

THE BOOK OF MICHAEL OF RHODES
A FIFTEENTH-CENTURY MARITIME MANUSCRIPT

EDITED BY PAMELA O. LONG, DAVID MCGEE, AND ALAN M. STAHL

Volume 3: Studies
edited by Pamela O. Long

transcription by Franco Rossi
translation by Alan M. Stahl

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INTRODUCTION: THE WORLD OF MICHAEL OF RHODES,
VENETIAN MARINER

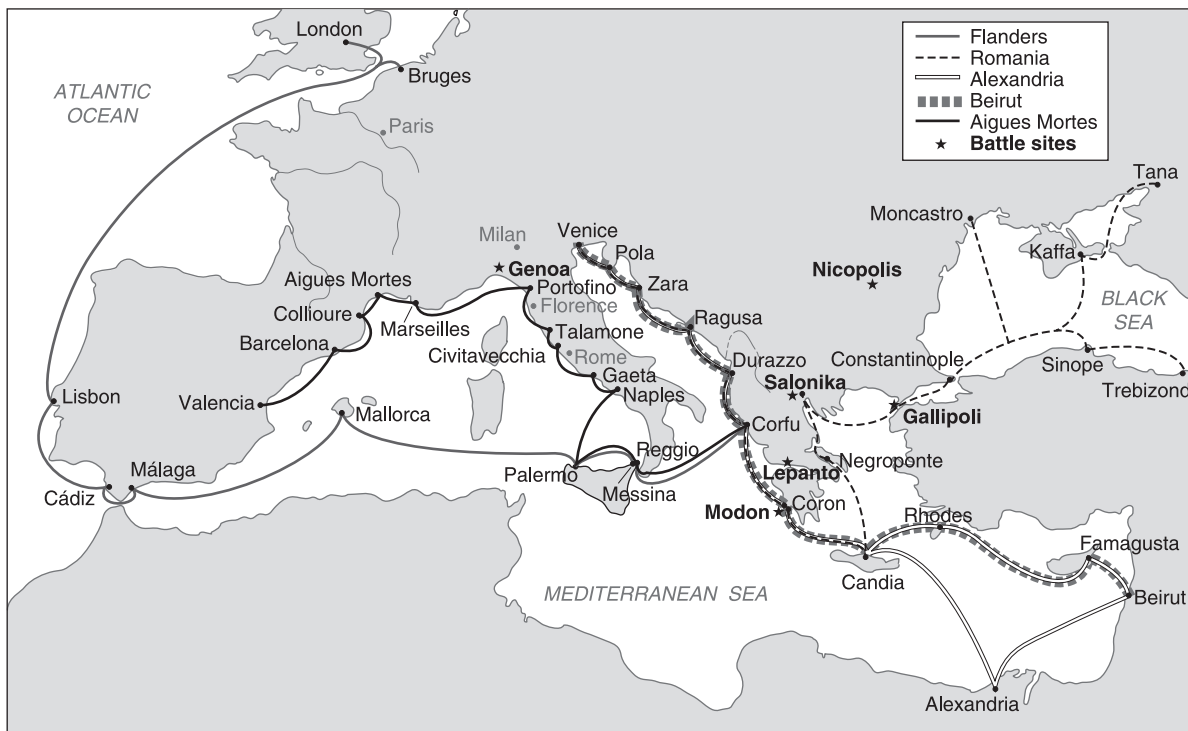
PAMELA O. LONG

Michael of Rhodes began his career as an oarsman on a Venetian galley and over his lifetime worked his way up to various offices on shipboard, even including, on three occasions, the highest office that a non-noble could obtain—*armiraiò*, the individual under the noble officers who commanded the fleet. He spent much of his adult life at sea, working on Venetian galleys, both commercial and military, and traveling to the eastern Mediterranean as well as north to London and Flanders (figure 1.1). In many ways his life must have resembled that of hundreds of other seamen serving either Venice or one of the many other maritime states in the first half of the fifteenth century. What makes Michael highly unusual—indeed, for a person who started his career as an oarsman, absolutely unique—is that he wrote a book.

Or rather, as we now know, he wrote two books. The first is the manuscript that is the subject of this edition and group of studies, here being made available for the first time. The second is a manuscript in the Biblioteca Nazionale Marciana, written in the same hand and formerly attributed to one Pietro di Versi. Franco Rossi, the paleographer who has studied and transcribed the first Michael of Rhodes manuscript for this edition, has shown that the Marciana manuscript was also almost certainly written by Michael himself.¹

The first book of Michael of Rhodes, the subject of the studies in the present volume, comprises a rich compendium of diverse materials from mathematics to shipbuilding to calendars. Michael wrote it with his own hand and illustrated it with colorful pictures. The book provides a unique and fascinating view of the knowledge and interests of a lowborn man who worked his way up in the maritime world of Venetian shipping, and who at the same time clearly devoted much time to the study of mathematics, astrology, and a variety of other topics. Michael can only be described as a highly unusual individual, even a genius. His book reveals some of his own individuality and also provides a fascinating window into the wider world of knowledge and practice in which he lived and worked. From an era—the first half of the fifteenth century—in which individuals from the elite classes, more often than not university-educated men, produced most extant writings, Michael's book constitutes a precious addition to a small number of works written by nonelite workers and artisanal practitioners.

1. See Franco Rossi's essay in this volume, 99–113. The second manuscript, formerly attributed to Pietro di Versi (Venice, Biblioteca Nazionale Marciana, Ms. It. IV, 170 [= 5379]), is available in a recent edition. See Pietro di Versi, *Raxion de' marinieri: Tacuino nautico del XV secolo*, ed. Annalisa Conterio (Venice: Comitato per la Pubblicazione delle Fonti relative alla Storia di Venezia, 1991).



1.1

Map of the voyages taken by Michael of Rhodes between 1401 and 1443.

Michael of Rhodes first signed on as an oarsman to a Venetian galley in 1401, and he sailed on annual voyages for the next 42 years. He seems to have begun to write his book in 1434.² He compiled a variety of materials, including over 100 folios devoted to various kinds of mathematical problems; a portolan detailing navigational directions for specific ports and destinations; and a copy of the standing orders issued to the Venetian guard fleet in 1428. Michael also included an autobiographical section in which he lists the voyages on which he worked between 1401 and 1443, giving his own position on the ship, naming the ship's officers, and indicating the ship's destination or charge (e.g., the guard fleet). His book includes much astrological information; calendrical material detailing saints' days and the calculation of the date of Easter; an illustrated section on shipbuilding, the earliest extant tract on the subject; and pages on topics such as cutting sails, masts and yards, rope, and anchors. The codex is not a work of original authorship in the modern sense of the word. Rather it is a collection of materials from a variety of sources, many of

2. See the manuscript (hereafter cited as MOR), fol. TOC1b, where is written "In the name of Christ, 1434," in the same hand as the table of contents and most of the rest of the manuscript. In addition, the tables for calculating the date of Easter and the phases of the moon begin in 1435. See also Alan Stahl's essay in this volume, 35–98, which discusses the identification of Michael on fols. 90-2b and 204a.

which evidence Michael's own study and individuality. In his essay in this volume, art historian Dieter Blume suggests that Michael himself very probably created the book's striking illustrations.³

Michael may have written the book at least in part to advance his career as a mariner, as we shall see, and he undoubtedly gained some admiration from his contemporaries as a result. Yet I would resist the conclusion that external rewards constituted his sole motivation. Michael seems to have been deeply absorbed in at least some of the book's subject matter, especially mathematics. He also clearly possessed and enjoyed exceptional graphic skill, as the neat and straight lines of script, beautifully drawn rope "page dividers," and charming images attest. The studies of this volume make clear that Michael used many different sources to compile his own book. Nevertheless his individuality is often clearly in evidence. An extensive document of 440 folios, the book provides a fascinating window into the technological and practical knowledge of an ordinary, nonelite—but certainly exceptional—Venetian mariner.

The manuscript itself does not fall easily into existing genres of writing; rather it shares the characteristics of several different ones. It is a mariner's notebook, the first extant example of its kind, but by no means the last.⁴ Considering its predominant focus on mathematical topics, some would consider it an "abbacus" book, that is, a manual of practical mathematics similar to those that proliferated widely before and during Michael's lifetime.⁵ Certainly it contains an abbasus book within it. Yet the autobiographical material, the 1428 ship orders, the portolan, and the striking pictorial material distinguish it from contemporary books in the abbasus tradition.

It is similar in some ways to merchants' notebooks such as the fourteenth-century *Zibaldone da Canal*, but shaped to the interests and tasks not of a merchant but of a mariner who worked on Venetian galleys.⁶ In other ways it resembles a commonplace book, a term used by medievalists to denote a manuscript collection of miscellaneous items gathered by an individual over time for his or her own use.⁷ In part it is similar to a *ricordanza*—a record usually written by heads of families noting family events such as births and deaths, properties, and commercial transactions, a genre

3. See Dieter Blume's essay in this volume, 147–191, esp. 166. Michael would have been familiar with the rich visual culture of early fifteenth-century Venice. For this culture, see especially Patricia Fortini Brown, *Venetian Narrative Painting in the Age of Carpaccio* (New Haven: Yale University Press, 1988); Brown, *Venice and Antiquity: The Venetian Sense of the Past* (New Haven: Yale University Press, 1996); and Brown, *The Renaissance in Venice: A World Apart* (London: George Weidenfeld & Nicolson, 1997).

4. See the essay in this volume by Mauro Bondioli, 243–279, for later examples.

5. This is the view of Warren Van Egmond, whose *Practical Mathematics in the Italian Renaissance: A Catalog of Italian Abbasus Manuscripts and Printed Books to 1600*, supplement to the *Annali dell'Istituto e Museo di Storia della Scienza* (Florence: Istituto e Museo di Storia della Scienza, 1980), provides a detailed catalogue of the many manuscripts of this genre.

6. For the *Zibaldone da Canal*, see Alfredo Stussi, ed., *Zibaldone da Canal: Manoscritto mercantile del sec. XIV* (Venice: Comitato per la Pubblicazione delle Fonti relative alla Storia di Venezia, 1967); and John E. Dotson, trans., *Merchant Culture in Fourteenth Century Venice: The Zibaldone da Canal* (Binghamton, N.Y.: Medieval and Renaissance Texts and Studies, 1994).

7. For commonplace books, see A. G. Rigg, "Commonplace Books," in Joseph R. Strayer, ed., *Dictionary of the Middle Ages*, 13 vols. (New York: Charles Scribner's Sons, 1982–1989), 3: 492–493.

best known through Florentine examples.⁸ Yet, as several of the authors in this volume note, Michael's record of his annual voyages is more a service record than a typical *ricordanza*.

The view that Michael's record of his voyages should be seen as a service record is supported by Alan Stahl's discovery of a labor dispute between the noble patrons and mariners in the 1430s in which the Venetian Senate sided with the non-noble officers. In the years of this dispute the Senate frequently asked for records of the galleys to ascertain whether or not the men had been paid their full due.⁹ Since Michael began writing his book in 1434, exactly during the time of these disputes, the requests of the Senate could well have moved him to write down the record of his voyages.

Michael's lifetime service record represented far more than was required, however. Further, he copied his service record into his book after he had completed most of the mathematical section, leading to the supposition that he had already written a great deal when the request was made by the Senate. The detail of his service record leads to the conclusion that he had actually kept such records for years. While it is certainly a service record, it might also be seen as something more—an early example and form of the “popular” (i.e., written by nonelite individuals from the artisanal classes) autobiographical text, a genre studied especially by James Amelang. Amelang rightly cautions that such texts in earlier centuries “contain none of the characteristics of the modern version of the genre which features inner development—the unfolding of selfhood through a gradual drama of individual affirmation.”¹⁰ This is certainly true of Michael's own brief and factual record, which nevertheless is a remarkably detailed account for the early fifteenth century, especially given his nonelite social status.

Michael also recorded momentous personal events, seemingly by adding them later, as can be surmised by the handwriting. To his record of the guard fleet voyage of 1415 he added: “And at this point I found that my wife Dorotea had died.” Concerning his guard fleet voyage of 1422, he wrote: “And my son Teodorino died on this voyage.” Fourteen years later, appended to a note about his 1436 voyage to Flanders, he reported: “And on this voyage I found my wife Cataruccia dead.” The final sentence of Michael's book in his own hand reports the last event of his life related to his service: “In the name of God and of the Blessed Virgin Mary. I, Michael of Rhodes, received the steelyard by special grant from our Signoria on January 28, 144[5], and moreover gave it to Stefano Negro to manage on my behalf.” This statement refers to the traditional benefit given to mariners over the age of 60 who were too old or ill to work. It is written with the same ink as

8. For the Florentine *ricordanze*, see especially Gian-Mario Anselmi, Fulvio Pezzarossa, and Luisa Avellini, *La “memoria” dei mercatores: Tendenze ideologiche, ricordanze, artigianato in versi nella Firenze del Quattrocento* (Bologna: Pàtron Editore, 1980); Duccio Balestracci, “Le memorie degli altri: Ricordanze, libri di conti e cronache dei ceti al margine della scrittura nell'Italia medievale,” in *Cultura e società nell'Italia medievale: Studi per Paolo Brezzi* (Rome: Istituto Storico Italiano per il Medio Evo, 1988), 1: 41–58; and Vittore Branca, introduction to Branca, ed., *Mercanti scrittori: Ricordi nella Firenze tra Medioevo e Rinascimento* (Milan: Rusconi, 1986), ix–lxxviii, trans. Murtha Baca as *Merchant Writers of the Italian Renaissance* (New York: Marsilio Publishers, 1999), which also contains a substantial selection of texts.

