 (AP.1).
Ioanis Xenodocos, Western Europe, 1520 (IX.11).
Ioannis Xenodocos, the eastern Mediterranean, 1520 (IX.1.2).
4 Ioannis Xenodocos, the course of the Danube, 1520 (IX.13, detail).
5 Ioannis Xenodocos, the central Mediterranean, 1520 (IX.1.3).
6 Georgio Sideri (Callapodha), the NW coast of Africa, 1537 (GS.11).
Georgio Sideri (Callapodha), the coast of Western Europe, 1537 (GS.1.2).
8 Georgio Sideri (Callapodha), the central Mediterranean, 1537 (GSI.4).
9 Georgio Sideri (Callapodha), the Black Sea and the SE Mediterranean, 1537 (GS.1.5).
10 Georgio Sideri (Callapodha), portolan chart of the Mediterranean, 1541 (GS.2).
11 Georgio Sideri (Callapodha), the western hemisphere, 1550 (GS.3).
Georgio Sideri (Callapodha), portolan chart of the Mediterranean, 1560 (GS.5).
13 Georgio Sideri (Callapodha), portolan chart of the Mediterranean, 1561 (GS.7).
14 Georgio Sideri (Callapodha), Crete, 1562 (GS8).
15 Georgio Sideri (Callapodha), planisphere, 1562 (GS.9.1).
16 Georgio Sideri (Callapodha), the New World, 1562 (GS.9.2-3).
17 Georgio Sideri (Callapodha), Europe, Asia and Africa, 1562 (GS.9.4-5).
18 Georgio Sideri (Callapodha), Crete, 1562 (GS.9.16).
19 Georgio Sideri (Callapodha), the North and South hemispheres, 1563 (GS.10.1).
20 Georgio Sideri (Callapodha), the Black Sea and the eastern Mediterranean, 1563 (GS10.4-5).
Georgio Sideri (Callapodha), Western Europe, 1563 (GS.10.9).
22 Georgio Sideri (Callapodha),
England and Ireland,
1563 (GS.10.10).
23 Georgio Sideri (Callapodha),
Iceland and Rhodes,
1563 (GS10.12-13).
24 Georgio Sideri (Callapodha), portolan chart of the Mediterranean 1565 (G8.11).
[Georgio Sideri (Callapodha)], the eastern Mediterranean, c. 1560 ([GS12]).
Anonymous of Lucca, the Aegean Sea, first half of the sixteenth century (AL16).
28 Anonymous of Lucca, the central and western Mediterranean, first half of the sixteenth century (AL.12).
29 Anonymous of Lucca, the Adriatic, first half of the sixteenth century (AL.1.3).
Anonymous of Lucca, the Adriatic, first half of the sixteenth century (AL.1.4).
Anonymous of Lucca, the eastern Mediterranean, first half of the sixteenth century (AL.15).
Anonymous of New York, the coast of NW Europe, mid-sixteenth century (ANY.11).
Anonymous of New York, the coast of Western Europe and Spain, mid-sixteenth century (ANY.1.2).
34 Anonymous
of New York,
the Western Mediterranean,
mid-sixteenth century (ANY.1.3).
Anonymous of New York, the islands of the Adriatic, mid-sixteenth century (ANY.14, detail).
Anonymous of New York, the central Mediterranean, mid-sixteenth century (ANY.1.4).
37 Anonymous of New York, the central Mediterranean, mid-sixteenth century (ANY.1.5).
Anonymous
of New York,
the Black Sea,
mid-sixteenth century (ANY.1.6).
Anonymous of New York,
portolan chart of the Mediterranean
mid-sixteenth century (ANY.1.7).
Antonio Millo, portolan chart of the Mediterranean, 1567 (AM.2).
42 Antonio Millo, the south coast of the central Mediterranean, 1582-1584 (AM.59).
43 Antonio Millo,
Greece, 1582-1584 (AM.5.11).
44 Antonio Millo, the eastern Mediterranean, 1582-1584 (AM.512).
Antonio Millo, The Movement of the Sun and the Phases of the Moon, 1586 (AM.6.3).
46 Antonio Millo, Switzerland, 1586 (AM.6.16).
DESCRITTIONE DELLA GEOGRAFIA MODERNA DI TUTTA LA C. REGIA. M.D.L.XXVII
ANTONIVS MILLO-F.
47 Antonio Millo, Greece, 1586 (AM.6.18).
Antonio Milli, the eastern Mediterranean, c. 1580-1590 ([AM.7]).
49 [Antonio Millo], Western Europe, c. 1580-1590 ([AM.8.1]).
50 [Antonio Millo], the Aegean Sea, c. 1580-1590 ([AM.86]).
51 [Antonio Millo],
the central
and western Mediterranean,
c. 1580-1590 ([AM.8.2]).
52 [Antonio Millo],
the eastern Mediterranean,
c. 1580-1590 ([AM.8.3]).
53 [Antonio Millo],
the Adriatic,
c. 1580-1590 ([AM.8.4]).
54  [Antonio Millo],
the Black Sea,
c. 1580-1590 ([AM.8.5]).
[Antonio Millo], Crete, c. 1580-1590 ([AM.8.7]).
[Antonio Millo], Cyprus, c. 1580-1590 ([AM88]).
57 Antonio Millo, China, c. 1580-1590 (AM9, detail).
Nikolaos Vourdopoulos, portolan chart of the Mediterranean, early seventeenth century (NV.2).
Anonymous of Athens, portolan chart of the Mediterranean, seventeenth century (AA.I).
Anonymous of Athens, views of cities in the western Mediterranean, seventeenth century (AA1, detail).
DESCRIPTIVE CATALOGUE OF CHARTS AND ATLASES
The descriptive catalogue which follows contains the works which have been located in public and private collections together with works not located but described in the relevant bibliography.

A double asterisk (**) marks the works which it did not prove possible to inspect directly or study in copy form; a single asterisk (*) marks the works which could not be inspected directly or indirectly, but of which a description has been published. Square brackets ([]) mark the unsigned works attributed to Greek chartmakers; a question mark and square brackets (??) are used to mark the signed works whose 'paternity' is dubious but which, with certain reservations, can be attributed to Greek chartmakers.

Each entry describes the chart or atlas, comments on it, and supplies references to publications in which it is mentioned. These references are given in abbreviated form; the full titles of the works concerned will be found in the Bibliography.
Antonio PELEKAN

AP. I Portolan chart of the Adriatic, 1459.
Parchment. Signed and dated: antonio pelekán admiraló al retimo o fatto questo cholto 1459 año 4 lujo.
Venice, Arch. di Stato, Sala Reg. Margherita LXXV no 1.
Provenance: The fragments of this chart were donated by G.D. Cav. Vardo to the State Archives of Venice in 1878.

The chart shows the west and east coasts of the Adriatic, the "Gulf of Venice". Since it was rolled up into a cylinder, damp has destroyed half the chart. Only five strips have survived, showing part of the east coast of Italy and the west coast of Dalmatia. The coastline is sepia, the islands are red and blue, and the place-names are sepia or red. The rhumb line network in 26 directions is picked out in black and red. The solution proposed by the chartmaker to the problems of definition and nomenclature involved in portolan charts is characteristic: he circumvents them altogether, stating only that he "drew this Gulf at Rethymno on 4 July 1459".

Depiction of the church of St Mark in Venice, and a banner with the lion of St Mark. Shallows are marked with dots. In the ornamental border, a scale bar measuring miglia, in five parts. If the chart had a wind rose or compass, it has not survived. This simple chart is typical of those produced for use by sailors during the fifteenth century.


Ioannis XENODOCOS

IX.1 Portolan atlas with three charts of the Mediterranean, the Atlantic coastline of Europe, and North Africa, 1520.
Parchment, 320 x 223 mm. (closed).
Signed and dated: Ego Ioanis Xenodocus da Corfui composuit. Ano domino MDCCCC XXX. Ex dies XXIIIIsi setebrio [IX.1.1].
Venice, Correr Museum, Port. 29.
Provenance: Correr Collection, 1322.

The atlas contains: IX.1.1, a portolan chart of the coast of the western Mediterranean and the Atlantic coasts of Europe and North Africa; IX.1.2, a portolan chart of the coast of the eastern Mediterranean and the Black Sea; and IX.1.3, a portolan chart of the coast of the central Mediterranean.

This classic portolan atlas covers the zone in which the sailors of the Mediterranean were traditionally active. At the top and bottom of each chart, a red and gold ornamental band decorated with plant motifs including 96 mm. miglia scale bars divided into ten parts (the same for each chart). The wind roses have 32 directions. Place-names and rhumb lines in green and red; mountains in green, rivers in blue, islands in red, green, blue and gold. The maps contain depictions of cities, banners and ornamentation. Representations of cities: IX.1.1, six fortified cities (three in the Iberian Peninsula, two in France, one in Denmark); IX.1.2, Froma (on the site of Bucharest), Damasco, San Sopulcro (Jerusalem), Vabilionia (Cairo); 'mute' cities to the north of the Danube, in Asia Minor, in the Middle East (possibly the Monastery of St Catherine on Mt Sinai), and North Africa (to the east of the Nile). To the west of the river, tents and palm trees; IX.1.3: Avignon, Genoa, Venice, eight cities along the Danube and eight more in North Africa (ornamental tent).

This fine small-scale atlas of the Mediterranean is elegantly made and discreetly ornamented. There are clear influences from the Venetian portolan charts of the late fourteenth and early fifteenth centuries (those of Fransiscus Pizigano, Francesco de Cesantis and Grazioso Benincasa). The ornamentation is interesting — in particular, the faithful representation of St Mark, with the new roof constructed after the earthquake of 1511. Palaeographic study of the chart shows it to have been drawn by a scholarly, practised hand. This chart may be connected with the operation of scriptoria in Corfu.


Georgio SIDERI (Callapoda)

GS.1 Portolan atlas with five charts, 1537.
Parchment, 290 x 338 mm. (closed).
Signed and dated: Georgio Challapoda Candiotus composuit Chandia anno Domini MCCCCXXXVII [GS.1.4].
Provenance: Nani Collection.

Contains: GS.1.1 (f1v-f2r), a portolan chart of the Atlantic coastline (coast of North Africa and south-west Iberian peninsula), with the Canary Islands; GS.1.2 (f2v-f3r), a portolan chart of the western European coast with the British Isles and Ireland; GS.1.3 (f3v-f4r), a portolan chart of the western Mediterranean; GS.1.4 (f4v-f5r), a portolan chart of the central and eastern Mediterranean, and GS.1.5 (f5v-f6r), a double portolan chart of the Black Sea and the south-east Mediterranean. These five portolan charts by Sideri are bound with a portolan chart by J.F. Roussin (f6v-f7r), a well-known French chartmaker of the seventeenth century who worked in Toulon (1660-1665) and later in Venice. The five charts by Sideri are simply drafted, without the wind roses, compasses, ornamental rossets and bands and the individualistic way in which Sideri renders the hinterland in his other works. The only ornamentation of the atlas is the capital 'G' for Giorgio by the signature to the chart, on the leaf showing the central and eastern Mediterranean (GS.1.4). The
rhumb lines (in sepia and red) are comparatively widely-spaced, intersecting at 16 points which surround the charts or the double charts when opened out, forming a kind of frame. The same technique can be seen in the other atlas by Sideri in the Biblioteca Nazionale Marciana, a work of 1563 (GS.10 infra).

The coastline is picked out in sepia, the place-names are in black and red, and the islands and headlands are in blue and red. Apart from the signature, the atlas has two more manuscript insertions (GS.1 and GS.12). In each of the four corners of the opened leaves of the atlas there are simple ornamental motifs, in which the scale bar of miglia is included. There are no compasses or other indications of orientation on any of the leaves.

This, the first atlas to be signed by Sideri, and that of 1563 to which we have already referred, differ from the main corpus of work by the Cretan cartographer and also deviate—in different ways—from the next two items. The differences between this first atlas and the rest of Sideri's oeuvre are in fact so great that Ratti and Ratti dismiss it as the work of another chartmaker to which Sideri merely appended his signature. It seems more likely, however, that he experimented with various models before arriving at the style which was to characterise the rest of his work.

The mapping here is faithful to the model and aesthetics of Grazioso Benincasa, the cartographer of Ancona who flourished in the period from 1461 to 1482 and of whose work 22 charts and atlases have survived. Benincasa, who himself relied on earlier traditions, influenced much of the production of portolan charts with his presentation of Britain as two separate islands and his exaggeration of the size of Ireland. Further similarities can be identified between the work of Benincasa and that of Sideri, which is our concern here: the two circular islands (one to the east of Scotland and the other to the west of Ireland), the Dutch coast as a continuation, in a straight line, of that of Denmark, and in particular the depiction of the west coast of Ireland: there, Sideri copies Benincasa in distorting the shape of Achil Head (Ardoim) and in making Lough Corrib with its islands open to the sea. He even copies the Latin inscription given by Benincasa at this point: Lacus Fortunatus ubi sunt insulae que dicuntur epy See beate CCCCLXVII.

There is a latitude scale on GS.1 and GS.12. Only on GS.12 is any indication of the hinterland given.


GS.2 Map of Europe and North Africa, 1541.
Parchment, 620 x 830 mm. (maximum).
Signed: Georgio callapodii a cretesia faciebat (on an ornamental band on the west side of the chart) and dated: 1541 (on another ornamental band, beneath the coat-of-arms of Francesco Zeno, on the west side of the chart).
Private collection.
Provenance: the chart was auctioned in October 1984 at the Salamon, Augustoni and Agrati Gallery, Milan. It reappeared in April 1990 at an auction held by Christie's.

The orientation of the map is reverse, with south at the top and west on the right. The chartmaker was equally interested in the coastline and the hinterland. There are two wind roses, with maps of Crete and Cyprus as ornaments at their centres; one is located to the north of the Crimea and the other in the Moroccan hinterland. Coat-of-arms of the Zeno family, with the initials of Francesco Zeno, admiral of Venice, who in 1537 was sent to the Crimea to ransom out Janus Bey, an envoy of the Sultan, who had been taken prisoner. Coats-of-arms over England, Scotland and Ireland. An ornamental band with a triple scale bar on the north side of the map; its symmetrical counterpart on the south side has been destroyed.

The rhumb lines in 24 directions are in sepia, and the scale bar of 137 mm. in the ornamental band along the south edge of the chart is divided into 15 parts. The coastline is in sepia, the place-names in sepia and red, and the islands in green, blue, red and gold.

The principal cities of Europe, the Near East and North Africa are shown in stylised form. The borders between the various areas are interestingly marked in green, and the network of primary and secondary communications is picked out in grey. Rivers are drawn in blue: those of Europe are depicted as a single system crossing the entire continent; only the rivers of Spain and France form separate systems. As is usual in the charts of Sideri, the Red Sea is red. Here it contains a fleet: L'Armada de Portugalle. Mountains are drawn in sepia and gold, lit from the east. Extensive texts with archaeological, historical and geographical information are crammed into the empty spaces.

Although this map is relatively accurate in its depiction of the Mediterranean coastline, its representation of the English Channel perpetuates beliefs common in the early fifteenth century. It is unusual in its version of the south Scandinavian coastline, where a new and large island replaces the more accurate way in which the Scandinavian peninsula had been mapped down to that time. This is the map in which Antonio Ratti sees a copy of a lost map by Fra Mauro.

With interesting visual and colour features, this chart is a characteristic example of Sideri's work in the 1540s. The technique of the drawing and the handling of the hinterland are reminiscent of the 1550 chart (infra) and also of the topographical maps of Crete (GS.8, GS.9.16 and GS.10.11).


GS.3 Portolan chart of the Western hemisphere, 1550.
Parchment, 720 x 1060 mm.
Signed and dated: Georgio Callapodii cretensis meffecit nell'anno domini 1550 de 14 luis (on the southwest edge of the chart).
The chart shows the Atlantic Ocean (Oceanus ocidus) and the Mediterranean, the eastern coastline of North, Central and South America (Asia orientalis, bacalareum regio and la florida for North America, Peru for the south of the continent), Africa, Europe and the Middle East.

There are four scale bars of miglia, in four ornamental bands, each divided into five equal sections of about 5 mm. The scale bar closest to the signature measures 140 mm. and is divided into 27 parts. The rhumb lines intersections have 32 directions and are picked out in sepia.

The coastline is in sepia and blue and the place-names in sepia and blue (with the exception of most of those in the hinterland). The lakes and rivers, in blue, are structured into systems in a manner similar to, though clearly simpler than, GS.2. The mountains are in sepia and gold, lit from the west, and the islands in green, blue, red and gold.

There are two cross-wise latitude and longitude scales, without numbering, divided into parts of approximately 5 mm. each; these intersect so as to divide the chart into four equal quadrants. Six small 16-direction wind roses are arranged in a circle around a much larger wind rose set in north-west Africa, at the point of intersection of the two cross-wise scales.

Coats-of-arms for England, Scotland, France, Germany, Poland, Hungary and Spain; representations of Genoa and Venice; tents to indicate the khanates of the Tartars; crowns for the kingdoms of Russia, Africa and the Middle East; a single crown over South America (Gigantum Regio); a double mitre for Greater Armenia; representations of the sacred precincts of Mecca and Medina; stylised markings for 15 more cities in Europe, 41 in Asia, approximately 100 in Africa and 18 in South America; banners and emblems, ships sailing across the Atlantic.

As in GS.2, the cartographer takes an equal interest in the coastline and the hinterland – a feature characteristic of Sideri’s work after 1541.

Here, too, the cartographic models are a mixture of the Majorcan and Venetian styles. The influence of Agnese, and of the Catalan cartographers, is clear in the depiction of the American coastline. Ireland is disproportionately large, and England and Scotland are shown as separate islands, revealing that Sideri remained attached to the outdated Benincasa model. Scandinavia is shown more accurately than on GS.2. This is a rather cumbersome but interesting piece of work, which creates an atmosphere with its large dimensions and bright colours.


GS.4 Portolan atlas with eight maps, 1552 (?)

Parchment, 280 x 210 mm. (closed).

Signed and dated, Georgio Calapoda Crete fecit ano dm :55ii (= 1552) (on the chart of the west coast of Spain and north-west Africa, G4.3).

Stockholm, Riksarkivet, Skoklostersml 1 fol 163.

Contains: GS.4.1, map of the world; GS.4.2, portolan chart of the central Mediterranean; GS.4.3, portolan chart of the eastern Mediterranean; GS.4.4, portolan chart of the west coast of the Iberian peninsula and North Africa; GS.4.5, portolan chart of the western Mediterranean; GS.4.6, portolan chart of the west coast of Europe; GS.4.7, portolan chart of the north-west European coast and islands; GS.4.8, portolan chart of the Black Sea.

The atlas deals with the coastline of the Mediterranean, Western Europe and North Africa. There is an oval world map along the lines established by Agnese and the Ptolemaic atlases. Around the world are four wind-figures, with puffed cheeks; on the south, the inscription AUSTER - MEDIDIES. Along the south is a scale of latitude, and there is a scale of longitude in the oval border. Asia is shown joined to the North American continent, while Mexico (La Florida) is an island linked to the mainland across two isthmuses. At the South Pole and beneath the Strait of Magellan, the note: terra Australis.

Here, too, the cartography uses fifteenth-century models. Further errors are introduced, including the schematic and rough depiction of the tip of Norway as an amorphous tract of forest. The rhumb line network in 32 directions is picked out in sepia; there are wind roses in red, blue and gold, and numerous ornamental rosettes and scale bars of miglia. The islands are brightly coloured.

This is beyond question a crude work. The place names are in sepia or black in large Gothic script and there are scale bars of miglia in multicoloured wavy ornamental bands, multicoloured and bulky ornamental motifs, crowns and coats-of-arms, views of cities, banners, and stylised mountain ranges. Each map is surrounded by a black border; in each corner is an ornamental triangle containing brightly-coloured plant motifs in red, blue and gold. Apart from the wind roses, there are numerous gold and red ornamental rosettes. Nordenskiöld summed up the atlas as follows: “With its tasteless drawings and gaudy colours it gives an idea of which may be called vulgar portolan-literature of the 16th century” (Periplus, p. 66). This atlas is a rougher version of that in the British Museum (GS.9).

Representations of cities: GS.4.2, two fortified cities in the hinterland of Dalmatia, one with a Christian banner and one with an Islamic flag; GS.4.3, two fortified cities in Asia Minor; GS.4.4, two fortified cities, one in the Iberian peninsula and one in Morocco; GS.4.5, the emblem of the House of Leon in Spain and of the French throne over the Pyrenees, three fortified cities, in Spain, France and Morocco, fortified positions at Granada and Avignon; GS.4.6, an enthroned ruler over the entire Iberian hinterland, marked prince despania.
GS.5 Portolan chart of the Mediterranean and the west coast of Europe, 1560.
Parchment, 980 x 570 cm.
Signed and dated: Georgio Sideri dictus Calapoda cretensis composuit nel anno Domini 1560.
Provenance: the chart was bought by a Scottish collector in 1958; in the previous year, it had been auctioned by Maggs of London. On the reverse of the chart is the number 24992 or 24972.