9. See Stahl's essay in this volume, 81–84.

10. James S. Amelang, *The Flight of Icarus: Artisan Autobiography in Early Modern Europe* (Stanford: Stanford University Press, 1998), 28.

the sentences recording the death of two of his wives and his son.¹¹ Perhaps Michael at the time of retirement and possibly ill health was looking back over his life and the record of his service, to which he then added this record of more deeply personal events.

Considered in its entirety, Michael's book is a richly diverse and informative document. In its broadest context, it can be considered an early example of an expanding literature on the practical and technical arts in the fifteenth century, written in part by practitioners and in part by learned men.¹² What motivated Michael to create his own book has been one of the central questions of our collective studies. The tentative answer to that question depends on an understanding of the broader Venetian context in which he lived and worked. Before describing the book itself in greater detail, it is appropriate to recall some aspects of that maritime context.

RHODES AND VENICE

Although there is no other documentation for his origins, we can assume from his name that either Michael himself or his family came from the island of Rhodes in the eastern Mediterranean, a location which would have put him in close proximity to Venetian and other Italian settlers and traders. His ethnic origins were almost certainly Greek. Although some Rhodian families would have been of Venetian descent, usually such individuals possessed a surname, which Michael did not. The several Greek prayers written in Latin letters in the manuscript provide further support for his probable Greek origins, and suggest as well that although Greek may have been his native language, it may not have been a language that he knew how to read or write.¹³

Rhodes in the early medieval period was controlled by the Byzantine Empire except for occasional interludes of Moslem conquest. From the late eleventh century, one or more Venetian merchants usually ruled the island. Then in 1309 with the encouragement of the Pope and the Genoese, the Knights Hospitallers of St. John of Jerusalem, a crusading military order, conquered the island and built massive fortifications on land and a powerful naval fleet. Under Hospitaller rule, both native Greek and Italian residents carried on a lively trade with the many merchants whose ships regularly visited the Rhodian port. In the fifteenth century, the Hospitallers protected an active port as it also effectively protected Rhodes itself and the southern seas against the Ottoman Turks. (The Turks finally conquered the island in 1522.)¹⁴

11. MOR, fol. 91-2b (for Dorotea), fol. 92a (for Teodorino), fol. 93a (for Cataruccia), and fol. 204a for Michael's final statement. The "steelyard" was a benefit that Venice provided for aging sailors. For this topic in general, see Dennis Romano, "Vecchi, Poveri, e Impotenti: The Elderly in Renaissance Venice," in Stephen J. Milner, ed., *At the Margins: Minority Groups in Premodern Italy* (Minneapolis: University of Minnesota Press, 2005), 249–271, esp. (for sailors) 253–254; and for the steelyard, see Alan Stahl's essay, 96.

12. Pamela O. Long, *Openness, Secrecy, Authorship: Technical Arts and the Culture of Knowledge from Antiquity to the Renaissance* (Baltimore: Johns Hopkins University Press, 2001), 175–243.

13. MOR, fols. 183a, 184a, 184b, 185a; and see Alan Stahl's essay in this volume, 36–39, for a discussion of this issue.

14. Anthony Luttrell, *The Hospitallers of Rhodes and Their Mediterranean World* (Aldershot, Hampshire: Variorum, 1992); Constantin Marinescu, "L'Île de Rhodes au XV^e siècle et l'Ordre de Saint-Jean de Jérusalem d'après des documents inédits," in *Miscellanea Giovanni Mercati*, vol. 5: *Storia ecclesiastica. Diritto*, Studi e testi, 125 (Vatican City: Biblioteca Apostolica Vaticana, 1946), 382–401; and Nicolas Vatin, *Rhodes et l'Ordre de Saint-Jean-de-Jérusalem* (Paris: CNRS, 2000).

Assuming that he came directly from Rhodes in 1401, Michael journeyed from the island to the port city of Manfredonia in Apulia on the eastern coast of Italy where he signed on to his first Venetian ship as an oarsman. In this his initial journey, he followed a well-established itinerary whereby Greeks and others from the eastern Mediterranean migrated to the Italian peninsula to work on Venetian galleys. Numerous foreigners in Venice included a substantial Greek community established on the right bank of the Grand Canal in the quarter of Castello. Michael's will tells us that he also lived in this quarter—in the parish of San Pietro di Castello.¹⁵ A permanent Greek presence in Venice was in part a result of the long-standing relationship of the Republic to the Byzantine Empire.¹⁶ Greeks in Venice included many small retailers, artisans, especially tailors and glassworkers, stonemasons, workers in naval construction, soldiers and cavalymen, and numerous sailors and mariners who worked on both private ships and public galleys. The Greek community was cohesive and strove to maintain itself and its language and customs, but at the same time it was deeply tied to its adopted city.¹⁷ Although Greeks originally would have celebrated Greek Orthodox rather than Roman Catholic religious rites, during Michael's lifetime they were expected to conform to the Roman Catholic ritual.¹⁸ Michael's actual religious affiliations are unknown. What pervades his notebook is his thoroughgoing piety, evidenced by the "Jesus" at the top of every page, by the prayers, and by the worn page near the end of the book (fol. 202a) displaying the image of St. Christopher.

15. For Michael's will, see, vol. 1, 517–518; vol. 2, 614–620, and Alan Stahl's essay in this volume, 95, and 98, n. 422.

16. The many studies of David Jacoby provide detailed knowledge of this relationship. See, for example, David Jacoby, "The Encounter of the Two Societies: Western Conquerors and Byzantines in the Peloponnesus after the Fourth Crusade," in Jacoby, *Recherches sur la Méditerranée orientale du XIIIe au XVe siècle: Peuples, sociétés, économies* (London: Variorum Reprints, 1979), no. II. See also Jacoby, *Trade, Commodities and Shipping in the Medieval Mediterranean* (Aldershot, Hampshire: Ashgate, 1997); Jacoby, *Byzantium, Latin Romania and the Mediterranean*, Variorum Collected Studies Series CS703 (Aldershot, Hampshire: Ashgate, 2001); and Jacoby, *Commercial Exchange across the Mediterranean: Byzantium, the Crusader Levant, Egypt and Italy* (Aldershot, Hampshire: Ashgate, 2005). See also Eric R. Dursteler, *Venetians in Constantinople: Nations, Identity, and Coexistence in the Early Modern Mediterranean* (Baltimore: Johns Hopkins University Press, 2006).

17. For foreigners in Venice, see Giorgio Fedalto, "Le minoranze straniere a Venezia tra politica e legislazione," and for Greeks (and Albanians), Freddy Thiriet, "Sur les communautés grecque et albanaise à Venise," both in Hans-Georg Beck, Manoussos Manoussacas, and Agostino Pertusi, eds., *Venezia: Centro di mediazione tra Oriente e Occidente (secoli XV–XVI): Aspetti e problemi* (Florence: Leo S. Olschki, 1977), 1: 143–162 and 217–231 respectively; and Giorgio Fedalto, "Stranieri a Venezia e a Padova," in Girolamo Arnaldi and Manlio Pastore Stocchi, eds., *Dal primo Quattrocento al Concilio di Trento*, vol. 3 of *Storia della cultura veneta* (Vicenza: N. Pozza, 1980), 1: 499–535.

18. For the piety of mariners, see Marco Tangheroni, *Commercio e navigazione nel Medioevo* (Rome: Editori Laterza, 1996), 239–243; and for the ecclesiastical history of Venice and the government's attitude toward its Greek Orthodox population, see Paolo Prodi, "The Structure and Organization of the Church in Renaissance Venice: Suggestions for Research," in J. R. Hale, ed., *Renaissance Venice* (London: Faber and Faber, 1973), 409–430. For a study of Venetian religious life from another point of view and for a slightly later period, see John Martin, *Venice's Hidden Enemies: Italian Heretics in a Renaissance City* (Berkeley: University of California Press, 1993).

THE VENETIAN MARITIME WORLD

By the time Michael signed on to his first Venetian galley in 1401, Venice had been engaged in extensive maritime trade in the Mediterranean for centuries.¹⁹ Convoys of Venetian merchant ships sailed east on regularly scheduled itineraries. They were able to dock at a series of strategic bases and ports that were controlled by the Republic directly, or that contained well-established colonies of Venetian merchants, or that operated under favorable trade agreements. These Mediterranean voyages initially took place along two major itineraries. One route comprised Greece, the Aegean islands, and nearby territories that had been part of the Byzantine Empire, a region that the Venetians called *Romania*, referring to the fact that it consisted of the remains of the Roman Empire.²⁰ The second itinerary took Venetian ships to *oltremare* (beyond the sea)—the coasts and islands east and southeast of the Aegean Sea, including Syria, Palestine, and the island of Cyprus. Venetian convoys, when they were following the *oltremare* itinerary, often called at Rhodes.²¹ It would not have been difficult for a young Rhodian such as Michael to take a ship from the island and go west to the Italian peninsula.

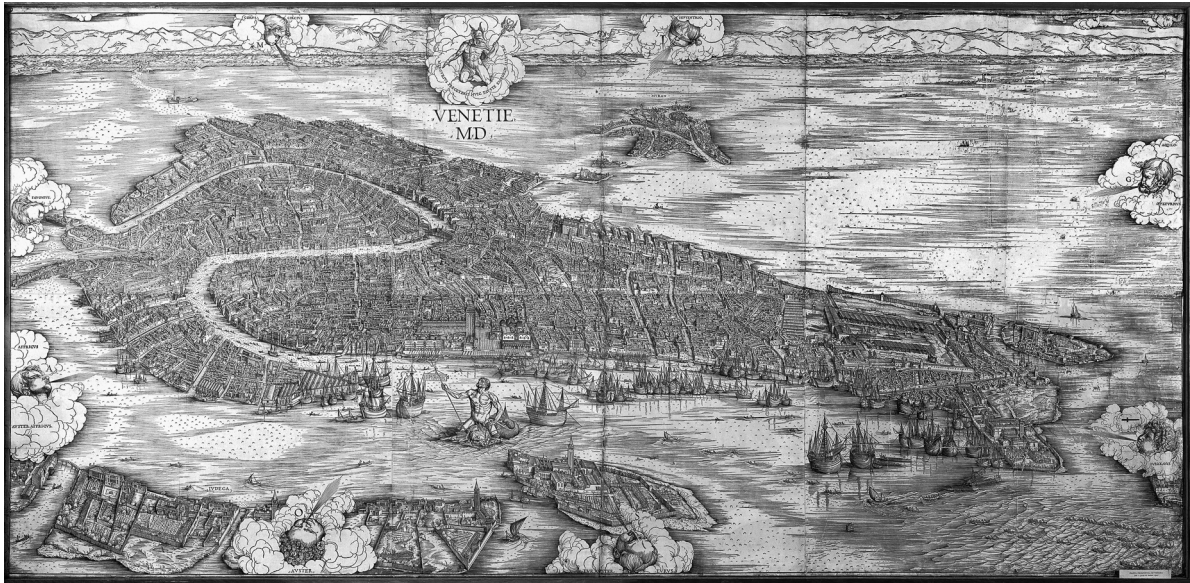
By the early fifteenth century, in addition to the major Mediterranean routes mentioned above, Venetian galley convoys regularly traveled to Alexandria in Egypt and north to London and Flanders. The Venetian Senate mandated and authorized official convoys.²² In addition, numerous private merchant vessels, also regulated to some extent by the Senate, sailed the official routes as well as

19. See Frederic C. Lane, *Venice: A Maritime Republic* (Baltimore: Johns Hopkins University Press, 1973), 68–73. For the recent historiography of Venice, see John Martin and Dennis Romano, “Reconsidering Venice,” in Martin and Romano, eds., *Venice Reconsidered: The History and Civilization of an Italian City-State, 1297–1797* (Baltimore: Johns Hopkins University Press, 2000), 1–35; and for a comprehensive introduction to European trade of which Mediterranean trade was a significant part, see Peter Spufford, *Power and Profit: The Merchant in Medieval Europe* (New York: Thames and Hudson, 2003). The fiscal backbone of Venetian commerce was the Venetian money market and mint. See Frederic C. Lane and Reinhold C. Mueller, *Money and Banking in Medieval and Renaissance Venice*, vol. 1: *Coins and Moneys of Account*, and vol. 2: Reinhold C. Mueller, *The Venetian Money Market: Banks, Panics, and the Public Debt, 1200–1500* (Baltimore: Johns Hopkins University Press, 1985 and 1997); and Alan M. Stahl, *Zecca: The Mint of Venice in the Middle Ages* (Baltimore: Johns Hopkins University Press, 2000). A thorough study of the Venetian system of organizing commercial galleys is Doris Stöckly, *Le système de l’Incanto des galées du marché à Venise (fin XIII^e–milieu XV^e siècle)* (Leiden: E. J. Brill, 1995).

20. For Romania, see especially Gaetano Cozzi and Michael Knapton, *La Repubblica di Venezia nell’età moderna*, vol. 1: *Dalla guerra di Chioggia al 1517*, *Storia d’Italia*, 12 (Turin: Unione Tipografico-Editrice Torinese, 1986), 179–194; David Jacoby, “Les états latins en Roumanie: Phénomènes sociaux et économiques (1204–1350 environ),” and “Les ‘Assises de Roumanie’ et le droit vénitien dans les colonies vénitiennes,” both in his *Recherches sur la Méditerranée orientale*, nos. I and IV; Stöckly, *Le système de l’Incanto*, 101–119; and Freddy Thiriet, *La Roumanie vénitienne au Moyen Âge: La développement et l’exploitation du domaine colonial vénitien (XIII^e–XV^e siècles)* (Paris: E. De Boccard, 1959).

21. For an account of Venetian power and influence in the eastern Mediterranean, see Silvano Borsari, “I veneziani delle colonie,” in Girolamo Arnaldi, Giorgio Cracco, and Alberto Tenenti, eds., *La formazione dello stato patrizio*, vol. 3 of *Storia di Venezia: Dalle origini alla caduta della Serenissima* (Rome: Istituto della Enciclopedia Italiana, 1997), 127–158; and for commercial galleys in this region, Stöckly, *Le système de l’Incanto*, 119–152.

22. For commercial galleys on the Flanders route, see Stöckly, *Le système de l’Incanto*, 152–165.



1.2

Jacopo de' Barbari (ca. 1460/70–ca. 1516), perspective plan of Venice. Scala/Art Resource, NY.

many others. Venetian shipping was a crucial link in the trade between west and east. Western Europe sent metal and wool cloth to the east often in Venetian vessels. With the money gained from selling such products, the Venetians brought back silk cloth and clothing, honey, salt, wheat and other grains, cotton, a red dye called kermes, alum for use as a mordant in cloth dyeing, and soda or potash for making glass. They also carried slaves and furs from the region of the Black Sea, wines from the Greek islands, and spices—pepper, cloves, cinnamon, nutmeg, and ginger—which came through the Levant and Alexandria in Egypt from lands further east such as India.²³ Venetian maritime commerce, and the naval forces needed to protect that commerce, represent the most essential context of Michael's life and work.

Although Venetian shipping dominated northern Mediterranean routes in the first half of the fifteenth century, the Mediterranean was by no means a Venetian sea. Rather, diverse peoples participated in extensive networks of communication and exchange through numerous particular areas of the sea as they also sometimes engaged in intense conflict, both private (piracy) and more organized (warfare). In the twelfth and thirteenth centuries the northern half of the Mediter-

23. Bernard Doumerc, "Le galere da mercato," in Alberto Tenenti and Ugo Tucci, eds., *Tempi: Il mare*, vol. 12 of *Storia di Venezia: Dalle origini alla caduta della Serenissima* (Rome: Istituto della Enciclopedia Italiana, 1991), 357–395, esp. 357–385; Jean-Claude Hocquet, "I meccanismi dei traffici," in Arnaldi, Cracco, and Tenenti, eds., *La formazione dello stato patrizio*, 529–616; Lane, *Venice: A Maritime Republic*, 32, 68–69, 131–134; Thiriet, *La Romanie vénitienne*, 29–178; and for general background, Gino Luzzatto, *Storia economica di Venezia dall'XI al XVI secolo* (Venice: Centro Internazionale delle Arti e del Costume, 1961), esp. 3–145; and Tangheroni, *Commercio e navigazione*.

anean was dominated by the Byzantine Empire, centered in its capital city of Constantinople, while the southern half was dominated by Muslim states. Powers rivaling Venice in the Mediterranean included the Italian city-states of Pisa and Genoa. Venetian control of the eastern Mediterranean was greatly enhanced in 1204 after the Fourth Crusade, during which Venice and its allies lay siege to Constantinople and then captured and sacked the Byzantine capital. In 1261 the Greeks led by the emperor Michael VIII Palaiologos returned to power, throwing off the Latin Empire that had been established by the Fourth Crusade. Over the next 150 years, maritime conflict continued in many regions of the Mediterranean. In the decades prior to those encompassed by Michael's career, such conflicts included a series of bitter naval wars fought between Venice and Genoa.²⁴

In the late fourteenth century, the two republics wielded roughly equal power. They were fierce rivals, both almost entirely dependent on maritime trade for life-sustaining necessities such as grain. In addition, their wealth depended on a vigorous trade of other commodities, including luxury goods. Venice pursued peaceful policies when possible, but also fought Genoa and engaged other antagonists as well. For example, the Hungarian kings pressed claims to the territories and cities of Dalmatia, the territory that formed the eastern border of the Adriatic Sea. Venice had dominated the region for centuries—a domination crucial to the control of the sea itself. In 1358 Venice lost control of the Dalmatian coast after a successful campaign by King Louis of Hungary. Louis's military victory deprived Venice of a region that had provided important maritime ports as well as significant sources of supplies and manpower. About 20 years later, in 1378, a full-scale war erupted between Venice and Genoa. The war was precipitated by the Venetian occupation and fortification of the strategic island of Tenedos near Constantinople, crucial to commercial shipping going to the Black Sea. Genoa decided to fight back in the Adriatic. The Genoese made allies with two enemies of Venice—the Carrara family from the city of Padua and the Hungarians in Dalmatia. Then, in 1379, Genoa took the city of Chioggia at the entrance to the Venetian lagoons. For a time the Genoese effectively blocked the Adriatic. In this the Fourth Genoese War, called the War of Chioggia, Venice came closer than it had ever been to being overthrown by a foreign power. Gradually, however, the Venetians were able to surround and isolate the Genoese at Chioggia and to clear the Adriatic of Genoese ships. Finally in 1381 Venice defeated the Genoese and ended hostilities by signing the Treaty of Turin.²⁵

In the two decades following the signing of the treaty, Venice's maritime fleets were at a low point in terms of numbers of vessels and the manpower needed to work them. The Venetian merchant galley was a large ship that required a crew of more than 200 men to operate effectively.

24. For an introduction to the Mediterranean as a whole, see especially John H. Pryor, *Geography, Technology, and War: Studies in the Maritime History of the Mediterranean, 649–1571* (Cambridge: Cambridge University Press, 1988); and see Lane, *Venice: A Maritime Republic*, 31–43, 173–201, and Thiriet, *La Romanie vénitienne*, 63–78.

25. Roberto Cessi, *Storia della Repubblica di Venezia* (Florence: Giunti Martello, 1981), 306–332; Bariša Krekić, “Venezia e l’Adriatico,” and Michel Balard, “La lotta contro Genova,” in Arnaldi, Cracco, and Tenenti, eds., *La formazione dello stato patrizio*, 51–85 and 87–126, respectively; Cozzi and Knapton, *La Repubblica di Venezia*, 4–5 (for the War of Chioggia) and 195–201 (for Dalmatia); and Lane, *Venice: A Maritime Republic*, 189–196.

Venice's devastating war with Genoa had cost many lives at a time when the population had already been decimated. The plague or Black Death that had reached Venice in 1348 had reduced the population by a third to a half. It was a scourge that periodically reappeared. In 1383 a new outbreak killed about 19,000 Venetians. One result was that Venetian shipping experienced a desperate shortage of manpower, a shortage exacerbated by the loss of the traditional Dalmatian recruiting grounds to the Hungarian king. This great need for oarsmen and other hands on Venetian ships was met in the east. Greeks from Venetian areas of Romania and elsewhere were recruited in large numbers.²⁶ Assuming that Michael was born on the island of Rhodes, he migrated to Italy as part of a large stream of maritime workers from the east who responded to a critical Venetian manpower shortage and found welcome employment on Venetian ships.

From the early fifteenth century, as Michael labored on annual voyages, Venice itself gradually regained military and economic security. In a treaty of 1409 after military defeat, Hungary formally returned the vital area of Dalmatia, and in the next ten years Venice succeeded in dominating almost the entire region, except for the city of Ragusa (modern Dubrovnik). The reconquest of the Dalmatian coast allowed Venice once again to control the Adriatic Sea and its maritime commerce and to ensure safe passage of Venetian ships, a situation that endured until the arrival of Napoleon in 1795. During the first half of the fifteenth century, Venice also acquired an extensive territory on the Italian mainland (the *terraferma*, as it was called) and a standing army. In general the four decades of Michael's voyages between 1401 and 1443 were years of prosperity and expansion. This prosperity in part came about because Venice extracted significant revenues from commercial tariffs and taxation in the eastern Mediterranean.²⁷

During the four decades of Michael's voyages, Venice's most significant maritime enemy came to be the Ottoman Turks, named after Osman (d. 1326) who had united a diverse group of Turkish tribes. In the mid-fourteenth century the Turks had moved into the Anatolian peninsula, and subsequently into the Balkans. They defeated Byzantine and western armies in a series of battles, including one at Nikopolis of 1396 in which they routed an army led by Sigismund, king of Hungary.²⁸ In general the Venetians were unable to fight the Turks on land, but they were concerned to keep them out of the coastal areas of the Adriatic Sea. To protect Venetian shipping from Turkish, Genoese, and other threats, Venice maintained a flotilla of galleys called the guard fleet, thereby exerting control over shipping in strategic areas of the Mediterranean. Of Michael's 43 voyages, 17 were with the Venetian guard fleet. Most of these 17 voyages took place in his younger years.

26. Lane, *Venice: A Maritime Republic*, 197; and Bernard Doumerc, "Il dominio del mare," in Alberto Tenenti and Ugo Tucci, eds., *Il Rinascimento: Politica e cultura*, vol. 4 of *Storia di Venezia: Dalle origini alla caduta della Serenissima* (Rome: Istituto della Enciclopedia Italiana, 1996), 113–180, esp. 146–148.

27. See Maria Georgopoulou, *Venice's Mediterranean Colonies: Architecture and Urbanism* (Cambridge: Cambridge University Press, 2001); Giuseppe Gullino, "Le frontiere navali," in Tenenti and Tucci, eds., *Il Rinascimento: Politica e cultura*, 13–111, esp. 14–23; Krekić, "Venezia e l'Adriatico," 81–82; and Thiriet, *La Romanie vénitienne*, 393–428. For the acquisition of the *terraferma* state, see M. E. Mallett and J. R. Hale, *The Military Organization of a Renaissance State: Venice, c. 1400 to 1617* (Cambridge: Cambridge University Press, 1984), 1–210; and Michael E. Mallett, "La conquista della Terraferma," in Tenenti and Tucci, eds., *Il Rinascimento: Politica e cultura*, 181–244.

28. Pryor, *Geography, Technology, and War*, 165–192.

He was wounded in battle in 1431 and served in the guard only one more time, in 1432, eleven years before he finally retired on January 28, 1445.²⁹

MICHAEL AT SEA

In some cases, Michael's cryptic but precise records of his own voyages can be put together with known aspects of the history of maritime Venice to create a far more detailed account of a particular voyage.³⁰ An example is the voyage of 1403, which he describes as follows: "I signed on as oarsman in 1403 in the guard fleet with the nobleman Andrea da Molin, the captain being the distinguished Carlo Zeno, my *comito* Nicoletto Testa, my *paron* Manolli Filaretto. It was at this time that we routed Boucicaut at Modon." Boucicaut (Jean II Le Meingre) was the marshal of France who had taken control of Genoa by taking advantage of factional disputes between Genoese nobles and the merchant/artisanal classes. The Venetian Senate became alarmed when he led a Genoese fleet to the eastern Mediterranean. Venice responded by sending its own guard fleet there as well, led by Carlo Zeno.³¹

Michael rowed in Zeno's fleet of eleven light and two great galleys. The captain of Michael's ship was Andrea da Molin. The Genoese and Venetian fleets met off Modon (a Venetian colony) and Corfu and exchanged traditional courtesies. Thus began a tense seven-month episode. Boucicaut suggested that Zeno join with him in an attack on the Turks, and Zeno politely refused. Each side sent four galleys to escort the Byzantine emperor Manuel II Palaiologos—who was returning from an unsuccessful trip to France and Italy to muster help against the Turks—back to Constantinople. Then the Genoese sailed to Rhodes and the Venetians followed. Merchants and others were warned of the Genoese danger up and down the coast. Boucicaut sacked the Turkish-controlled island of Scandelerio (modern Alaia) and then moved toward Alexandria. The Egyptian sultan, warned by the Venetians (an example of the frequent cooperation between the Venetians and the Arabs), had reinforced his Alexandrian fortifications and had hired on 4,000 extra cavalymen, but contrary winds prevented the Genoese from reaching Egypt. Boucicaut then attacked Tripoli in Syria, but was driven back and forced to leave many wounded and dead on the field. Three days later, he successfully attacked and sacked Beirut, a city where many Venetian merchants lived and in which Venice possessed major commercial interests. Zeno immediately sent a galley—the "Molina" in which Michael was working as an oarsman—back to Venice to report to the Senate

29. Gullino, "Le frontiere navali," 26–38; Cozzi and Knapton, *La Repubblica di Venezia*, 10–11, 179; Thiriet, *La Romanie vénitienne*, 351–385 and 393–410. For Michael's account of his voyages, including the specification of whether they were taken with the guard fleet, see MOR, fols. 90-2b–93b.