The chart covers the coasts of the Mediterranean and the Black Sea, with the Atlantic coast of North Africa and Europe, with the British Isles. On the neck is the coat-of-arms of the Venetian family Bragadin. Place-names and rhumb lines (32 directions) in sepia and red. A black rectangular mesh of parallels and meridians; latitude is marked on the right-hand edge of the chart. On the north and south sides, a border with a scale bar of miglia; wind roses in gold and red (a large one in the African hinterland and a smaller one at Antioch in the Near East).

In the African hinterland, the Atlas Mountains (Montes Claros over Monte Athalante) are marked in Sideri’s usual manner: the mountains rise from a green base and are lit from the west. There are recognisable depictions of Genoa and Venice and stylised representations of seven cities in Europe, three in the Mediterranean/Asianic area and six in Africa. The monastery of St Catherine on Mt Sinai is shown. Emblems and banners denote the rulers of each country. In Spain, an enthroned ruler is depicted, and there are tents in Asia Minor and North Africa. The Red Sea is painted red.

Majuscules are used to denote Europe and Africa (Evropa, Afric), with Asia (Asia) in smaller, gilt letters. In Greece, Thessaloniki (Salonicchi) is shown as a walled city; the term Grecia is applied to Thrace, Tesalia to Macedonia, and Albania to the rest of the country.

This rather cumbersome but visually interesting chart uses cartographic models obsolete in its own time.

References: Maggs 842 (1957) lot 2237, Astengo (1996) UKEL.

GS.6 Fragments of a portolan chart or atlas of the Mediterranean and the Atlantic coasts of Europe and North Africa, 1560.
Parchment, 542 x 940 mm. (maximum).
Signed and dated: Georgio Sideri dictus Callapoda cretensis fecit nel anno Domini 1560 (at the neck of the parchment).
Provenance: Cicogna Collection, 3453.

Three fragments of a portolan chart or atlas of the Mediterranean. This work must have been rather similar to GS.5, of which its fragments are ornamentally and cartographically reminiscent. The fragments depict the Atlantic coastline of Europe, the northern part of the Black Sea, and the eastern extremity of the Mediterranean. Perhaps the parts which are missing were heavily ornamented and were removed to be used for other purposes.

The chart bears the coat-of-arms of the Giustiniani family and has all the artistic and cartographic properties of GS.5 (for example, a monumental tent is depicted to the south of Cairo, between the River Nile and the Red Sea, with the inscription Rex de Babylon). It, too, has a scale bar of miglia in the ornamental border, rhumb lines and a 32-direction wind rose. Cities are depicted, and there are emblems of rulers and banners.


GS.7 Portolan chart of the Mediterranean, the Black Sea and the east coast of the Atlantic 1561.
Parchment, 255 x 423 mm.
Signed and dated: Georgio Sidero dictus Calapoda Cretensis fecit nel anno dini: 1561 (in the north-west corner of the chart).
Provenance: Gidoni Donation.

This small portolan chart depicts Europe, Asia Minor and the Near East with the coastline of North Africa. It bears the coat-of-arms of the Calbo family and is dedicated to Marc’Antonio Calbo, Duke of Crete until 1662: ANT. CALBO DUCA C(a).

There are four gilt wind roses around the chart (to the north and south of the Black Sea, in Egypt and in Morocco), and four scale bars of miglia, two in each of the ornamental borders to the north and south of the chart. The scale bar in the north border is larger: 130 mm., divided into sections of approximately 5 mm. Each latitude, from 26° to 62° North, is marked vertically across the map from north to south (from the west of Ireland in the north to the Canaries in the south). The rhumb lines in eight directions are in sepia, the coastline in green, the islands in green, gold and red, and the place-names in sepia and red. The Red Sea is red. There is a representation of Venice, and 29 banners with emblems.

As in the works we have already described, the cartographic models are obsolete, suggesting that Sideri was more interested in the aesthetic aspects of his maps than in their cartographical accuracy. In Scandinavia, he returns to the erroneous depiction of 1541. The widespread use of archaisms in the toponymy (Isulate fortunate for the Canaries, the presence in Asia Minor of Colchos and Troia) is an indication that this chart was not intended for use at sea. The geographical division of Greece is once more interesting, with Thessaloniki as the most important city.
1.2 Georgio Sideri, fragments of a portolan chart or atlas of the Mediterranean and the Atlantic coast of Europe and North Africa (GS.6).
The work contains all the ornamental and stylistic features of the central period in Sideri’s career. However, it is much more sophisticated than some of his other works, perhaps because of the small dimensions which make the entire composition something of a miniature. There are close affinities between this chart and the unsigned Greek chart in the Correr Museum, attributed to Sideri (GS.12), infra.


GS.8 Portolan and geographical chart of Crete (La Isola de Candia), 1562.

Parchment, 635 x 1420 mm.

Signed and dated in the south-east corner: Georgio Sideri dicto Calapoda cretensis fecit nel anno Domini 1562.


Provenance: Cicogna Collection, 3461.

This large map of Crete is the first of the three depicting the island which Sideri made. All three combine topographical and hydrographic representations and are reminiscent of the charts of 1541 and 1550 (GS.2 and GS.3). The models for this chart remain unknown, and, as far as I am aware, only a unsigned printed map of Crete with such an outline had been published before Sideri’s map (1551). After 1584, Ortelius, too, adopted this outline in maps of the island, but without stating his source.

The map has two scale bars of miglia, each measuring 245 mm. divided into five equal parts. Latitude and longitude are indicated in the ornamental border around the map (latitude 43°-45°, longitude 37°), the rhumb lines are in 32 directions, and there are five wind roses in red, blue and gold. The title ornament shows the lion of St Mark with an open Bible above a mountainous landscape. Three caravels and a fleet of galleys are shown sailing across the sea.

The island itself is mapped in its division into four administrative districts. An attempt is made to show the layout of the most important towns; fortifications and fleets of ships in harbour are also depicted, and the villages are indicated in stylised form. The relief and the network of rivers are stressed, making the map more geographical than some of his other works, perhaps because of the small dimensions which make the entire composition something of a miniature. There are close affinities between this chart and the unsigned Greek chart in the Correr Museum, attributed to Sideri (GS.12), infra.

The area now occupied by Greece is marked on map GS.9.4-5 as Dalmatia, Bulgaria, Albania and Morea. On map GS.9.6, the Greek peninsula is called Albania and Asia Minor Anatolia. On maps GS.9.7 and GS.9.8 a place-name has been added in another hand: such additions are extremely rare in portolan charts. The position marked is called Salines, and is in fact superfluous since the place-name is already given at the same point, inscribed on the hinterland.
3 Gioan Francesco Camocio, topographical map of Iceland, c. 1570.

4 Georgio Sideri, map of Iceland from the atlas of 1563 (GS.10.12).
The mapping of the Atlantic coastline is interesting because it shows the degree of obsolescence of Sideri’s models. Map GS.9.12 does not have a scale bar of miglia, probably because Sideri did not know how far it was from Europe to the Caribbean; this map is based on a model by Benincasa. Also of interest is the depiction of the two large islands located on the west side of the Atlantic: although a map earlier in the atlas (here GS.8.2-3) shows the Caribbean more correctly, here two large islands in the shape of regular parallelograms, one of which is the mythical Antilia, have been drawn in. Chart GS.9.13 shows the coastline of France and Flanders, the British Isles, Ireland, and part of Norway with Iceland. Here, too, the mapping follows the model of Grazioso Benincasa and the map is similar to GS.12.

The map of Crete (GS9.16) is a smaller version of the large map of Crete made by Sideri in 1562 and now in the Correr Museum (here GS.8). There is a scale bar of miglia in the south-west corner; it is 130 mm. in length and is divided into six equal parts. The bar bears the following note: scala demisuratur ... isola delarug sie tutti stiponti milia: 60. The seas by which Crete is washed are also named: Mare Adriatico, Mare Cretico, Mare Carpathio and Mare Punico. Bold red lines divide the interior of the island into four administrative districts: territorio della cania, territorio de rete­sto, territorio de la tera and territorio de Sita. The larger towns are represented by small but recognisable pictures, while more stylised indications are used for settlements of secondary importance. The map of Cyprus (Isola de Cipro, GS.9.17) has a crown to indicate that the island was a kingdom. The seas washing it are named in ornamental bands: Panphiliu Mare (NE), Aegipiliu Mare (SW) and illegible (E). All the place-names —some forty of them— are inscribed in the hinterland within off-white frames. Two place-names have been added in a different hand. In terms of its outline and orientation, this map relies on the map of Cyprus by Ferrandus Bertelli (Rome 1500), while its place-names are taken from earlier mappings of the island and in particular from the map of Matheo Pagano (Venice 1538). In 1566, Silvester van Parijs copied and printed the Sideri map in Antwerp.

The map of Rhodes (GS9.18) resembles that of Cyprus in its style, drawing and colour-scheme. Its toponymy relies on the maps of the island contained in earlier isolari and, in its turn, had an influence on the printed depictions of Rhodes produced in 1570-1574 by Bertelli, Pinargenti and Camocio.

The variety in the cartographic types led Ratti and Ratti to the conclusion that the atlas was made by two different cartographers and that Sideri was responsible only for the geographical maps and the map of Crete. However, it seems hazardous to state with such certainty that two different hands have been at work here and that the the name of the more skillful has been suppressed. Although the Ratti hypothesis cannot be ruled out, we would incline towards the view that Sideri used one set of models for his hydrographic charts and another for the geographical maps in the atlas. His model for the hydrographic charts of the Old World was probably one of the atlases of Grazioso Benincasa of Ancona: especially in the areas around the English Channel and the Atlantic, Sideri’s atlas contains many of the views held by that mid-fifteenth century cartographer. Further support for our hypothesis can be found in the fact that Sideri signed one of the hydrographic charts, in the uniform ornamentation of all the leaves, and in the presence of wind roses of a form typical of Sideri’s work.

The overall composition and aesthetics of this atlas and the cartographic work on the coastlines are reminiscent of the atlases of Battista Agnese, although it cannot compete with them in terms of artistic quality or freshness of geographical information.