30. For further details of Michael's voyages, see Alan Stahl's essay in this volume.

31. MOR, fol. 90-2b. The foundational study of Boucicaut is J. Delaville Le Roulx, *France en Orient au XIV^e siècle: Expéditions du Maréchal Boucicaut*, Bibliothèque des Écoles Françaises d'Athènes et de Rome, fasc. 44–45 (Paris: Ernest Thorin, 1886). For a detailed account of the Boucicaut episode, on which this summary is based, see Francesco Surdich, *Genova e Venezia fra Tre e Quattrocento*, Collana Storica di Fonti e Studi, 4 (Genoa: Fratelli Bozzi, 1970), 43–72 and 167–173 (for the Senate order of March 9). For further details concerning this voyage, including additional sources, see the essay by Alan Stahl in this volume, 53–54.

and get further instructions. Surprised and indignant at Boucicaut's actions, the Senate instructed Zeno to take decisive action. Open warfare between the Genoese and Venetian fleets broke out on the evening of October 6 near Sapienza, an island governed by Rhodes, and continued into the next day.³²

In the Battle of Modon, as it was called, the Venetians defeated the Genoese, taking three galleys (from a total of 11) and many prisoners. Declining to give chase, Zeno landed in Modon, sent communications to the Senate, took care of the wounded, and secured the captured galleys. Receiving orders on November 9 to return to Venice, the fleet arrived home probably on November 24.³³ Michael's own terse account refers to a more complex set of events, which took him to Rhodes and then sent him back to Venice with his captain Molin on an urgent mission to get further instructions from the Venetian Senate.

On at least three later occasions, Michael worked in convoys that engaged in sea battles. Of the first he writes, "I signed on as *paron* in the guard fleet of 1416 with the nobleman Giacomo Barbarigo, our captain the distinguished Pietro Loredan, my *comito* Tommaso Pissato. [We were present] at the victory over the Turks." He refers to the battle of May 29, 1416, when Loredan, leading twelve Venetian galleys, defeated the fleet of Mehmed I at Gallipoli in the Dardanelles. Michael was the second officer of one of these ships. The defeat by Venice led to a Venetian-Turkish peace treaty signed on 1419 in which the sultan promised to respect the lands of the Venetians. Again in 1424, Michael was serving on a galley of the guard fleet (as *comito*) when it assaulted a Turkish fleet at Gallipoli. This time the attack was unsuccessful.³⁴

Michael participated in one further battle in 1431, this the fifth and final armed conflict fought by the Venetians and the Genoese, near Portofino off the west coast of Italy. The Venetian Senate decided to attack the Genoese fleet in part as a response to the situation created by the ruler of Milan, Filippo Maria Visconti, an ally of the Genoese who was encouraging a policy of aggression. The Senate sent a fleet led by Pietro Loredan to the Tyrrhenian Sea. Four Florentine galleys under the command of the Florentine Paolo Rucellai provided additional support. Michael served as one of the officers (*comito*) on one of the Venetian galleys. In August, the Venetian armada concentrated at Livorno began to move toward Portofino to meet the Genoese fleet. On the night of August 25 and the day after, a violent storm arose during which many Venetian galleys disappeared from Loredan's view. Relieved at the storm's end to find his fleet intact, Loredan led it against the Genoese. The battle took place on August 27, 1431, in the Gulf of Rapallo. Loredan sent back a report of the conflict that provides details of tactics and strategy. Michael's own account shows that for him, the battle had devastating consequences: "I signed on in the guard fleet as *comito* . . . the captain being the distinguished Pietro Loredan. We had a victory along the coast over the Genoese and I went

32. See Camillo Manfroni, "Lo scontro di Modone: Episodio della lotta Veneto-Genovese (1403)," *Rivista Marittima* 30 (1897): 75–99 and 319–321; Gullino, "Le frontiere navali," esp. 13–14 and 105–106, n. 2; and Surdich, *Genova e Venezia*, 43–72.

33. Surdich, *Genova e Venezia*, 43–72. See Alan Stahl's essay, 53–54, for further discussion of this incident.

34. MOR, fol. 91-2b; and see Camillo Manfroni, "La battaglia di Gallipoli e la politica Veneto-Turca (1381–1420)," *Ateneo Veneto* 25 (1902): 3–34 and 129–169. For the second attack, see MOR, fol. 92a; and see Gullino, "Le frontiere navali," 30–31, and Thiriet, *La Romanie vénitienne*, 368.

home over land, wounded and broken, in 1431.”³⁵ He must have recovered, for he continued his annual voyages for more than a decade.

Venice exercised naval power in the interests of a commercial empire based on a far-flung network of trade routes that served numerous ports and markets. The Venetian Senate vigorously regulated shipping to ensure that supplies for markets would be available when needed in particular locales. In addition to serving on the guard fleet, Michael worked on many commercial galleys in the merchant convoys of the Venetian state. He went on 13 voyages to Flanders and/or London, the first in 1404 and the last—his final voyage—in 1443. The northern convoy, which always comprised four or five galleys, followed a relatively invariable itinerary year after year. If it left Venice in August, it usually reached England in early November, sailing first to Lisbon and then from Lisbon to southern England. Normally half of the convoy docked at London or Southampton and the other half went on to Flanders, most often calling at Sluys, the port for both Bruges and Antwerp. The convoy reassembled and returned in the late spring or early summer, calling at the ports of Ibiza and Mallorca, islands off the coast of Spain, and then at Palermo and Messina in Sicily. The convoy also stopped at Corfu, Curzola, Lesina, and Parenzo in the Adriatic. This was a route that remained fixed for almost a century. Between 1400 and 1429 at least 116 mercantile galleys traveled this route. It was a difficult voyage, which the Senate always equipped with the strongest and best galleys available. Although the voyage to England and Flanders normally took three months, it could take up to twice as long.³⁶

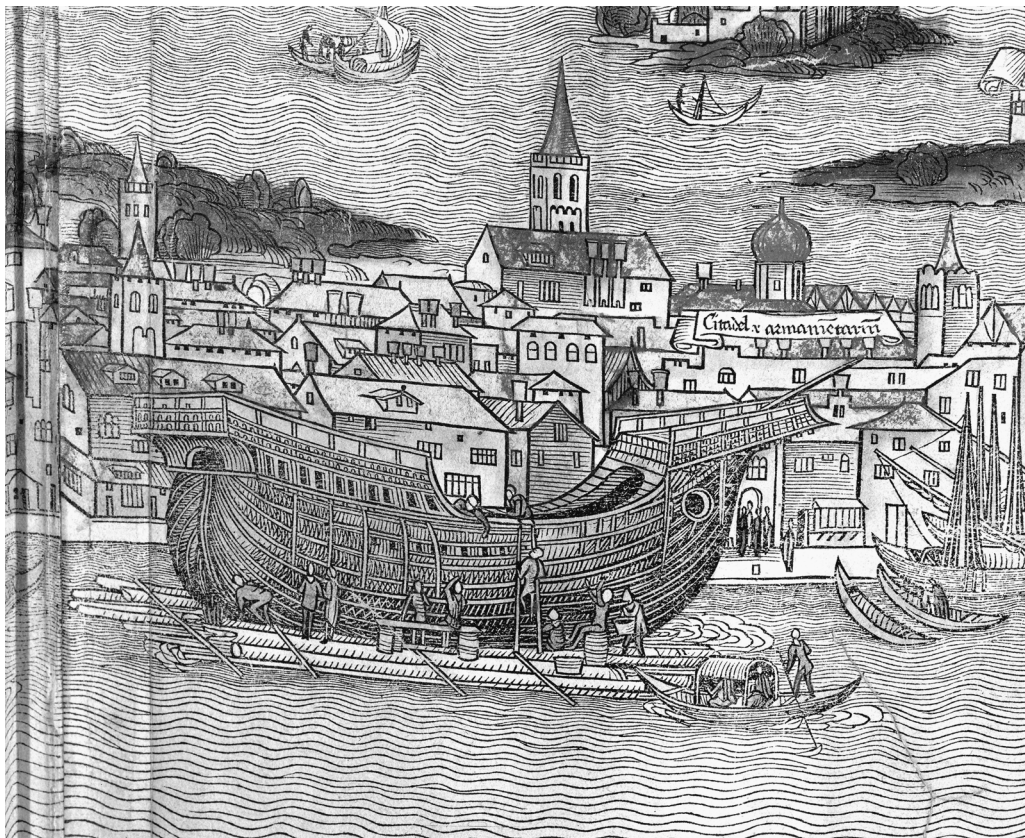
The galleys traveling north carried goods such as spices and cotton from the eastern Mediterranean. At London, they loaded wool and metals such as tin and lead, while at Flanders they took on hemp and linen. Michael himself worked most of his commercial voyages on the northern route. Several times, however, he served on galleys that traveled to ports in the Black Sea (in 1421, 1427, and 1435). On one occasion he served on the convoy to Aigues Mortes in southern France, a route that the Senate established in 1412.³⁷ On another occasion, in 1442, he worked in the convoy that traveled to Alexandria. On these commercial voyages, the crew was permitted to carry a certain number of possessions including wares that they personally could sell. Within the large-scale commercial enterprise in which they took part, members of the crew (including, we can presume, Michael himself) functioned as small-scale entrepreneurs.³⁸

35. For Michael’s account, see fol. 92b. For a detailed discussion of the battle, see Gullino, “Le frontiere navali,” esp. 40–44. See also Guido Cappellini, “Contributo storico alle relazioni fra Venezia e Genova: Lo scontro di Rapallo (27 agosto 1431),” *Nuovo Archivio Veneto*, n.s., 3, pt. 6 (1903): 69–131; and Alan Stahl’s essay in this volume, 77–78.

36. Doumerc, “Il dominio del mare,” esp. 113–115. For a brief overview of Venetian naval policy, see John E. Dotson, “Foundations of Venetian Naval Strategy from Pietro II Orseolo to the Battle of Zonchio, 1000–1500,” *Viator* 32 (2001): 113–125; and see Alan Stahl’s essay in this volume, esp. 54–57.

37. Stöckly, *Le système de l’Incanto*, 165–168.

38. Doumerc, “Il dominio del mare,” esp. 134–139; Frederic C. Lane, “Venetian Shipping during the Commercial Revolution,” *American Historical Review* 38 (1933): 219–239, and “The Mediterranean Spice Trade: Its Revival in the Sixteenth Century,” *American Historical Review* 45 (1940): 581–590, both reprinted in *Venice and History: The Collected Papers of Frederic C. Lane* (Baltimore: Johns Hopkins University Press, 1966), 3–24 (see p. 7 for crew allowances to transport their own wares) and 25–34, respectively. See also Lane, “Rhythm and Rapidity of Turnover in Venetian Trade of the Fifteenth Century,” and “The Merchant Marine of the



1.3

Bernhard Breidenbach, caulking of a Venetian round ship, a type of ship used extensively for Mediterranean commerce. Detail from *Peregrinatio in Terram Sanctam*, fifteenth century, colored woodcut. Erich Lessing/Art Resource, NY.

When Michael hired on to a Venetian galley in 1401, he became part of a complex and well-established system of Venetian maritime commerce and naval defense. Venetian ship design is a complex subject that is treated in detail by David McGee and Mauro Bondioli later in this volume. In the broadest terms, however, Venetian ships in the early fifteenth century could be divided into two general types: round ships powered by sails alone (figure 1.3) and long ships, that is, galleys powered by both sails and oars. Most round ships were privately owned, while most state-owned ships were galleys. Venice saw to it that galleys, better equipped for defense than round ships, carried the most precious cargoes such as spices and silk. Venetian commercial voyages set out under

Venetian Republic,” in *Venice and History*, 109–127 and 143–162, respectively; and Lane, *Venice: A Maritime Republic*, esp. 136–170. As Raffaella Franci points out in her essay in this volume, 121–123, several of the mathematical problems entail pepper, a commodity that is both lightweight and precious, which Michael undoubtedly traded on his voyages.

a variety of organizational and regulatory systems. They could be free voyages of ships privately owned and operated, most of which involved round ships; voyages privately owned and operated but regulated by the Venetian Senate; voyages of privately owned and operated ships licensed by the Senate; voyages of ships owned by the state that had been auctioned for private operation; or voyages of ships owned by and under the direct command of the state.³⁹ Michael, who of course started out as an oarsman, worked on galleys, not round ships. When he worked on the Venetian guard fleet, he was working on galleys owned and controlled by the state. On his commercial voyages, he would have been working on ships either owned by the state and leased for private operation, or owned by and under the direct command of the state.

When Michael signed on to a voyage, he agreed to perform a specific task and took orders from a well-organized chain of command aboard the galley. His own upward mobility within that chain of command during the course of his career is quite notable. One has the impression that he was a hard-working and competent mariner who soon gained the trust of paymasters and officers. In his record of voyages, he almost always notes his own position on the ship and then mentions several other important officers. To sign up for a voyage, Michael and other mariners would go to paymasters who had set up tables in the Piazza San Marco to sign up crews for particular voyages. These naval paymasters were Venetian noblemen who served in their offices for terms of three to four years. They did not sail with the galleys and normally did not receive a regular salary. Their job was to sign up the crew members of the state-controlled galleys, and they were able to collect the fines imposed on crew members who had signed up and then failed to fulfill their obligations by not showing up for departure, by jumping ship, or by failing in some other way.⁴⁰

THE IMPERIAL CONVOYS OF 1437 AND 1439

Although Michael almost always worked on either a commercial vessel or a galley of the Venetian guard fleet, three of his voyages had a different purpose, namely the transport of important personages. For two of those voyages, Michael worked on one of the four ships in a convoy that was charged with the transport and escort of the Byzantine emperor, John VIII Palaiologos, and his party of 700, including the Byzantine patriarch, Joseph II, from Constantinople to Venice in 1437 and back again in 1439.⁴¹ The emperor and his large entourage came to Venice to take part in the Council of Ferrara-Florence of 1438–1439 that many hoped would reunite the Roman Catholic and eastern Orthodox churches. The Byzantines were motivated at least in part by the hope for western military aid against the Turkish threat to Constantinople. There exists an extraordinarily vivid account of the two voyages by a passenger on one of the four ships, Sylvester

39. Frederic C. Lane, *Venetian Ships and Shipbuilders of the Renaissance* (Baltimore: Johns Hopkins University Press, 1934), 1–53; and Lane, “Venetian Merchant Galleys, 1300–1334: Private and Communal Operation,” *Speculum* 38 (1963): 179–205, reprinted in Lane, *Venice and History*, 193–226.

40. Lane, “Venetian Merchant Galleys,” 219–222, for an earlier history of the noble paymasters. For a discussion of the various officers on board a Venetian galley, see David McGee’s essay in this volume.

41. A third voyage in 1440 on which Michael worked (MOR, fol. 93b), not discussed in detail here, carried Medea Palaiologos, daughter of the marquis of Monferrat, to Cyprus to marry the king of Cyprus, John Lusignan.

Syropoulos. Syropoulos was an official who traveled in the service of the patriarch Joseph II. Michael's own record of his maritime service tells us that he worked on one of the four galleys in the convoy on each of the voyages. As usual, Michael names some of the officers in his own ship. However, Syropoulos, who was not a mariner, does not name the ships' officers; thus we cannot identify which ship is Michael's in Syropoulos's account. In 1437, one of the galleys carried the patriarch (and Syropoulos), one carried the emperor, while two served as escorts.⁴²

Michael tells us that he signed on as *comito* in 1437, "my captain the distinguished Antonio Condulmer." Condulmer was the nephew of the Venetian pope Eugenius IV (Gabriele Condulmer). Appointed July 6, 1437, as captain general of the four galleys, Antonio led the convoy to Constantinople, one (a light galley) arriving in early September, the remaining three on September 24. The galleys carried among others the *legato a latere* (a papal legate), Marco Condulmer (another relative of Eugenius IV), and the well-known conciliarist and philosopher Nicholas of Cusa.⁴³

We know from Michael's service record that he served as master of the oarsmen (*comito*) on one of the ships in the convoy that set out from Constantinople for Venice on November 24, 1437. Syropoulos reports that the ships were loaded with 700 passengers with an eye to speed rather than comfort. At the end of the first day out, toward midnight, a storm arose with torrential rains. It was so dark the travelers could not see their fingers in front of them. Without sails the ships drifted and it was feared that they would break on the island of Prokonnesos (now Marmara Adasi). Attempting to prevent such a catastrophe, the sailors let out the anchors to drag from the back. The Lord had mercy (Syropoulos says) and at daylight the storm dissolved and the island could be seen to the left and well behind the ship.⁴⁴ The following day the convoy passed by Gallipoli with the emperor's ship in full display. The convoy was rewarded by the stones and arrows thrown by the hostile (Turkish) inhabitants.⁴⁵

42. For Michael's record of the voyages, see MOR, fols. 93a, 93b. My discussion relies on Laurent's French translation of the chronicle and his detailed notes. See Silvestros Syropoulos, *Les mémoires du grand ecclésiastique de l'Église de Constantinople Sylvestre Syropoulos sur le Concile de Florence (1438–1439)*, ed. Vitalien Laurent (Rome and Paris: Pontificum Institutum Orientalium Studiorum and Éditions du Centre National de la Recherche Scientifique, 1971), 191, n. 6 (for the number in the emperor's entourage); 172, n. 4 (for the arrival of the Venetian galleys in Constantinople); 197–221 (for the trip from Constantinople to Venice and the entrance of the entourage into Venice); and 523–545 (for the return trip). For the Ferrara-Florence council, see Deno J. Geanakoplos, *Byzantine East and Latin West: Two Worlds of Christendom in Middle Ages and Renaissance: Studies in Ecclesiastical and Cultural History* (Oxford: Basil Blackwell, 1966), 84–111; Joseph Gill, *The Council of Florence* (Cambridge: Cambridge University Press, 1959); and J. M. Hussey, *The Orthodox Church in the Byzantine Empire* (Oxford: Clarendon Press, 1986), 270–281. Syropoulos himself, although he served on several committees of the Council of Florence and signed the decree of Union, became an ardent opponent of the agreement after his return to Constantinople.

43. MOR, fol. 93a for Michael's account; and Syropoulos, *Les mémoires*, 161–195 (for preparations for the trip and the individuals involved) and 177, n. 6 (for Condulmer's appointment). For an introduction to Nicholas of Cusa, see J. Koch, "Nicholas of Cusa," *New Catholic Encyclopedia*, 2d ed., 15 vols. (Detroit: Gale and Catholic University of America, 2003), 10: 372–376.

44. Syropoulos, *Les mémoires*, 199, no. 3.

45. Syropoulos, *Les mémoires*, 201, no. 4.

Navigating by both sail and oar all day and night, the convoy arrived at the port of Moudros on the island of Lemnos and remained there for two days.⁴⁶ When the voyage continued, the imperial ship sailed well ahead of the other galleys. Two days later, as the convoy moved toward the Peloponnese, the imperial ship disappeared from view. The remaining three ships waited at the port of Sykea (in the present-day province of Lakonia) for two days “with great embarrassment and chagrin.” Clearly, the crucial task of keeping the ships of a convoy together, an issue addressed frequently in the regulations that Michael included in his book (to be discussed below), was not always carried out successfully. Syropoulos reports that the following day, “at the insistence of a great number among us,” the captain of the convoy went out to look for the imperial ship, discovering that it had stopped at Cenchreae (modern Kechriés) in Corinth. Reunited, the four ships departed together on the fourth day.⁴⁷

The convoy made its way to Modon (Methóni), struggling with a lack of wind. When it finally arrived, several of the passengers delayed departure, complaining of the discomfort and scarcities that they had suffered due to the great number of passengers. A bishop told them that it would be very difficult to find another ship, that it would take a month to fit it out, and that even if this were accomplished, there would be huge expenditures and little ability to control a crew that had been recently hired on and was desperately needed. He suggested instead asking the captain to unload the slaves and merchandise. The captain, having been asked, replied that there was no merchandise and that they were leaving the slaves, and would have left them even if he hadn't been asked, and that those slaves would reach Venice by other ships. Syropoulos informs us that none of the slaves finally reached Venice, all dying of plague on the way. And, he adds, “The most strange thing was that although all the world of all ages lived together [on the ship that transported them], the epidemic hit no Greek or Latin but only all the slaves, because no one of them escaped it.”⁴⁸ What seems certain is that conditions for slaves on trans-Mediterranean voyagers were even more harrowing and dangerous than for oarsmen, other mariners, and passengers.

Conditions on the imperial convoy were evidently ameliorated by the departure of the slaves. The passengers returned to the ship and the convoy made its way to Navarino (present-day Pílos) where the emperor, who had traveled across the Peloponnese by horse from Cenchreae, rejoined the convoy; from there it continued to the island of Cephalonia.⁴⁹ There, however, a violent storm held the ships for five days and nights during which no provision for water could be made. Finally the anchor was lifted at night; the wind was so strong (Syropoulos reports) that it carried the ships 60 miles in four hours. Then the *sounis* holding the yard broke in the profound darkness and in such violence of wind and sea that certain sailors reported the breakage openly and said they had climbed up to provide ties and reinforcement at a moment when most of the sailors were not even able to walk on the bridge. The wind suddenly shifted direction and the ships were carried back in the same direction that they had come, arriving once again at Cephalonia. Here all on board remained without food or drink for an entire day. They all assumed that death was imminent and plunged into profound dizziness and numbness, with the exception of the five or six sailors

46. Syropoulos, *Les mémoires*, 201, no. 5.

47. Syropoulos, *Les mémoires*, 203, no. 6.

48. Syropoulos, *Les mémoires*, 207, no. 10.

49. Syropoulos, *Les mémoires*, 207, no. 11.



1.4

Antonio Averlino, known as Filarete (1400–1469), detail of bronze doors, St. Peter's basilica, Vatican City: arrival of the Byzantine emperor at Venice, February 9, 1438. Scala/Art Resource, NY.

who were able to watch and manage the ship as waves as high as very high mountains hit it. Again they stayed at this same port for three days. Finally the storm passed and a favorable wind arose. They began to sail again in the light of a full moon. One of the galleys while deploying its sails was pushed by the wind into Syropoulos's ship and then thrown on a reef where it broke its oars. Little more was needed for the ship itself to be crushed. However, "with the help of God" they escaped from this danger. Sailing all night, the next day, and all the following night, they reached the island of Corfu.⁵⁰

The remainder of the trip was somewhat less eventful, although it did include the dispersal of the convoy one evening so that they lost each other for a time,⁵¹ the grave illness of the emperor during which he lay in a tent on a deserted island for four days, and a violent storm that caused the lateen yard of the imperial ship to split.⁵² Finally, though, a light galley from Venice met the convoy and an advance party of the Byzantine travelers boarded it to go quickly to Venice and help prepare the way for the emperor and his large entourage.⁵³

Great ceremony attended the imperial arrival at Venice on February 9, 1438 (figure 1.4). The doge (Francesco Foscari) transported in the doge's ship (the Bucentaur) met the imperial ship. A large number of other boats followed the doge, saluting the emperor with trumpets and numerous chants. The doge climbed onto the imperial galley and presented his son "despite the fact that some days later the child would die." The imperial galley lifted anchor and advanced slowly as if walking,

50. Syropoulos, *Les mémoires*, 209–212, no. 12. The exact meaning of *sounis* is not known. From the context, it could be one of several appliances or lines attached to the yard—most probably the appliance called "parrel" or "parrel truck" that holds the yard to the mast, which consists of a necklace or collar of rope and large wood beads that allow the yard to be raised and lowered without binding on the mast.

51. Syropoulos, *Les mémoires*, 211, no. 14.

52. Syropoulos, *Les mémoires*, 213, no. 15.

53. Syropoulos, *Les mémoires*, 213, no. 16.



1.5

Antonio Averlino, known as Filarete (1400–1469), detail of bronze doors, St. Peter's basilica, Vatican City: departure of the Byzantine emperor from Venice in October 1439. Scala/Art Resource, NY.

escorted by the Bucentaur with numerous other boats following or making circles around the entourage. Syropoulos exclaims that so many boats had met the convoy that the sea around Venice was nearly hidden. To shouts of acclamation and chants, the emperor was solemnly escorted to the residence that had been prepared for him, while trumpets played and all of the bells of Venice rang continuously. The only thing that marred the day was that it was humid and rainy.⁵⁴ It seems certain that Michael of Rhodes, *comito* for one of the ships in the imperial convoy, witnessed and indeed took part in this spectacular and solemn entrance of the Byzantine emperor into the city.

The Council of Ferrara-Florence began in Ferrara but was moved to Florence in January 1439, in part to escape an outbreak of the plague. The union of the two churches was agreed upon in July of 1439, its terms spelled out in the papal bull *Laetentur caeli*. However, this union was never put into effect because the Byzantines in the east failed to ratify the agreement before the Turks conquered Constantinople in 1453. The Byzantine delegation finally left Venice in October 1439 (figure 1.5) with Michael of Rhodes working as *comito* on one of the galleys of the imperial convoy returning to Constantinople.⁵⁵

The return voyage was plagued by dangerous storms and delays. A violent storm on the day of departure, October 14, damaged some of the ships; after three days of repair work, the convoy finally set out.⁵⁶ Soon another violent storm dispersed the ships, and the imperial galley got

54. Syropoulos, *Les mémoires*, 217–219, no. 21. For Foscari see Giuseppe Gullino, “Foscari, Francesco,” in *Dizionario biografico degli italiani* (Rome: Istituto della Enciclopedia Italiana, 1997), 49: 306–314; and Dennis Romano, *The Likeness of Venice: A Life of the Doge Francesco Foscari, c. 1374–1457* (New Haven: Yale University Press, 2007).