GS.10 Portolan atlas with 14 maps, 1563.
Parchment, 500 x 360 mm. (closed).
Signed and dated: Georgio Sideri dicti Calapoda Cretensis fecit nel anno domini 1563 die 21 Auosto [GS.10.1].
Provenance: Zeno Collection.

The atlas contains: GS.10.1 (f2v-f3r), maps of the northern and southern hemispheres; GS.10.2 (f3v-f4r), a portolan chart of the western hemisphere; GS.10.3 (f4v-f5r), a portolan chart of Europe, Africa, Asia and part of South America; GS.10.4-5 (f5v-f6r), a double portolan chart of the Black Sea and the eastern Mediterranean; GS.10.6-7 (f6v-f7r), a double portolan chart of the central and western Mediterranean; GS.10.8 (f7r-f8v), a portolan chart of the west coast of the Iberian peninsula and North Africa; GS.10.9 (f8r-f9v), a portolan chart and topographical map of England, southern Scotland and Ireland; GS.10.10 (f9v-f10v), a portolan chart and topographical map of England, southern Scotland and Ireland; GS.10.11 (f10v-f11r), a portolan chart and topographical map of Crete (La Isola di Candia); GS.10.12 (f11r), a portolan chart and geographical map of Iceland (Islandia); GS.10.13 (f12v), a portolan chart and geographical map of Rhodes (Rodii).

The atlas has 12 leaves containing 12 portolan charts, one geographical map of the northern and southern hemispheres, and a frontispiece bearing the coat-of-arms of the Venetian house of Michiel, also created by Sideri. The frontispiece bears Sideri’s dedication to Giovanni Francesco Michiel, Duke of Crete, in which apart from formality and respect we can also detect a note of familiarity: Ut pro tot, ac tantis tuis erga Sebeniscus Inllustris ... tuae qua omnes tui Cre­teses te uno ore eternis incensam Lauditas ex tessoni alligis ex parte Gratam se exhibeat hunc artis virtuosisque luce & Losculum magna elaboratum cura tibi virtutu amatori optimo offert, atque dedicat.

The twelve portolan charts are ornamented with plant motifs in all four corners, with the exception of the first chart (f3r-f4v),...
The portolan charts (GS.10.2 to GS.10.10) are extremely simple and have absolutely no ornamentation or information about the hinterland, with the exception of the Black Sea chart (GS.10.4), on which there are three banners: a Christian one in the Crimea and two, one Christian and one Muslim, over Constantinople. On GS.10.2 and GS.10.3 the coastline and islands are picked out in red and blue; on the other charts, the coastline is sepia and only the islands are coloured. In this map, too, there is a degree of archaism in the toponymy which is indicative of the nature both of Sideri's sources and of those for whom the atlas was intended. The scholarly sources are particularly obvious on chart GS.10.4-5, where the Black Sea is called Pontus Euxinus rather than the more usual Mare Maggiore and the Sea of Azov is Moetis P[allus].

The introductory map consists of facing heart-shaped depictions of the northern hemisphere (left) and the southern hemisphere (right). They have a common title: GENERALIS TOTIUS URBSI DESCRPITIO. Above the maps and between the two hemispheres: PARTIM EX VETERIBUS; below the maps and between the two hemispheres: PARTIM EX RECENTIORIBUS COLECTA. The projection of the northern hemisphere has the North Pole at its centre and that of the southern hemisphere the South Pole.

Charts GS.10.2 and GS.10.3 have a scale of latitude at the Equator. These charts do not have scale bars of miglia, the latitude bars standing in for these (Sapi che la misura desta prima taula et della seconda se mesura pigradi). The remaining maps and charts have scale bars and 32-direction wind roses in alternating colour-schemes (red, blue and gold). Apart from some place-names, the portolan charts in the atlas (GS.10.2 - GS.10.9) give no information about the hinterland.


GS.11 Portolan chart of the Mediterranean, 1565.

Parchment, 430 x 290 mm.

Signed and dated: Georgio Sideri dico Calapoda Cretensis fecit nel anno Domini 1563 die ... Iugiai.


Provenance: the chart belonged to the Congetratio de propaganda fide in Rome and was bought by the Bibliothèque Nationale on 4 December 1901. It may be the portolan chart of Europe (Normal-Portolano) dating from 1563 which according to Nordenskiöld was in the Borgia Museum in Rome in 1897.

This small portolan chart shows the coastline of Europe, Asia and Africa, from the Baltic to the area south of Mecca, along with the islands of the Mediterranean, the British Isles, Iceland, the Azores and the Canaries. There is a scale bar on the lower part of the map, divided into ten equal parts of 51 mm. each. Two large wind roses in blue, red and gold are positioned over the North African hinterland, and a third over modern-day Romania (Vlachie). A smaller wind rose, with 16 directions, is situated to the west of the Iberian peninsula. The network of rhumb lines is dense, with 16 32-direction systems. The place-names are marked in sepia and red. Since red is the predominant colour used for the coastal place-names, it is not possible to distinguish between capital cities and smaller towns. The Peloponnesse, the Crimea and the islands are coloured green and gold.

England and Scotland are shown as separate islands. Scandinavia is depicted in an unusual manner: the hinterland contains mountain ranges with green foothills, lit from the west. The larger islands, and Spain, are marked with coats-of-arms. Some cities are marked: (Avignon), (Genoa), Venice, (a fortified city in the mountains of Syria), the Monastery of St Catherine on Mt Sinai, and Cairo.

A legend over Morocco refers to the capture of the pirate lair of Penon de Velez by King Philip of Spain in 1564.


[GS12] Portolan chart of the central and eastern Mediterranean and the Black Sea, c. 1560.

Parchment, 403 x 600 mm.

Unsigned and undated.

Venice, Correr Museum, Portolani 33.

Provenance: Collection of Giulio Balbi Valier.

This is the only work by Sideri in Greek to have survived. It covers the greater part of the Mediterranean, omitting only the Iberian Peninsula. It bears resemblances to two signed works by Sideri—the 1561 portolan chart of Europe (GS.7) and the fragment of the portolan chart of 1560 (GS.6)—and so it seems reasonable to date it to the same period. The attribution is further strengthened by the representation of the terrain, which is characteristic of the work of Sideri.

The left-hand side of the map is damaged, and an attempt was made to repair it with parchment at an early date. However, it seems unlikely that any part of the cartography was destroyed, since the central system of rhumb lines is still in the middle of the chart.

The 16 32-direction rhumb line systems are in sepia; place-names are in sepia and red, and peninsulas and islands in red, blue and green. There are three complete wind roses in blue and gold, two half wind roses in blue, gold and red, four scale bars in the orna-
5, 6 Georgio Sideri, portolan charts, from the atlas of 1563 (GS.10.2, GS.10.3).
7 Georgio Sideri, map of Crete, from the atlas of 1563 (GS.10.11).

8 Abraham Ortelius, map of Crete, 1584 et seq.
The atlas contains: AL.1.1 (f1r-f2r), a portolan chart of the coast-line of western Europe and North Africa, with the British Isles and Ireland; AL.1.2 (f2v-f3r), a portolan chart of the coastline of the Balkans, Italy, Mediterranean France and Spain, along with the west and central sections of the North African coast; AL.1.3 (f3v-f4r), a portolan chart of southern Italy, western Greece, with Sicily, and the Peloponnese; AL.1.4 (f4v-f5r), a portolan chart of the Adriatic coast; AL.1.5 (f5v-f6r), a portolan chart of the eastern Mediterranean and the Black Sea, and AL.1.6 (f6v-f7r), a portolan chart of the Aegean. The binding states the book to be a Cosmografia e carte de navigare.

The network of sepia and red rhumb lines consists of 16 32-direction systems. The coastline is shown in sepia and red or green, the place-names are in black and red, and the regional names are in red. The islands and wind roses are brightly coloured (in blue, green, red and gold). The charts in the atlas are surrounded by gold and red ornamental bands and include one or two scale bars (without numbering) in characteristic wavy bands. All the charts except AL.1.3 include an indication of north in their compass roses. There are no scales of latitude or longitude.

This portolan atlas in Greek is a homogeneous work of cartography. The range of colours is the same on all six maps of which it consists and also resembles the colour-schemes of other Greek-language works. The wind roses with their inset Mediterranean compasses are reminiscent of the undated portolan chart of Nikolaos Vourdopoulos (NV.2), as are the ornamentation of the North African coastline on AL.1.2 and the way in which the cities of Venice, Genoa and Thessaloniki are depicted.

The structure of the atlas is certainly that which we encounter in similar sixteenth-century works. At first sight, the affinities with Greek-language works of the early seventeenth century would seem to suggest that this atlas was made in a similar environment, but there is a feature which differentiates this atlas from the others: the fact that the third chart deals with the coastline and islands of the Ionian Sea, with southern Italy and Sicily (AL.1.3). This is a point of originality in the work, since the chart shows an area which did not usually attract the interest of portolan chartmakers. It could, perhaps, be hypothesised that the area in question was the main area of activity either of the cartographer himself or of the sailor who commissioned the atlas. Furthermore, the extreme distortion of the area around Kyllini, which has the appearance of a fifth 'leg' of the Peloponnese, and the exaggerated and bold depiction of Cephalonia—coloured gold—makes it possible to focus our hypothesis still more specifically on that island and the coast of the Peloponnese facing it.

Palaeography reveals that the cartographer wrote a practised and scholarly hand. The vigorous scriptoria in the monastery on the Strophades islands may be connected with the work in question here. This evidence, and in particular the form of some of the letters under the strong influence of typography, allow us to date the work to the mid-sixteenth century.

Depictions of cities: (AL.1.1): Μπαρτζαλόνα, Αβηνηόμ, Αληζερη.
(Al.1.2): Αβινηομ, Γενουβα, Βενετήα, Σαλονίκη, Μπαρτζαλόνα, Αβηνηόμ, Αληζερη.
and possibly for the personal use of the chartmaker. This utilitarian characteristic of the cheaper works produced for use by sailors alone, a portolan chart of the Black Sea, the Sea of Azov and the Mediterranean, with the Aegean islands, Crete and Cyprus; ANY.1.6 (f6v-f7r), a portolan chart of the eastern Mediterranean, with Sicily and Crete; ANY.1.5 (f5v-f6r), a portolan chart of the central Mediterranean, with Malta, Sicily and Corsica; ANY.1.4 (f4v-f5r), a portolan chart of the central and eastern Mediterranean, with Sicily and Crete; ANY.1.6 (f6v-f7r), a portolan chart of the central and eastern Mediterranean, with the Aegean islands, Crete and Cyprus; ANY.1.7 (f7v-f8r), a portolan chart of the Black Sea, the Sea of Azov and the Propontis.