55. MOR, fol. 93b, and see Syropoulos, *Les mémoires*, 523–545, for the return trip. For the Council of Ferrara-Florence, see n. 36, and for the papal bull, Gill, *Council of Florence*, 412–415. In his service record, Michael does not mention his rank on this voyage. However, an account book exists for this trip (ASVe, Spirito Santo, Pergamene, B. 4) in which he is named as *comito*. See Alan Stahl's essay in this volume, 93–94.

56. Syropoulos, *Les mémoires*, 533, no. 11.

separated from the others. After several days it was discovered anchored on the other side of the deserted island of Lissa, hidden from the rest of the convoy that was also anchored near the island. Reassembled in the Gulf of Ragusa, the convoy went on, but a storm arose that was so violent that, Syropoulos writes, they despaired of their own lives and were groaning and crying pitifully for those they held dear. For the entire night no ship saw another and the sailors themselves did not know where they went.⁵⁷

Another harrowing incident occurred when the convoy, following the will of the emperor and despite the reluctance of the officers, entered a narrow passageway into an enclosed natural cove. Contrary winds prevented the galleys from leaving. “We remained there,” Syropoulos writes, “as in a prison, a prey to misery and pain, without provisions of water because one did not find a single drop on the island.” After seven days with huge effort, using force similar to that used in a military attack, the ships one by one managed to exit the narrow passage successfully. The captain, who “seemed to forget his great age,” walked among the sailors and called them brothers, promising them two amphorae of wine; then he climbed up high and gave a signal accompanied by piercing shouts, and thus they successfully maneuvered out through the passage. The ships proceeded to Kotzinos, a port on the north of the island of Lemnos. The emperor went hunting, while the crews of the Venetian galleys “pillaged the goods of the Lemniotes and created great devastation in this place.”⁵⁸ Clearly the mariners not only suffered hardships but could readily inflict them on others. After they “were gorged on the spoils of the Lemniotes,” they left the island and finally arrived in Constantinople on February 1, 1440.⁵⁹

One can imagine that Michael, who was probably Greek, may well have been pleased and honored to play a part in the transport of the Byzantine emperor, whatever he may have thought about the union of the two churches. (It seems likely that Greeks living in Venice would have welcomed such a union, but there is no evidence for what Michael himself thought.) Although Syropoulos’s account cannot be taken as trustworthy in all particulars, it provides vivid details of voyages in which Michael took part. As a seasoned mariner, Michael may not have suffered the degree of fear and discomfort that Syropoulos evidently did. Yet the danger and difficulties of the voyages for all on board are plainly evident.

MANAGING SHIPS AND CONVOYS: SHIPBOARD REGULATIONS

One section of Michael’s notebook is directly relevant to life on shipboard and the conduct of the convoy as a whole. This is his copy of the regulations for armed galleys issued in 1428 by the captain general of the Venetian fleet, Andrea Mocenigo. Venetian shipping law, which the Venetians had promulgated for centuries, was extensive, complex, and frequently modified in light of changing situations.⁶⁰ Mocenigo’s regulations do not represent a general law, but provide detailed and

57. Syropoulos, *Les mémoires*, 533–535, no. 12.

58. Syropoulos, *Les mémoires*, 541, no. 19.

59. Syropoulos, *Les mémoires*, citation on 543, no. 21, and see n. 7 which identifies Kotzinos as a port on the north of Lemnos. For the arrival in Constantinople, see 545, no. 23.

60. Studies of Mediterranean and Venetian maritime law include Walter Ashburner, *Rhodian Sea-Law* (Oxford: Clarendon Press, 1909); Guido Bonolis, *Il diritto marittimo medievale dell’Adriatico* (Pisa: F. Mariotti,

probably rigorously enforced standing orders for galleys traveling together in the guard convoy. Although Mocenigo issued the orders in 1428 (certainly with the prior approval of the Venetian Senate), they were in part derived from earlier orders. They would have been important to Michael in a very immediate sense, since he served as the non-noble fleet commander (*armirai*) in a guard fleet led by Mocenigo in the year that they were issued. Michael undoubtedly possessed a copy of the regulations and used that copy to transcribe the orders into his own notebook. As the captain of the flagship in the convoy, he would have had major responsibility for making sure the rules were carried out. Two later copies of these regulations exist in manuscripts in Venice, one in the notebook of Pietro di Versi, dated about 1444, which we now know was written by Michael himself, and another in an early sixteenth-century manuscript. An earlier set of instructions for a galley fleet, issued by Pietro Mocenigo in 1420, is quite similar although not identical to the 1428 version in Michael's notebook.⁶¹

The regulations begin with a prohibition against blasphemy that gives penalties for violations (100 lashes for oarsmen and fines for others). They continue with detailed instructions on how the individual galleys should be handled in various situations to keep the ships from interfering with one another while at the same time keeping them together and preventing individual galleys from getting lost from the convoy. Diverse instructions are specified for the occasions when the galleys are powered by oars or by sails, by day or night, while docking, when joining battle, and in other situations. A regulation concerns weapons, prohibiting their owners from selling them or using them in wagers. Other provisions deal with what to do in case of a lost galley. Many provisions instruct on signaling in a variety of situations. Signaling methods include the use of fires, lanterns, smoke, flags, and banners, and specific signals are mandated for a whole range of situations from docking to joining battle, and for both day and night. Penalties are specified for violations. Most of the provisions serve to ensure good communication from the captain of the fleet to the other galleys so that the convoy as a whole can operate in a coordinated way under orders of the captain of the fleet.

1921); Giovanni Cassandro, "La formazione del diritto marittimo veneziano," *Annali di Storia del Diritto* 12–13 (1968–1969): 131–159; Frederic C. Lane, "Maritime Law and Administration, 1250–1350," in *Studi in onore di Amintore Fanfani* (Milan: A. Giuffrè, 1962), 3: 21–50, reprinted in Lane, *Venice and History*, 227–252; Riniero Zeno, *Storia del diritto marittimo italiano nel Mediterraneo* (Milan: A. Giuffrè, 1946); and Giorgio Zordan, "Le leggi del mare," in Tenenti and Tucci, eds., *Tem: Il mare*, 621–662. The early Venetian statutes were published by Riccardo Predelli and Adolfo Sacerdoti, eds., "Gli statuti marittimi veneziani fino al 1255," *Nuovo Archivio Veneto*, n.s., 4, pt. 1 (1902): 113–161; 4, pt. 2 (1902): 267–291; 5, pt. 1 (1903): 161–251; and 5, pt. 2 (1903): 314–356. For the magistracies that administered maritime law, see Franco Rossi, "Le magistrature," in Tenenti and Tucci, eds., *Tem: Il mare*, 687–757. For further details and discussion of these orders, see Alan Stahl in this volume, 75–76.

61. For the orders, see MOR, fols. 111b–118b. For Michael's later transcription, see the Pietro di Versi manuscript, Venice, Biblioteca Nazionale Marciana, Ms. It. IV, 170 (= 5379); and Pietro di Versi, *Raxion de' marinieri*, ed. Conterio, 85–86. For the early sixteenth-century copy, Venice, Museo Correr di Venezia, Commissioni Mss III 90, and see Mario Nani Mocenigo, "Un capitolare veneziano per il buon governo delle galere del 1428," *Archivio Veneto*, ser. 5, no. 6 (1929): 83–117, which includes a transcription of the text. A copy of the 1420 regulation is in the Biblioteca Apostolica Vaticana, Urb. Lat. 821 A, fols. 231–252, in a sixteenth-century copy, and was published by Augustin Jal, *Archéologie navale*, 2 vols. (Paris: Arthus Bertrand, 1840), 2: 107–133.

MICHAEL'S INTELLECTUAL WORLD AND THE WORLD OF PRACTICE

Michael's life was intrinsically bound to the world of Venetian naval defense and commerce, practical navigation, and seamanship; yet he filled his book with materials that went well beyond practical utility. Indeed, it would be an error to think of Michael's book as exclusively or even primarily a technical manual or practical handbook. Rather, as the studies in this volume show, many of its contents did indeed have practical value, but they also extended beyond what would have been needed for practical utility. Further, some of the contents, such as inaccurate navigational directions, would have been eminently impractical.

The most substantial part of Michael's book—over 100 folios—concerns mathematics. Many of the mathematical problems that Michael recorded were relevant to commercial transactions—whether undertaken by crew members (who were permitted to carry on board a certain quantity of their own goods to sell) or by large-scale merchants. Michael's collection of mathematical problems is similar to those found in merchants' manuals from the same era, such as the *Zibaldone da Canal* (a notebook begun in the early fourteenth century with later additions).⁶² Most have their origins in the *Liber abaci* (written about 1200) by Fibonacci, also known as Leonardo Pisano (1170–c. 1250). Fibonacci was born in Pisa, the son of Guglielmo Bonacci, an official who directed the Pisan trading colony in Bugia (present day Bejaïa, Algeria). Bonacci brought his son to Bugia sometime after 1192 and had him given instruction in techniques of calculation, especially those using Hindu-Arabic numerals that had not yet arrived in Italy. Fibonacci helped his father carry out business in Syria, Greece, Egypt, Sicily, and Provence before he returned to Pisa around 1200. There he wrote mathematical treatises, including the *Liber abaci* and the *Liber quadratorum* on quadratic equations. His writings broadly influenced the development of commercial mathematics in Italy and elsewhere.⁶³

Michael included many examples of the “rule of three,” a method used to calculate the price of diverse quantities of goods or to determine equivalent amounts of different goods (such as wool and silk, or wool and alum). He also gives examples of problems involving the addition, subtraction, multiplication, and division of fractions, and those involving various kinds of equations, the latter similar to those in the *Liber abaci*. The merchandise mentioned in the problems is precisely what was loaded onto Venetian ships, including spices such as ginger, cinnamon, saffron, and pepper, and goods such as cloth.

Michael's mathematical problems reflect the commercial context in which he lived, as well as (occasionally) his society. For example, in one of his mathematical game problems, fifteen Christians and fifteen Jews agree that every ninth man will be thrown overboard. The problem is to arrange the group so that only the Jews will be thrown. The problem is a traditional one that also reflects the traditional hostility against the Jews within Venetian society. Resident Jews were expelled from Venice in 1397, a few years before Michael's arrival, and were allowed visits to the city

62. The mathematical sections of Michael's notebook consist of fols. 1b–90-2a and fols. 194a–203a. For the *Zibaldone da Canal*, see Stussi, ed., *Zibaldone da Canal*; and Dotson, trans., *Merchant Culture*.

63. For the tradition of commercial mathematical writings, see Van Egmond, *Practical Mathematics in the Italian Renaissance*. For further biography and explication, see Raffaella Franci's essay in this volume.

for only fifteen days at a time thereafter. After 1402, a new regulation required intervals of four months between visits, exceptions being made for physicians and bankers.⁶⁴

Michael's mathematical problems reflect the commercial and social world in which he lived, but they also reveal his individual interests. Warren Van Egmond has pointed out that Michael's methods of calculation were often quite innovative and included early steps toward symbolic algebra. In her detailed study in this volume, Raffaella Franci concludes that Michael was far more interested in the theoretical aspects of mathematics than in its practical use. He often offers two or three different kinds of solutions to the same problem (i.e., rule of three, algebra, and rule of double false position)—alternatives that are entirely unnecessary to purely practical solutions. Further, his alternate ways of solving problems are often far more complicated than those used for commercial transactions. On the basis of her study of the manuscript, Franci suggests that Michael worked out most of the calculations himself, rather than merely copying solutions from another manuscript. And most of his solutions are correct. She concludes that Michael of Rhodes loved mathematics.⁶⁵

A unique section of Michael's notebook consists of an illustrated tract on shipbuilding and rigging. Michael provides instructions for building five different ships—three galleys (long ships that used both oars and sails) and two round ships (which used only sails). These ships would have been familiar to any Venetian mariner and all would have been built in the Venetian Arsenal. Specifically Michael discussed how to build a galley of the Flanders type (one that went on the annual voyage to Flanders); a galley of the type used to go to Romania and Tana (on the Black Sea); a light galley; a round ship rigged with a lateen sail; and one rigged with a square sail. He illustrated this material with drawings in pen and ink and colored wash—views of parts of the galleys being constructed and then completed, views shown with and without sails, drawings of the square-rigged round ship and of two kinds of small boats, and drawings and diagrams of sails, ropes, anchors, and rudders. Michael included instructions for making sails, masts, rudders, anchors, yards (tapered cylindrical timbers hung on the mast from their centers, which supported the sails), cables (thick hemp ropes), and shrouds (hemp ropes stretching from the mastheads to the sides of the vessel to give lateral support to the masts); and he provided a list of kinds of wood needed for the Flanders galley—most important were oak, larch, and fir.⁶⁶

Michael's sources for the shipbuilding section of his manuscript are unknown. He may have taken some of his material from a prior manuscript or from extant drawings made for some

64. For the Jews in Venice, see esp. David Jacoby, "Les Juifs à Venise du XIV^e au milieu du XVI^e siècle," in Beck, Manoussacas, and Pertusi, eds., *Venezia: Centro di mediazione*, 1:163–216. Michael's mathematical problem concerning the Jews and Christians is on MOR, fol. 91-1a.