Structurally, this is a 'classic' Mediterranean portolan atlas. The work is extremely rough; no care has been taken over the aesthetic aspects of the charts, whose plainness and simplicity is characteristic of the cheaper works produced for use by sailors alone, and possibly for the personal use of the chartmaker. This utilitarian character is further demonstrated by the care taken to indicate the dangerous places for navigation, which are marked with crosses and dots.

The charts have no rhumb lines, simply a central wind rose or compass with 18 winds in sepia and red, on which the orientation is sometimes marked in the Latin alphabet (S, P, etc.). On some maps there is a second arc at some distance from the wind rose, though this does not form a grid. The central compass and the simplified cartographic work remind us of the utilitarian isolarii used by the Italian and Ottoman sailors of the period. The first two charts have scale bars of miglia in their borders. Most of the charts are surrounded by a green decorative band, which breaks off whenever cartographic needs dictate.

The coastline is picked out in green, place-names are in sepia and black, there are very occasional gold ornaments on the wind roses and at the estuary of the Don (in blue). ANY.1.4 has a damaged representation of Venice. In the hinterland, only the Taurus Mountains in Asia Minor are shown (ANY.1.6), together with a range of mountains in the Libyan hinterland. There are simple banners and emblems—in pen, possibly by another, still more untutored, hand—to mark England, Scotland, Libya and the Crimea. Of the countries of the hinterland, only Anatolia and Spania are named, in Latin letters faded almost to illegibility.

In the catalogue of the Brooklyn Museum of Art, the atlas is dated 1430, which would make it the sole surviving work of the Paleologan period. However, the cartographic work does not bear out a dating to the early fifteenth century, despite the fact that the sources for the first chart in the atlas (that which includes the British Isles) are still older than that time. Palaeographic study of the chart reveals it to have been drawn by a vulgar hand and allows it to be dated to the mid-sixteenth century, at the earliest, while a second and more learned script appears at certain points, especially in the toponymy of the largest islands. The first script is later than that of the Anonymous of Lucca.


THE ANONYMOUS OF NEW YORK

ANY.1 Portolan atlas with seven charts.

Parchment. Unsigned and undated (mid-sixteenth century).


The atlas contains: ANY.1.1 (f1v-f2r), a portolan chart of the Atlantic coastline of Europe, from Porto to Denmark, with the British Isles and Ireland; ANY.1.2 (f2v-f3r), a portolan chart of the west coast of the Iberian peninsula and North Africa, with the Canaries; ANY.1.3 (f3v-f4r), a portolan chart of the coasts of the west Mediterranean, with the Balearic Islands, Sardinia and Corsica; ANY.1.4 (f4v-f5r), a portolan chart of the central Mediterranean, with Malta, Sicily and Corsica; ANY.1.5 (f5v-f6r), a portolan chart of the central and eastern Mediterranean, with Sicily and Crete; ANY.1.6 (f6v-f7r), a portolan chart of the eastern Mediterranean, with the Aegean islands, Crete and Cyprus; ANY.1.7 (f7v-f8r), a portolan chart of the Black Sea, the Sea of Azov and the Propontis.

Structurally, this is a ‘classic’ Mediterranean portolan atlas. The work is extremely rough; no care has been taken over the aesthetic aspects of the charts, whose plainness and simplicity is characteristic of the cheaper works produced for use by sailors alone, and possibly for the personal use of the chartmaker. This utilitarian character is further demonstrated by the care taken to indicate the dangerous places for navigation, which are marked with crosses and dots.

The charts have no rhumb lines, simply a central wind rose or compass with 18 winds in sepia and red, on which the orientation is sometimes marked in the Latin alphabet (S, P, etc.). On some maps there is a second arc at some distance from the wind rose, though this does not form a grid. The central compass and the simplified cartographic work remind us of the utilitarian isolarii used by the Italian and Ottoman sailors of the period. The first two charts have scale bars of miglia in their borders. Most of the charts are surrounded by a green decorative band, which breaks off whenever cartographic needs dictate.

The coastline is picked out in green, place-names are in sepia and black, there are very occasional gold ornaments on the wind roses and at the estuary of the Don (in blue). ANY.1.4 has a damaged representation of Venice. In the hinterland, only the Taurus Mountains in Asia Minor are shown (ANY.1.6), together with a range of mountains in the Libyan hinterland. There are simple banners and emblems—in pen, possibly by another, still more untutored, hand—to mark England, Scotland, Libya and the Crimea. Of the countries of the hinterland, only Anatolia and Spania are named, in Latin letters faded almost to illegibility.

In the catalogue of the Brooklyn Museum of Art, the atlas is dated 1430, which would make it the sole surviving work of the Paleologan period. However, the cartographic work does not bear out a dating to the early fifteenth century, despite the fact that the sources for the first chart in the atlas (that which includes the British Isles) are still older than that time. Palaeographic study of the chart reveals it to have been drawn by a vulgar hand and allows it to be dated to the mid-sixteenth century, at the earliest, while a second and more learned script appears at certain points, especially in the toponymy of the largest islands. The first script is later than that of the Anonymous of Lucca.


ANTONIO MILLO

** AM.1 Portolan atlas, 1557.

Parchment.

London, British Museum.


AM.2 Portolan chart of the Mediterranean and the Atlantic coastlines of Europe and North Africa, 1567.

Parchment, 550 x 920 mm.

Signed and dated, Antonio de Mela Cosmographus fecit MDLXVII.


Provenance: The Ayer Collection.

This ‘classic’ portolan chart has a rhumb line network in 32 directions each, a large compass rose with 16 directions over North
Africa, two smaller roses with eight directions (over Egypt and Hungary), and two typically Mediterranean compasses, one in Denmark and the other to the south of Libya. The chart contains a scale of latitude, on its left side, and two scale bars of miglia in the centre, one to the north and one to the south. The rhumb lines and coasts are in sepia and red, although the coasts of Cyprus, Crete and Sicily are marked in blue or green. The colour-scheme is gentle, thus making the ornamentation stand out more boldly. There are gold ornamental bands to the north and south. The earliest chart of Antonio Millo so far located is one of the rare works in which the cartographer states his place of origin, the island of Milos (Antonius de Melo Cosmographus fecit MCLXVII), and his capacity as cosmographer – that is, chartmaker. We can conclude from this evidence that in 1567 Antonio had not yet finalised his professional status and was still contemplating the prospect of a career in mapmaking. The influences from the work of Diogo Homem, both in the cartographic execution of the work (especially in the representation of the Iberian peninsula and the British Isles) and in the ornamentation (gold depictions of cities, wind-roses, fluttering banners), make it possible to hypothesise close contact between Antonio and the Portuguese cartographer, who was in Venice at the time. The hypothesis is strengthened by the presence of a depiction of Christ Crucified on the narrow edge of the chart. The production of Diogo Homem in the period before 1576 was prolific (twelve world atlases and eleven large portolan charts); it seems likely that he had a workshop, and it is not impossible that Antonio was an apprentice there. Europe, Africa and Asia are marked in majuscules. There are emblems for Ireland, England, Scotland, France, Spain and Portugal, flags for Holland, Ragusa, Thessaloniki, the west and east coasts of the Black Sea, Asia Minor, and North Africa, and depictions of cities: Genoa and Venice are shown on a large scale, and there are smaller representations of Seville, Granada, Paris, Ragusa, Thessaloniki, Constantinople, Lebanon, St Catherine on Mt Sinai, Cairo and seven more cities in the hinterland of North Africa. There is a depiction of the Nile, with its labyrinthine springs.

AM.2 World map, 1582.
Parchment, 865 x 432 mm.
Signed and dated: Antonius Millo Cosmographus F 1582.

The map bears the following title: Tuto el disco pert in carta maritina in piano. Although this is primarily a geographical map, it retains some of the features of the portolan tradition, particularly in the way in which coastlines are depicted, in the compasses and in the wind roses. There are no rhumb lines, but there is a grid of parallels and meridians and a scale of latitude to the west of Africa. The main climatic zones are marked (Circolo Artico, Tropico de Cancro, Equinociale, Tropico de Capricorno). There are also two scale bars of miglia, one bottom left and the other bottom right. Between them, in a wavy band, is the chartmaker’s signature and the date of the work. The map is surrounded by a red and gold ornamental border. There are three complete wind roses on the edge of the map and two half-roses, in red, blue and gold. Ten smaller compasses are marked with the typical Mediterranean wind indications. On the right-hand side of the work, the coat-of-arms of its first owner. The names of large areas are written in the hinterland in red, along with the network of rivers and lakes and the most important cities, while emblems denote the ruler of each place. Gold majuscules over the sea name the Indian and Pacific Oceans (Oceano orientalis and Oceano Occidentalis). There are ships at sea, and monsters of the deep.

In its cartography, its colour scheme and its visual aspects, this map is reminiscent of the Rome and Berlin atlases. Here, too, the models used are those of Italian cartography of the second half of the sixteenth century.


AM.4 Isolario of the Mediterranean, c. 1580-1591.

Antonio Millo’s ‘island books’ are usually composed on paper and bound into small, handy volumes. They consist of maps of the islands, with brief accompanying texts on each. Both the maps and the texts are clearly intended for sailors, with additional information being provided in narrative portolans or navigation instructions inserted before or after the isolario itself. Apart from the broad outline of the coast of each island, the charts show orientation and a few details—plain, and often erroneous—about the interior. The island charts do not have scales of latitude and longitude, nor are scale bars used. However, the accompanying texts meet the needs of sailors, providing information about the position and size of each island, its harbours, the hazardous points for sailors in the sea around each island, and the distances from neighbouring islands. Antonio’s isolarri usually end with an alphabetical index.

The texts of Antonio’s isolarri are written in a simple, colloquial Venetian dialect. The large number of idiomatic usages and the striking irregularity of the spelling are indications that the compiler and his users were not men of much learning. The charts of the isolarri are clear and well-drawn, but the models on which they are based were obsolete: although the isolarri of Antonio can be dated to the period from 1580 to 1591, their cartographic models and the quality of the information they supply are those of the first half of the sixteenth century.

The following copies of the work have been located:

*AM.4.1 Isolario of the Mediterranean and narrative portolan [c. 1580].
Sepia on paper, 282 x 205 mm.
Signed on the title page: _di me Antonio Millo_
_Private collection._

According to the description, this isolario consists of 60 leaves with charts and descriptions of 90 Mediterranean islands. The narrative portolan accompanying the isolario has 37 leaves. The work is dedicated to Vicenzo Morosini: _Al’ Illustrissimo et Eccellentissimo Signor Vicenzo Morosini Dignissimo Procurator fi Santo Marco._

References: Sotheby’s (1999) lot 49.

*AM.4.2 Isolario of the Mediterranean and narrative portolan, 1582.

Sepia on paper, 93 leaves, 285 x 210 mm.
Signed and dated on the first page, also bearing the dedication of the work: _di me Antonio Millo ... li 20 Maggio. 1582._
_Private collection._

The manuscript bears the title _Isolario et Portolano di me Antonio Millo_ and is dedicated to the _Illustrissimo et Eccellentissimo Signor Signor Sforza Palavicino Marchese de Corte Magiore... di Venezia._ It consists of an isolario with 60 leaves and a descriptive portolan covering 32 leaves. The isolario contains maps and descriptions of 75 Mediterranean islands, of which the maps of Sicily, Crete and Cyprus occupy two facing pages while the remainder are on single pages. The script and the charts are in sepia, quite a number of the capitals are in gold, and the wind roses (eight directions) and initial words of each entry are in red. The extremely succinct portolan gives the distances between various places in the Mediterranean and brief instructions for navigation.

This is the earliest dated work in the series of isolarii by Antonio Millo, and also the most ornamented.

References: Sotheby’s (1985), lot 237.

AM.4.4 Instructions for navigation and isolario, 1590.

Sepia on paper, 113 leaves, 300 x 205 mm. (closed).
Signed and dated twice: by the title of the navigation instructions (... _di me Antonio Millo Armiraglio dal Zante... MDLXXXVII: Zenaro_) and by the title of the isolario (_De Antonio Millo Armiraglio al Zante..._).


The manuscript codex consists of: a) leaves 1-51, arte del Navigar de Antonio Millo Armiraglio dal Zante nel qual si contiene tutta quelle chosa qual richiede... perfetto marichante... con la distancia di tuta le isola dal mar Egeo. Fecit Ano MDLXXXX: Zenaro; b) leaves 52-113 (with corrections to the page numbering, which is often double or triple): Isolario de tuto el Mare Mediterraneo Principiando dal stretto di gibiltera ouer Colone di Erchule y tuto levante alla isula de Cipro ultima alla parte de Levante. De Antonio Millo Armiraglio al Zante nel qual si contiene tutte le isule del mare mediteraneo principiando dalla isola di giaviza...

The charts and texts are in sepia. The wind roses (eight winds) and the Mediterranean compasses typical of the work of Antonio have a reddish tinge. The names of the islands are inscribed in the usual band. The charts provide information for sailors (indicating shallows and reefs) and are accompanied by brief texts. The isolario contains 72 charts and descriptions of islands GIE-
Antonio Millo,
charts of Majorca, Sardinia,
Corsica, Malta, Corfu,
Cephalonia, Leukada,
Melos, Paros, Chios,
Lesbos and Kaloyeros,
from the isolario of 1590 (AM.4.4).

At the end of the isolarlo are two tables: one gives the distances between the islands of the Aegean (ff. llv-l12), and the other is a double-column alphabetical list of the islands covered by the book (ff. l12r-l13). At the bottom of the right-hand column of this list is a note by Antonio apologising for any errors in the work.


**AM.4.5 Instructions for navigation and isolarlo of the Mediterranean, 1590.

Sepia on paper, 305 x 205 mm. (closed).

Signed and dated: de Antonio Millo - Ano Domino: MDLXXXX.

Greenwich, National Maritime Museum, Ms P 17.

The work is entitled Tuto Quelo Richiede Alarte Da Navicar - Insulario De Antonio - Ano Domino: MDLXXXX. The manuscript consists of 113 numbered leaves.

References: Stylianou (1980) 75.

AM.4.6 Instructions for navigation and isolarlo of the Mediterranean, 1591.

Sepia on paper, 300 x 200 mm. (closed).

Signed and dated on the title page: de Antonio Millo - Ano MDLXXXI.

London, British Museum, Add. 10,365, ff. 36-95.

The title of the work is as follows: Arte del Navicar de Antonio Millo Armiraglio in Candia: nel qual si contian tute quelle cose qual si richiole a uno perfetto marinaro, si di la practica come di la siencia con tute le sue dicerie...Ano MDLXXXXI vac Isolario de tuto el Mare Medeteraneo... de Antonio Millo Armiraglio di Candia...

This is the second signed work of Antonio in which the cartographer states that his surname is toponymically derived. The work is dedicated to G. Bembo: All Illustissimo Signor Zaune Bembo dignissimo provveditor de armada Patron mio Colendisimo. Di vostra signoria illustissimo Umilisimo servitore, Antonio de Millo armiraglio in Candia. Giovanni Bembo was military commander of Crete from 1588 to 1591 and Provededor d’Armata between late 1591 and early 1595. Antonio may have been Armiraglio in Candia in 1591, as an officer in the fleet commanded by Bembo — as the wording of the dedication (Padron mio), indeed allows us to hypothesise.


With very few exceptions, the charts in the isolarlo do not have specific titles giving the names of the islands, as is usual. The beginning of the descriptions of Melos is interesting: Antonio refers to the tradition among the sailors of the island of providing pilots (armiraglio) for the fleets — a tradition dating back to the time of the Athenian League.

AM.4.7 Isolario and narrative portolan of the Mediterranean, late sixteenth century.
Sepia on paper, 290 x 220 mm. (closed).
Signed on the title page: di Antonio Millo.
Venice, Correr Museum, 904.
Provenance: Correr Collection.

The full title of the manuscript is as follows: Isolario et Portolano de tutto el Mare Mediterraneo di Antonio Millo nel Qual si ragiona di tutte el isole dittu Mare con sui porti cita sorzitori sache scholgi distancie da l'una a l'altra et qual vento et quanto circhondano longeze et largeze con el portolano qual chomincia dal streto di gibilitara per tutta la costa el mare oceano fino ila citta de costantinopoli et poi la costa si l'asia fino al fiume nilo et la costa de Africa fino a ceutta in streto con il portolano dil mare oceano principiando dal streto di gibilitara fino tutta la costa di finandra con lochi porti sache distanze da locho a locho le sonde dil fondo li segnali con sute le corente di aque de flusi et reflusi con la luna diligientemente.

There are 74 charts and descriptions of islands (ff. 1-91): GIEVICA & FORMENTARA, MAGICOLICA, MINORICHA, SARDIGNA, CORSICHA, ELBA, MONTE CRISTO & FORMISA & PIANA, IXCHIA & CHIRAPI, STRONBOLO & LIPARI & BULCAN, SICILIA, MALTA, GOZO & COMIN & COMINETO, VEGIA, ARBE, PAGO, CHERSO, OSARO, LISA, BRAZA, SOLTA, LIESENA, AGUSTA, CHURCOLA, MELEDA, ISOLA DE MEZO, TREMITI, CHORFU, PAXCO & ANTI PACSO, ZEFALENIA & ZAFALONIA PICHOLA, SNAVRA, ZANTE, MOREA (=PARTE DE LA MOREA & PRODONO & SAPIENCIA & CAPRERA & UENETICO & FARIONI), CERIGO & CICERIGO, MILLO, SERFO, SIFANTO, FERMENTA, SIRA, ZEA, ANDRI, TINO, MICCHONO, SDOLES, PAROS & ANTIPARO & IROCHI & DASCHALIO, NEXIA, NEGRONPonte, SCHIRO, SCHIATO & SCOPolo, LIODROMI (=SELIA & DROMO & SARACHINO), LIMNOPELAGICI, STALINNES, SAMMATRAGI & LIMBRO & TENDO, METTELLINO, SIO, PXARA & ANTIPXARA, NICARIA & STAPODIA & DRAGONISI, SAMO, PATINO, STANPALIA, CHRUSI, SANTORINI & TIRASIA & CAIENI & APRONISI, ISOLA DE NIO, LERO, CALAMO, AMURGOS, NAFI, CHALOGIERO, LANGO, NISARO, PISCOPIA, CARCHI & LIMONIA, RODI, SCHARPANTO & CHASO, CANDIA, CIPRO.

The isolario is followed by a narrative portolan of the Mediterranean and a portolan of the Atlantic coast of Europe. Spellings vary in most cases between the maps and the texts.


** AM.4.8 Portolano ossia Isolario dell Arcipelago.
Sepia on paper.
Signed.
Paris, Bibliothèque Nationale de France.
Provenance: the work was in Venice until 1792.


* AM.4.9 Isolario (late sixteenth century).
Sepia on paper, small 8°, 97 leaves.
Signed.
Private collection.

References: Sotheby's (1980) lot 369.

AM.5 Atlas with 12 portolan charts and 11 topographical maps, 1582-1584.
12 leaves of parchment glued to cardboard, 1025 x 710 mm.
Provenance: the atlas was in the collection of Victor Emmanuel II.

The atlas contains: AM.5.1 (fl1r), a portolan chart of the Mediterranean and the western European coast; AM.5.2 (fl2v), a planisphere, Tuto el Dischoperto in Carta Marina / Antonius Millo F.; AM.5.3 (fl2r), a portolan chart of the coastline of the central Pacific, Mare Oceano; AM.5.4 (fl3v), a portolan chart of the coasts of the north and central Atlantic, Mare Oceano; AM.5.5 (fl3r), a portolan chart of the coasts of the south Atlantic, Mare Oceano; AM.5.6 (fl4v), a portolan chart of the coasts of the Indian Ocean, Mare Oceano; AM.5.7 (fl4r), a portolan chart of the coasts of the north and central Pacific, Oceano Mare; AM.5.8 (fl5v), a portolan chart of the eastern Mediterranean; AM.5.9 (fl5r), a portolan chart of the Black Sea; AM.5.10 (fl6v), a topographical map of Germany, Germania; AM.5.11 (fl6r), a topographical map of Spain, La Spagna; AM.5.12 (fl7v), a topographical map of the southern part of Central Europe, Descrittione Ungaria MDLXXIII; AM.5.13 (fl7r), a topographical map of Switzerland, Descricione de tutto el paese de Sviceros; AM.5.14 (fl8v), a topographical map of the British Isles and Ireland, Britanniae Insulae quaes Angliae et Scotiae Regna Continet cum Hibernia adiacente nova d.; AM.5.15 (fl8r), a topographical map of France, Totius Galliae Descripti; AM.5.16 (fl9v), a topographical map of Denmark and southern Scandinavia, Septemtrionalium Regionum Svetiae Gothiae Norvegiae Daniae / Antonius Millos F.; AM.5.17 (fl9r), a topographical map of the Low Countries, Flandriae Recens exactae descriptio / Antonius Millos F.; AM.5.18 (fl10v), a portolan chart of the south coast of the central Mediterranean; AM.5.20 (fl11v), a portolan chart of the Adriatic; AM.5.21 (fl11r), a portolan chart of the coastline of Greece, western Asia Minor and south Italy; AM.5.22 (fl12v), a topographical map of Italy with Sardinia, Corsica and the Dalmatian coast, Provincia de la Italia MDLXXXII; AM.5.23 (fl12r), a topographical map of the Balkan peninsula and west Asia Minor, Totius Graetiae Descriptio.