65. Warren Van Egmond, presentation at the Michael of Rhodes Conference, Dibner Institute for the History of Science and Technology, MIT, December 2005, and personal communication. And for methods of multiplication and division, in general see Van Egmond, "Abacus, Algorism, Abbacus: Methods of Reckoning in the Merchant Cultures of Mediterranean [sic]," in *Commerce et mathématiques du Moyen Âge à la Renaissance, autour de la Méditerranée*, Actes du Colloque International du Centre International d'Histoire des Sciences Occitanes, Beaumont de Lomagne, May 13–16, 1999 (Toulouse: Éditions du C.I.H.S.O., Université de Toulouse II, 2001), 21–54. And see Raffaella Franci's essay in this volume.

66. MOR, fols. 135b–182b for shipbuilding and fol. 202b for kinds of timber. The essays by David McGee and Mauro Bondioli in this volume treat the shipbuilding part of the manuscript in detail.

purpose having to do with the Venetian Arsenal or, as Mauro Bondioli suggests, the Venetian nobles who controlled the Arsenal. Michael was a mariner who was away from Venice for a significant part of every year. While he would not have taken part in ship construction himself, such construction both in the Venetian Arsenal and in private shipyards was a significant Venetian activity. Michael as *comito* would have gone to the Arsenal before and after voyages to collect and then return the rigging for the ship. After 1424 the head of the Arsenal was himself from Rhodes, perhaps giving Michael access to plans and measurements that he would not otherwise have had. The shipbuilding section of Michael's notebook was copied in the sixteenth century. The copy, known as the *Fabrica di galere*, is in the Biblioteca Nazionale in Florence. Transcribed and published in the nineteenth century by Augustin Jal, its relationship to Michael's book was only discovered in 1966 when the latter was described in detail on the occasion of its sale at Sotheby's in that year.⁶⁷

The essential context of Michael's treatise on shipbuilding is the Venetian Arsenal (figure 1.6), a renowned, state-operated center for ship construction and repair, situated at the northeast edge of the city. It functioned as an essential component of Venetian maritime commerce and defense, employing numerous masters who were specialists of various kinds, as well as squads of day workers and piece workers. The Arsenal was divided into three separate spheres of production. The largest was devoted to the construction, outfitting, and repair of ships. The second, carried out in a large building called the Tana, concerned the manufacture of ropes and cables, and the third dealt with the production of arms. When Michael arrived in Venice in the early fifteenth century, shipbuilders in the Arsenal were experimenting with a variety of ship designs, often in rivalry with one another. Notable was a dynasty of Greek masters starting with Teodoro Baxon (d. ca. 1407) who brought techniques to the Arsenal from the eastern Mediterranean. Baxon created a number of new designs including a light galley that he made wider and heavier than the traditional vessel without sacrificing speed. The Venetian Senate asked his nephew, Nicolò Palopano, called Nicolò the Greek, to succeed him in 1407. The Senate only succeeded in bringing Nicolò to Venice in 1424, at which time he moved there from Rhodes to work in the Arsenal. In an atmosphere of self-conscious rivalry that was encouraged by the Senate, Venetian shipbuilders produced innovative designs that were seaworthy.⁶⁸

67. The *Fabrica di galere* is in Florence, Biblioteca Nazionale Centrale, Ms. Magliabechiano, cl. XIX, cod. 7, and is published by Jal, *Archéologie navale*, 2: 2–106. A thorough description of Michael's manuscript for the Sotheby's sale was completed by Andreas Mayer: Sotheby's, *Catalogue of Important Western and Oriental Manuscripts and Miniatures*, auction cat., July 11, 1966 (London: Sotheby & Co., 1966), Lot 254, 89–93. For the Arsenal and Michael's access to it, see Alan Stahl's essay in this volume, 52, 71, and 93–94, and Mauro Bondioli's essay, 271–279.

68. See esp. Maurice Aymard, "L'Arsenale e le conoscenze tecnico-marinaresche: Le arti," in Arnaldi and Pastore Stocchi, eds., *Dal primo Quattrocento al Concilio di Trento*, 2: 289–315; and Maurice Aymard, "Strategie di cantiere," in Tenenti and Tucci, eds., *Temi: Il mare*, 259–283, esp. 274–279 (for day workers); Giorgio Bellavitis, *L'Arsenale di Venezia: Storia di una grande struttura urbana* (Venice: Marsilio, 1983); Mauro Bondioli, "The Arsenal of Venice and the Art of Building Ships," in Carlo Beltrame, ed., *Boats, Ships and Shipyards: Proceedings of the Ninth International Symposium on Boat and Ship Archaeology, Venice 2000* (Oxford: Oxbow Books, 2003), 10–23; Mauro Bondioli and Gilberto Penzo, "Teodoro Baxon e Nicola Palopano, protti delle galee sottili: L'influsso greco nelle costruzioni navali veneziane della prima metà del XV secolo," *Archeologia delle Acque* 1 (1999): 67–80; Ennio Concina, *L'Arsenale della Repubblica di Venezia: Tecniche e istituzioni dal Medioevo all'età moderna* (Milan: Electa, 1984), 25–73; Concina, "La casa dell'Arsenale" and "La costru-



1.6

Jacopo de' Barbari (ca. 1460/70–ca. 1516), the Arsenal, detail of the perspective plan of Venice. Erich Lessing/Art Resource, NY.

zione navale,” both in Tenenti and Tucci, eds., *Temi: Il mare*, 147–210 and 211–258 respectively; Robert C. Davis, *Shipbuilders of the Venetian Arsenal: Workers and Workplace in the Preindustrial City* (Baltimore: Johns Hopkins University Press, 1991); Jean-Claude Hocquet, “La gente di mare,” in Tenenti and Tucci, eds., *Temi: Il mare*, 481–526, esp. 493–494; Lane, *Venetian Ships and Shipbuilders*, esp. 56–58, 129–145, and 269–284; and Franco Rossi, “L’Arsenale: I quadri direttivi,” and Giovanni Caniato, “L’Arsenale: Maestranze e organizzazione del lavoro,” in Alberto Tenenti and Ugo Tucci, eds., *Il Rinascimento: Società ed economia*, vol. 5 of *Storia di Venezia: Dalle origini alla caduta della Serenissima* (Rome: Istituto della Enciclopedia Italiana, 1996), 593–639 and 641–677 respectively. For the materials used by the Arsenal, such as timber, hemp, and various metals, see, in addition to the above, Frederic C. Lane, “The Rope Factory and Hemp Trade in the Fifteenth and Sixteenth Centuries,” *Journal of Economic and Business History* 4 (1932): 830–847, reprinted in Lane, *Venice and History*, 269–284; and Raffaello Vergani, “Le materie prime,” in Tenenti and Tucci, eds., *Temi: Il mare*, 285–312. For administration of the Arsenal, see Rossi, “Le magistrature,” 723–745.

The shipbuilding part of Michael's book illustrates a problem that arises with regard to many aspects of the codex. In the broadest sense, the material comes out of the general context of Venetian shipbuilding both in the Arsenal and in private shipyards. Yet the precise sources of Michael's own drawings and text are unknown, and his reasons for presenting drawings illustrating ship construction, including measurements and explanatory text, are unclear. We can be certain that Michael was not instructing shipbuilders how to build ships. Rather, the shipbuilding section probably points to two different aspects of Michael's intellectual and social world. First, it shows his interest in how ships were built, an interest that undoubtedly arose from the intimate knowledge that he must have had of Venetian galleys and how to handle them. That his expertise would inform an interest in actual construction is a tribute to his evident intellectual curiosity. Further, his display of knowledge of shipbuilding could impress patrons, employers, and others as well. In his essay in this volume, David McGee suggests that Michael may have used his book, including the shipbuilding section, as a teaching tool while sitting at the captain's table on voyages—instructing the unskilled elite men, such as merchants and patrons, who traveled with the ship.

The materials of Michael's book, then, stand in complex relationship to many of the practices explicated within it, as well as to the practice of authorship itself. Michael certainly was cognizant to a greater or lesser degree of those practices—his greatest strength being mathematics. Yet his book is by no means simply an instructional manual, addressed to other practitioners. It is a result of Michael's efforts to improve his social, patronage, and employment opportunities, and of his wide-ranging intellectual interests as well.

Nowhere is an ambiguous relationship to practice more evident than in the portolan or navigational directions that Michael wrote into his book. The portolan consists of detailed written directions for particular routes, and is not to be confused with portolan charts (a type of navigational map), although the two are undoubtedly related. A part of Michael's portolan is a set of directions that he copied into his notebook, "made by Zuan Pires, pilot of the Flanders sea." It provides instructions for navigating around Spain and Portugal and on to Flanders. It lists a series of pairs of place names, each followed by a direction and distance (e.g., "Trafalgar and Marzamusa, southeast–northwest, bear a little north, 7 leagues"). Occasionally additional information is provided, such as notes concerning reefs. Another set of directions refers to sailing in the area of Apulia in southeast Italy from Manfredonia to Otranto, and into the Gulf of Salonika. Michael's book provides detailed instructions for entering specific ports, such as those of Venice, Sandwich, Sluys (the port for Bruges and Antwerp), and Santander. In this period Venetian navigators would have guided their ships on the basis of experience and familiarity with approximate distance and landmarks. Further, they would have hired pilots knowledgeable of particular ports and harbors when this was expedient. Written navigational directions may have served as useful guidelines for those not familiar with a particular region and as reminders for those who were, but they never could have substituted for experiential knowledge gained on actual voyages. They were navigational aids in an era when navigation was largely an empirical art based on extensive, hands-on experience.⁶⁹

69. MOR, fols. 119a–119b, 120a–127a, 190b–193b. Portolan charts (as distinguished from portolans) are treated comprehensively in Tony Campbell, "Portolan Charts from the Late Thirteenth Century to 1500," in J. B. Harley and David Woodward, eds., *History of Cartography*, vol. 1: *Cartography in Prehistoric, Ancient,*

So it would seem that Michael's portolan, including the part written by the pilot Zuan Pires, is a perfect example of a straightforward practical navigational aid with little ambiguity in terms of use or users. Yet Piero Falchetta's detailed study of this part of Michael's manuscript reveals something quite different. He has discovered numerous "mistakes" in the navigational directions, incorrect directions and distances so far off that to follow them exactly might well result in losing one's bearings or becoming shipwrecked. Given navigational directions that contain this many errors, Falchetta concludes that they have a symbolic meaning—signifying Michael's knowledge of the sea to men such as patrons who might hire a mariner onto a particular voyage but need not know whether such directions were accurate.⁷⁰

Another area of major importance in Michael's notebook concerns calendrical and astrological issues. As Faith Wallis explicates, these materials include a solar calendar with martyrology and a table for the calculation of the date of Easter. These tables are accompanied by prognostic materials including astrological medicine, such as the best days for bloodletting; lucky and unlucky days; a table for predicting the position of the moon in the zodiac; and a lunar almanac ("table of Solomon") for 1435–1530, showing (accurately) the date and time of all new moons during these decades. Michael also provides instructions for finding various elements of calendar information (e.g., the age of the moon on a given date, or the weekday of a given date) using a method of computation carried out on the fingers of the hands.⁷¹ He is concerned to order the days of the year, and has arranged them in diverse ways. In one section he names each day of every month in the year, beginning with March, the first month of the year under the Venetian calendar then in use. For each day, with only a few exceptions, he gives the name of a saint. For each month, he provides other information, such as the number of hours of day (i.e., daylight) and night for one day of each month, and the number of days in the month. For March, for example, he writes, "On the 16th, at 12 o'clock, the night has 12 hours and the day 12 hours; it has 31 days." He notes both lunar and solar eclipses, for example on March 14 ("And if the moon is new on this day, the sun obscures it"). And on April 13: "If the moon is turning, the sun will obscure it." And he notes the days when the sun moves into the "house" of a new sign. On March 15, for example: "St. Longinus martyr. † The sun enters Aries."⁷²

Michael's interest in the calendar and his view of the significance of particular days are tied to his beliefs concerning astrological influences, beliefs that were generally accepted as givens in his

and *Medieval Europe and the Mediterranean* (Chicago: University of Chicago Press, 1987), 371–463, esp. 386–387 (for Mediterranean navigation before the portolan chart). For portolans, see Henry Romanos Kahane, Renée Kahane, and Lucille Bremmer, *Glossario degli antichi portolani italiani*, trans. and notes by Manlio Cortelazzo (Florence: Leo S. Olschki, 1967); Konrad Kretschmer, *Die italienischen Portolane des Mittelalters: Ein Beitrag zur Geschichte der Kartographie und Nautik* (Berlin: E. S. Mittler und Sohn, 1909); A. E. Nordenskiöld, *Periplus: An Essay on the Early History of Charts and Sailing-Directions*, trans. Francis A. Bather (Stockholm: P. A. Norstedt och Söner, 1897), esp. 4–9 and 76–80; and see Ugo Tucci, "La pratica della navigazione," in Tenenti and Tucci, eds., *Temi: Il mare*, 527–559, esp. 527–528.

70. Piero Falchetta, 193–210 in this volume.

71. MOR, fol. 129b and fols. 189b–190a (for Easter), fols. 130a–130b (for the sign of the zodiac in which the sun can be found), fols. 131a–135a (for the phases of the moon), and fols. 185a–189b (for calculating using the hands and fingers).