This atlas consists of a planisphere, twelve portolan charts and...
ten topographical maps, and it is the earliest surviving dated atlas by Antonio Millo. It must have been produced in steps over the period from 1582 to 1584: two of the twenty-three maps in the work are dated, one to 1582 (the topographical map of Italy) and the other to 1583 (the topographical map of Hungary), while the introductory planisphere and the map of the north Atlantic coastline record a British passage around the north coast of Canada in 1584 (Canal qale passo corso Inglese lano MDLXXXIII).

The considerable period of time over which the atlas was produced explains the geographical disorder of its structure and the inconsistency of Antonio’s signature. He signed the planisphere as Antonius Millo and the maps of the Low Countries and Denmark as Antonius Millos – another variation to add to the long list of those encountered elsewhere: (de Melo, Millo, Milo, da Millo, Millos) and further increase the confusion. The period of production and the variety of the sources on which Antonio drew also explain the fact that some of the maps in the atlas have Italian titles and others in Latin.

Great care was taken over the atlas; in cartographic terms, it is unusual in combining portolan charts and topographical maps, a feature also found in the Berlin atlas (infra). The portolan charts are inspired by the work of Agnese, whose influence is also plain in the structure of the atlas and in the introductory planisphere surrounded by depictions of the eight winds.

In the portolan charts, Antonio’s interest focuses on the new discoveries. He twice mentions a ‘north passage’ of the American continent by British explorers in 1584, and he devotes one of the maps in his atlas to ‘New India’, the group of islands to the west of New Guinea which – as he tells us in a note – had been discovered in 1567. Here, Antonio (or his source) is close to the truth: in 1568, Alvaro de Mendana de Neira had set out from Peru and discovered the Solomon Islands. As for the supposed north passage of America, Antonio may have had in mind Martin Frobisher’s circuit of Labrador in 1576. (Frobisher, reaching the gulf which bears his name, believed he had found a passage around America; however, he was unable to prove his theory because he returned home after coming across what he thought was a rich seam of gold.)

The topographical maps in the atlas are based on the published maps of the period, most of them printed in Italy. The Switzerland of Aegidius Tschudi, the Greece of Sophianos (possibly from its smaller Salamanca edition), the Denmark and south Scandinavia of Cornelius Anthoniszoon (published by Camocio in 1562), the British Isles of George Lily (in the Sebastiano di Re edition of 1558), and the Italy of Bertelli (1565) are all immediately recognisable.

All the maps in the atlas have gradations of latitude and the planisphere has indications both of latitude and of longitude. Antonio makes much of this innovation, inscribing Gradus Longitudinis in letters many times the size of the other indications. The scales vary from map to map: the portolan charts are scaled in nautical miles (with a note explaining the values), while the topographical maps use a variety of scales depending on the sources and the systems of measurement applied in each country (Spanish leagues, Italian, Flemish or Swiss miles).

Each map is surrounded by a two-tone ornamental band, usually in red and gold – the colours also used for the wind roses and compasses typical of the work of Antonio. The portolan charts have a dense network of rhumb lines (32 directions) marked in sepia. Coastlines are picked out in blue or red and the islands in bright colours (blue, gold, red), while there are coats-of-arms, emblems and banners. The names of broader geographical areas are often recorded in wavy coloured bands. Ships sail the oceans, and there are monsters of the deep.

The topographical maps emphasise the relief of the terrain, the rivers and lakes, towns and cities, administrative divisions and forests. It is interesting that on none of the maps does Antonio insert representations of cities, indicating them instead in a standardised, conventional manner, though in rare cases on the topographical maps the largest cities are designated with a stylised depiction of a circular walled urban complex.

All the topographical maps in the Rome atlas, with the exception of those of Hungary and Germany and the replacement of the Sophianos map of Greece by the one created by Gastaldi, are also to be found in the 1586 Berlin atlas.


AM.6 World atlas with 30 leaves, 6 portolan charts and 8 topographical maps, 1586.

Parchment, 405 x 525 mm. (closed).

Signed and dated (f16r and f29v).

Berlin, Staatsbibliothek Preussischer Kulturbesitz, 2° Ms. Ham. 446.

Provenance: the atlas came into the possession of the SPK in 1883. Before that, it had belonged to the collection of the Duke of Hamilton.

The atlas contains: AM.6.1 (f1r), Mare Occceano (illustration); AM.6.2 (f1v), Figura della Sfera Accidentale; AM.6.3 (f2r), El corso del Sole et della Luna; AM.6.4 (f2v), Figura della Sfera Substantiale; AM.6.5 (f3v-f4r), a portolan chart of north and central America; AM.6.7 (f7v-f8r), a portolan chart of the Atlantic Ocean; AM.6.8 (f9v-f10r), a portolan chart and topographical map of the south and east coasts of Africa and the Arabian peninsula; AM.6.9 (f11v-f12r), a portolan chart and topographical map of south-east Asia and the islands in the Pacific Ocean; AM.6.10 (f13v-f14r), a portolan chart of the Mediterranean (Evropae, Asia, Africa); AM.6.11 (f14v-f15r), a topographical map of south Scandinavia and Denmark (Septentrionium Regionum Svetiae Gothiae Norvegiae Daniae, Antonius Millo); AM.6.12 (f17v-f18r), a topographical map of the Low Countries (Flandriae Description); AM.6.13 (f19v-f20r), a topographical map of the British Isles and Ireland (Britannia Insula Qvae duo Regn Angliam et Scotiam cum Hibernia); AM.6.14 (f21v-f22r), a topographical map of France...
21 George Lily / Ferando Bertelli, topographical map of the British Isles and Ireland, 1562.

22 Antonio Millo, topographical map of the British Isles and Ireland, from the atlas of 1586 (AM.6.13).
This fine atlas is an interesting mixture of portolan charts and topographical maps accompanied by texts which would be useful to sailors. It begins with four introductory drawings. First there is an illustration of the Atlantic Ocean, with large merchant vessels setting off in all directions from a point of Cavo S. Vincente, the southernmost extremity of the Iberian Peninsula. Most are under sail for the New World, although one is heading for Africa and another up the coast of western Europe. The sun is shown setting behind clouds, and the ocean is full of strange monsters. After this come images of the armilla (Figura della Sphera Accidentale), an elaborate table or instrument with three concentric revolving circles which can be used to calculate the movements of the sun and the phases of the moon (El Corso del Sole e della Luna), and a diagram giving the positions of the heavenly bodies. The six double portolan charts which the atlas contains (AM.6.5, 6, 7, 8, 9 and 10) have scales of latitude, scale bars and the compass roses so characteristic of Antonio’s work. The eight double topographical maps have a network of parallels and meridians rather than rhumb lines. They also bear indications of latitude and longitude and scale bars, though different metrical systems are used on each occasion.

Most of the maps in the atlas have titles, set in the usual wavy band or in gold borders. The hinterland is depicted in the same manner in both the portolan charts and the topographical maps, which enhances the cartographic uniformity of the atlas. Towns and cities are given stylised markings, as are the rivers and the relief of the terrain, where the style is rather similar to that of Georgio Sideri. The ornamentation includes the emblems of the rulers of each area and ships. The colour-scheme and the manner in which the maps, charts and drawings in the atlas have been executed are both elaborate and tasteful. The texts are a reworking of the material to be found in Antonio’s isolarii and handbooks of navigation. The first text supplies basic information about navigation (f3r), and this is followed by descriptions of the Canary Islands (f4v-f5r), of the islands of the North Atlantic (f6v-f7r), of the island of S. Lorenzo (f8v-f9r), of the islands of the Indian Ocean (f10v-f11r), of the map of the world (f12v-f13r) and of the portolan chart (f14v-f15r). Last comes a lengthy text on how to identify the coordinates of a given position and how to calculate magnetic deviation (f16v-f17r, f18v-f19r, f20v-f21r, f22v-f23r, f24v-f25r, f26v-f27r, f28v-f29r and f30v).

As in the case of the Rome atlas, the structure of this atlas is influenced by the work of Agnese, while the cartographic work often relies on the printed Italian production and in particular on the maps in the miscellaneous atlases of the period 1560-1575 (Bertelli, Camocio, Gastaldi, Salamanca, etc.). The map of Greece, for instance (AM.6.18), is a faithful replica of the corresponding map drawn and engraved by Gastaldi in 1566 (Zacharakis b562), the map of Switzerland follows closely that of Aegidius Tschudi (engraved by Paolo Forlani at Venice in 1567), and that of Denmark and southern Scandinavia is a copy of the map by Cornelius Anthoniszoon engraved in Venice by Camocio in 1562.


[AM.7] Portolan chart of the central and eastern Mediterranean, late sixteenth century.
Parchment, 950 x 625 mm.
Unsigned and undated.
Vienna, Österreichische Nationalbibliothek, K III 108 652.

This unsigned, undated chart is attributed to Antonio Millo because it displays all the recognizable characteristics of his production: the orientation inscribed in the characteristic wavy bands at the four points of the horizon, the two compasses typical of the work of Antonio (with the indications for the Mediterranean winds), the wind roses, the colour-scheme and the cartographic execution all reinforce the attribution to the Greek cartographer. The chart covers the eastern Mediterranean basin and the hinterland around it, from Sardinia to Syria and from the Red Sea to Venice. The ornamentation includes 32-direction wind roses, compasses and banners. In the hinterland, only Asia Minor and areas near the coast of North Africa are shown in relief. The only city depicted is Constantinople, which is designated Islamic. There are also Islamic signs over Greece (Thessaloniki), Asia Minor and North Africa. Dalmatia and Italy are marked as Christian.


Parchment, 332 x 262 mm (closed).
Unsigned and undated.
Venice, Correr Museum, Port. 39.
Provenance: Correr Collection.

The atlas contains the following maps, each measuring 290 x 498 mm: AM.8.1, a portolan chart of the Atlantic coast of Europe and North Africa; AM.8.2, a portolan chart of the central and west Mediterranean; AM.8.3, a portolan chart of the east Mediterranean; AM.8.4, a portolan chart of the Black Sea; AM.8.5, a portolan chart of the Adriatic; AM.8.6, a portolan chart of the Aegean; AM.8.7, a topographical map of Crete (Candia), and AM.8.8, a topographical map of Cyprus. Of the eight maps and charts in this unsigned and undated atlas,
23 Cornelius Anthoniszoon / Gioan Francesco Camocio, nautical chart of Denmark and south Scandinavia, 1562.

24 Antonio Millo, nautical chart of Denmark and south Scandinavia, from the atlas of 1582-1584 (AM.5.18).
the last two – the topographical maps of Crete and Cyprus – are to be attributed to Antonio Millo, a view advanced by A. Ratti and Susanna Biadene. There are without doubt very close similarities between the last two maps and the corresponding maps in Antonio’s isolarli, but the possibility should not be overlooked that – as we believe – the entire atlas is by him. The cartography is reminiscent of the Rome and Berlin atlases by the Greek chartmaker (nos. AM.5 and AM.6), and there is also supplementary evidence to support this view: the colour-scheme, the Mediterranean compasses characteristic of Antonio’s work, the typical designation of the cities, the fluttering banners and emblems, and the rendering of relief with short, low mountain ranges lit in the centre.

If the whole atlas is by Antonio, then it could be described as incomplete: the absence of place-names for the islands on the last portolan chart in the atlas (AM.8.6) and the rather juvenile appearance of the two topographical maps might further strengthen our hypothesis and explain why the chartmaker neither signed nor dated the work.

On the portolan charts, the rhumb lines are in sepia and red, intersecting in 16 systems surrounding a central system. The coastline is picked out in red and green, place-names are in red and black, and the islands are marked in red, blue, green or gold, as are the wind roses, the emblems and the banners. The atlas has a scale of latitude only on the first leaf, while only the scale bars, usually without numbering, are in characteristic wavy bands. On the topographic maps of Crete and Cyprus, the coastline is marked in red and green (respectively), the place-names are in black, the relief is in green and the rivers are blue. The cartographic work is careful, but the models on which the maps were based were highly obsolete.

In the portolan charts of this atlas, the influence of printed cartography is less strong than in the atlases by Antonio Millo now in Rome and Berlin. Stronger influences can be detected from the manuscript chart and atlassmakers of Venice, such as Diogo Homem of Portugal.

The atlas contains representations of the following cities: (AM.8.1) Serfield, Tremisana, Fessa, Granata, Seuilia, Lisbona, Toledo, Valencia, Madrid, Saragos, Tortosa, Bagiona, Rocala, Parris, Anuersa; (AM.8.2) Granata, Valencia, Tortosa, Barcelona, Narborna, Marsiglia, Genova, Fiorenca, Roma, Napoli, Taranto, Manfradonia, Ancona, Ferrara, Venecia, Zara, Ragus, Valona, Corinto, Tunesi, Bona, Algier; (AM.8.3) Vaiona, Art, Patrasa, Uolo, Salonichii, Eno, Costainopol, Nichomidia, Castro (four illegible cities along the south coast of Asia Minor), Alasandreta, Zafa, Larisa, Alexsandria, Lornich, Magna; (place-names illegible on AM.8.5); (AM.8.6) Moschosuris, Misitra, Corinto, Atene (four cities in Eubea), Vollo, Salonicithi, la Stromola, Cauala, Eno, Magari, Rodosto, Nichomidia, Montana, Anguri, Bursia, S.40, Smirna, Palaria, Areto and four cities in Crete.


*AM.9 Fragments of a world map or atlas, late sixteenth century.

Four leaves, parchment, 600 x 830 mm. each.
Signed (Antonius Millo fecit), undated.
Private collection.

According to the description given in the Christie’s Catalogue, four of the six leaves making up an impressive wall map measuring 3300 x 1200 mm. have survived. They show: a) part of South America, b) Europe and North Africa, c) the Middle East, and d) Asia. The leaves depicting North America and Africa are missing.

The coastline is picked out in black ink and blue, grey and red paint. The islands are brightly-coloured, some of them in gold. In the hinterland, mountain ranges, rivers and lakes are shown in blue. Cities are given stylised markings in gold. There is an elaborate depiction of Venice, and coats-of-arms designate the principal European cities. Ships and monsters of the deep ornament the seas. There are fourteen wind roses and two scale bars. Antonio's signature is in a wavy band. The sheets of the map are set in a triple ornamental frame in brown and sepia.


NIKOLAOS VOURDOPoulos

*NV.1 Portolan chart of the eastern Mediterranean.
Parchment, 440 x 230 mm.
Signed and dated: ἄργον χειρός Νικολάου Βουρδόπουλου εκ νέσου Πάτμων ἐν ἔτει 1608.
Volterra, private collection until 1897 (archivio dei signori conti Guidi).

There are four 32-direction wind roses. The rhumb lines converge off Carpathos. Scale 1: 6,440,000 approx. (as calculated by A. Magnaghi).

The map covers the eastern basin of the Mediterranean, with the coastline of the Greek peninsula along the Ionian and Aegean Seas, Protopis, the coast of Asia Minor and North Africa as far as Kāvopa (poco sopra di Tocra). The coastline is marked in green, with place-names picked out in green and red. The course of the River Jordan forms three lakes. To the east of the Red Sea are three conical mountains marked Σκύατο όρος. A little church marks the site of Jerusalem.

Alberto Magnaghi wrote of this map: “Da misure di distanze, riscontro che con quelle corrispondenti date dalle carte moderne, appare con esattezza e diligenza: cos_ pure le figure e i contorni dei divisì paesi corrispondono alla realtà con sufficiente approsimazione”.

Antonio Millo, charts from the atlas of 1582-1584 (AM.5).
Antonio Millo, charts from the atlas of 1582-1584 (AM.5).
NV.2 Portolan chart of the Mediterranean.
Parchment, 505 x 550 mm.
Signed: πιυμα νικολαοθ αναγνοστου βουρδοπουλου απο την πατμον.
Undated (early seventeenth century).
Provenance: bought by the Bibliothèque Nationale in 1888, from the booksellers Veuve Adolphe Labitte, Em. Paul & Cie.

The map shows the Mediterranean, most of the Black Sea, and the Sea of Azov. It is signed (top right). At the neck of the parchment is a cross with the ΙΧΝΩ (Ιησούς Χριστός Νικά).
The rhumb lines, in green and sepia, form a circle of 16 32-direction systems with a central system focusing on Sicily. There are three 16-direction wind roses: one to the north of Avignon and two in the African hinterland, while a half-rose is located in the European hinterland to the north of Venice. A smaller wind rose in purple, with eight directions, lies off the south-east coast of Cyprus. One of the rhumb lines south-west of the Nile Delta (ραχι) has been erased and corrected. The rhumb lines are coloured purple, blue, dark green and light green. The coastline is in black, and the place-names are in light red and purple; most of them are illegible, especially those in the north-east part of the chart. Cyprus, the Peloponnese, the Crimea and Sicily are marked in light green; Crete is light red, as are Euboea, Sardinia and Corsica. The smaller islands are coloured blue and purple.
The map contains the following representations: a small fortress and a walled city in the Iberian hinterland, the castle of the Popes at Avignon (αβινιουμ), the harbour and lighthouse of Genoa (Γένουα), Venice with the cathedral church of St Mark (Βενετία), Thessaloniki (σαλονήκι), a walled city in the Balkan hinterland, and Cairo and three other Muslim cities in the hinterland of Africa. The Red Sea is coloured red, with a white line to mark the spot where Moses made his crossing. There are banners, green mountain ranges lit from the east, palm trees and animals in the African hinterland.
The chart is a fine piece of work, with a clear coastline and harmonious earthy colours. The iconography contains vernacular elements.


THE ANONYMOUS OF ATHENS

AA1. Portolan chart of the Mediterranean.
Sheepskin, 395 x 935 mm.
Unsigned and undated (seventeenth century).
Athens, Benaki Museum, cat. no. 36215.

The map shows the coastline of the Mediterranean and the Black Sea. It has two 100 mm. scale bars divided into five equal parts, with double numbering: every five units (above) and every ten units (below). The bars are framed in coloured ornaments with plant motifs in which the influence of baroque aesthetics can be identified.
Almost on its central axis, the chart has a scale of latitude from 31° to 46°. This breaks off near Aulon so as not to fall on top of the coastal place-names and continues further to the right, in the empty hinterland. There are eight 32 direction rhumb line systems in sepia and red, within which are an eight-direction wind rose to the north of Antioch, three half-roses with 32 directions, and a quadrant of a fourth wind rose at the bottom right-hand edge of the chart.
The coastline is picked out in blue, and the place-names are in sepia and red. Islands are marked in blue, green, red and gold, as are the estuaries of the Nile and the Dneister. However, the colouring of the islands goes no further than Corfu: the Greek islands, and the larger islands of the Mediterranean, have been left uncoloured, making the work look rather incomplete.
There are representations of Barcelona (?), Genoa, Venice, Konya, and three cities under Islamic banners (in the interior of the Balkans, in Tartary, and in Gaza), with a further two on the north-west coast of Africa. Also shown, on their thrones, are the King of Spain, the Austro-Hungarian Emperor, the Ottoman Sultan, and the rulers of the Tartars, the Arabs and Morocco. A standard-bearing janissary is shown upright in the interior of Asia Minor, and a Berber archer in the hinterland of Libya.
The interest and originality of this map lie in the five tables of place-names which surround it. In black or red ink, they consist of lists of place-names in various parts of the area depicted, each location being accompanied by a number which corresponds to a number on the chart. The first table, to the west of the African hinterland, gives place-names in Sicily, Sardinia, Corsica and the smaller islands of the Tyrrenhenian Sea; the second (in the middle of the African hinterland) gives place-names in Crete; the third (to the east of the African hinterland) lists the place-names of Cyprus; the fourth and largest (to the west of the European hinterland) deals with place-names in the Aegean, and the fifth and last (in the Balkan hinterland) is blank.

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