72. MOR, fols. 95a–102b.

lifetime. He represents the zodiac and its influence with striking pictorial images of the signs accompanied by explanatory text. He notes the influence of each sign, often explaining the nature of men born under the sign as well as the identity and influence of the planets within it. As Dieter Blume explains, he makes some basic astrological mistakes, a notable one being that he changes “houses,” giving Capricorn to Venus instead of Saturn. Blume suggests, however, that it is possible that Michael made the change deliberately, and that Capricorn may have been the sign governing the mariner’s own birth. Thus Michael may have been reluctant to place Capricorn under the negative influence of Saturn. Further, as Blume explicates, the characteristics that Michael gives to someone born under Capricorn in Venus are remarkably like an idealized picture of the kind of person he might have thought himself to be—Venus governs seacoasts; everyone born under the sign will be kind, rich, wise, generous, and the master of many men, but they will also be hated for the great positions that they hold.⁷³

Michael often ties his description of the influence of a planet to medical advice. One must be careful about taking blood from the head under the influence of Aries, for example.⁷⁴ He lists “odious and perilous days,” thirty-six in all, on which it is not advisable to begin anything—St. Jerome warned to watch out for them. For example, one shouldn’t start anything on the first Monday of April, because “on this day Cain killed his brother Abel, and this was the first blood shed in the world.”⁷⁵

The astrological material in Michael’s book, including the charming miniatures, shares some of the features of the calendrical material. Both calendrical and astrological materials show that Michael used traditional materials and that he struggled, not always successfully, to master at least some of the technical details of these highly complex subjects. At the same time, he brought to the materials his own original point of view and way of constructing things. This individualistic imprint is evident, for instance, in his original way of designing several of the images of the zodiacal signs, as Dieter Blume’s essay makes clear.⁷⁶

MICHAEL’S AUTHORSHIP

Why did Michael write his book? He may have been motivated in part by the method by which officers were chosen for Venetian galleys, instituted in 1418. At that time a *collegio* was formed consisting of the doge and other highly placed men. All who wished to be considered for the office of *armirato* and *homo de conseio* submitted their names and thereby were chosen (or not) by an election carried out by this group. As Alan Stahl suggests, Michael may have come upon the idea of creating his book as a way to improve his chances of advancement in the competition for officer

73. MOR, fol. 108b, and see Dieter Blume’s essay in this volume, esp. 156. A comprehensive study of astrological images in the late medieval period is Dieter Blume, *Regenten des Himmels: Astrologische Bilder in Mittelalter und Renaissance* (Berlin: Akademie, 2000).

74. MOR, fol. 104a.

75. MOR, fols. 111a–111b.

76. For Dieter Blume’s essay, see 147–191 of the present volume. The astrological miniatures appear on MOR, fols. 103b–109b.

places on the Venetian galleys.⁷⁷ An impressive notebook displaying a grasp of the practical knowledge of the time, including mathematics, shipbuilding, navigation, officer's rules, astrology, and calendrical matters, and providing as well a curriculum vitae of past voyages, could be seen as giving Michael a competitive edge. The striking visual depictions of ships, zodiac signs, ropes, sails, and other images could only add to the positive impression of the *collegio* making decisions about officers on particular ships.

While such a change in Venetian maritime hiring practices may have been one reason Michael decided to create his book, it should not obscure a broader context. Michael was probably close to 50 years old in 1434 when he writes that he started his book. The contents of the book constitute evidence that he had undertaken years of prior study that would necessarily have required extensive reading and writing. As Raffaella Franci suggests in her essay in this volume, Michael undoubtedly studied with an abacus master to acquire his excellent grasp of commercial and theoretical mathematics. His knowledge of the subject and his ability to find diverse ways for solving the same problem, evident in the pages of his book, suggest long hours spent working out problems by writing them down and solving them. It suggests further long hours of studying abacus books, copying out problems, and both copying and working out solutions.

Similar extensive work, although perhaps with less success, is evident in the calendrical material, which Michael would have found in abacus books, in almanacs, and in other written forms. Such materials include lists of saints' days; writings of medical advice, including propitious days for bloodletting and other activities; instruction on how to calculate the day on which Easter falls each year; and calendars recording the date of full moons, highly useful for Mediterranean voyages. Clearly Michael studied, assimilated, copied, and tried to master a variety of written sources, shaping them to his own interests and concerns. Michael's long-term engagement in the practices of recording also seems evident in his relatively cryptic record of his voyages. As we have seen, for each voyage he noted his own position on the ship (with the exception of three voyages)⁷⁸ and also identified the captain of the convoy, the patron, and other officers. Stahl's detailed biographical study in this volume fleshes out the details of these voyages and explicates the Venetian context in greater depth. Here I would add that Michael's account of his voyages is a remarkably detailed lifetime record, given that the author was a non-noble mariner living in the first half of the fifteenth century. The detail of the record itself over a more than forty-year period makes it reasonable to suppose that Michael kept a written record of his voyages long before he began writing his book in 1434. He may have kept this record among other papers and books, the latter either owned by him or perhaps borrowed.

Michael's book as a whole presupposes in some sense an adult lifetime of study, reading, and writing, including copying, as well as drawing. It demonstrates the mastery of a language (Venetian) that may not have been his own native language (which, as we have said, was probably Greek). It seems likely that Michael brought his book along with him on voyages—perhaps working on it, or on materials that eventually found their way into it, in lulls in activity. Such pauses could be relatively frequent, as the account of the imperial voyages suggests. The worn page of Michael's

77. See Alan Stahl's essay in this volume, esp. 87–92.

78. The voyages for which Michael fails to record his own position on the ship are those of 1439 and 1440 (both voyages to transport important personages) and 1441. See MOR, fol. 93b.

notebook on which is depicted St. Christopher, guardian of safe journeys if an image of the saint is glanced at each day, is another indication that the notebook may well have found a place in Michael's sack on his voyages. And of course, we know that it actually was in the sack of another mariner, Giovanni da Drivasto, as the will of August 29, 1473, written at the end of Michael's book, attests.⁷⁹

Other contents of the book would have made it useful as an onboard reference as well: if not the portolan, then certainly the ship orders, the predictions of full moons, the saints' days, and the days on which certain things should or should not be done (e.g., bloodletting, beginning new things). And although Franci rightly suggests that Michael was at least as interested in the theory of mathematics as in the practice, we can imagine him using his mathematical skill to sell his own goods, such as pepper, and perhaps helping less capable mariners in selling theirs. Michael lived and worked in a world of practices for which his studies and writings were surely relevant, if not to be understood in direct, one-to-one relationships. And it should be kept in mind that, while certain practices such as interpreting astrological influences no longer hold credence among most educated elites today, they were important and generally accepted practices in the early fifteenth century, just as important as ship construction, navigation, or calculating the price of pepper.

Michael's book suggests an individual who seriously pursued certain studies in the course of his daily life. The book can also take its place in a wider context of authorship that brought about an expanding number of writings in practical subjects in fifteenth- and sixteenth-century Europe—subjects ranging from gunpowder and military weapons, to mills and other machines, to practical mathematics, painting, and architecture. This expansion of practical writings began before printing, and came about in part because of an increased cultural valuation of practical and technical matters. This growing appreciation for practice is evident within the development of fifteenth-century civic humanism. It is also evident in the greatly expanded number of books written by both practitioners and more learned men on practical and technical topics.⁸⁰

The increased valuation of technical and cultural matters developed intellectual and philosophical moorings as well. Perhaps their most compelling presentation was written by the great philosopher and conciliarist Nicholas of Cusa. Nicholas traveled, we can recall, as a passenger in the convoy that was sent to bring the Byzantine emperor John VIII Palaiologos to Ferrara in 1437. We know that Nicholas of Cusa and Michael of Rhodes traveled in the same convoy, though not whether they were on the same ship or, if they were, whether they conversed. Nevertheless, Cusanus

79. This will is at MOR, fols. 238a–238b. It is possible that Michael's book was not in Giovanni's sack but in that of another officer. Whoever owned the book then, it was used to record the will of a (presumably) dying mariner.

80. For practical and technical authorship, see especially William Eamon, *Science and the Secrets of Nature: Books of Secrets in Medieval and Early Modern Culture* (Princeton: Princeton University Press, 1994); Anthony Grafton, *Leon Battista Alberti: Master Builder of the Italian Renaissance* (New York: Hill and Wang, 2000); Rainer Leng, *Ars belli: Deutsche taktische und kriegstechnische Bilderhandschriften und Traktate im 15. und 16. Jahrhundert*, 2 vols. (Wiesbaden: Reichert Verlag, 2002); and Long, *Openness, Secrecy, Authorship*. For the later influence of artisanal culture on the development of the new sciences of the seventeenth century, see especially Pamela H. Smith, *The Body of the Artisan: Art and Experience in the Scientific Revolution* (Chicago: University of Chicago Press, 2004).

wrote a remarkable treatise, *Idiota: De sapientia, De mente, De staticis experimentis* (ca. 1450), in which he sanctioned and legitimized the knowledge of the unlearned as well as the value of practical mathematics.⁸¹

Idiota contains four books, the first two of which, on wisdom, take the form of a dialogue between an unlearned man (the *idiota*) and an orator. The *idiota* shows the way to wisdom by rejecting the learning of the orator based on the authority of books. Rather, he suggests, wisdom can be found in the streets and marketplaces where ordinary weighing and measuring occur. The unlearned man leads the orator to wisdom—that is, comprehension of the divine—through mathematics.⁸² In the third book, *De mente*, Cusanus argues that the word for “mind”—*mens*—derives from the same word as “measure”—*mensura*.⁸³ In the fourth, *De staticis experimentis*, he describes a series of experiments in practical measurement, including the determination of the specific gravities of particular substances and the comparative weight of other substances such as the blood and urine of well and sick men.⁸⁴

It is tempting to imagine that Nicholas of Cusa and Michael of Rhodes traveled on the same ship and that they overcame the large social gap between them and conversed. Such conversations would resemble those depicted in Cusanus’s dialogue written more than ten years later. Certainly Michael of Rhodes and Nicholas of Cusa passionately shared at least one mutual interest—practical mathematics.⁸⁵

Whether or not the two men actually spoke with each other, taken together they illustrate the cultural legitimation of practical knowledge, especially practical mathematics. In his dialogue, Nicholas’s learned orator seeks to learn not from books but from his unlearned companion. Michael, who is “unlearned” in the sense that Cusanus uses the term, that is, without Latin learning, has written a book that includes a broad range of topics, most importantly mathematics. Just as Nicholas of Cusa embraced the culture of practice, Michael himself embraced a culture of reading and writing—the culture of books.

Michael’s two books and other practical and technical writings bear complex relationships to the actual practices that they describe. They constitute, among other things, *prima facie* evidence for the practice of authorship itself, a practice distinct from the other practices that are described within. The Venetian origins of Michael’s book, its early date, and the circumstance that it was written by a person who started his working life in the low position of an oarsman on a Venetian

81. Nicholas of Cusa, *Opera omnia*, vol. 5: *Idiota: De sapientia, De mente, De staticis experimentis*, rev. ed., ed. Renata Steiger et al. from the edition of Ludwig Baur (Hamburg: Felix Meiner, 1983). There is an anonymous seventeenth-century English translation, *The Idiot in Four Books* (London: William Leake, 1650), and more recent English translations of the third book, *Idiota de Mente: The Layman: About Mind*, trans. Clyde Lee Miller (New York: Abaris, 1979); and of the fourth book, Henry Viets, “*De staticis experimentis* of Nicolaus Cusanus,” *Annals of Medical History* 4 (1922): 115–135.

82. Nicholas of Cusa, *Idiot in Four Books*, 7–8.

83. Nicholas of Cusa, *Idiota de Mente*, trans. Miller, 42–43.

84. Viets, “*De staticis experimentis*.”

85. For his mathematical writings, see Nicholas of Cusa, *Nicolai Cusae cardinalis opera* (1514; reprint, Frankfurt: Minerva, 1962), 2, xxxiii–cxiii (page numbering not sequential).

galley make this book a remarkable historical document, one that will surely reward continuing study.

CONCLUSION

During his many voyages, on clear nights Michael would have seen the sky bright with stars, planets, and sometimes the moon—brighter than many in the modern world living in a light-polluted environment have ever seen. He endowed the stars and planets with pervasive influence, accepting the astrological doctrines that were commonplace in his own day. He lived an adventurous and dangerous life, facing battles, violent storms, and the ever-present threat of illnesses such as plague, and he suffered profound losses—we know of the death of two of his wives, a son, and possibly a daughter.⁸⁶ While his life was deeply enmeshed in the world of Venetian seaborne commerce and naval power, it was also anchored in the specific significances of the stars and planets, the days of the year and their saints, and in a deeply felt Christian piety. This piety is evident on every folio of his notebook, each one of which begins with “Ihesus”—Jesus. Among the prayers that he copied into his book, some function as magical antidotes. For example, he advises that one prayer be written on a sheet “while fasting on a Monday” and tied to the throat of a person who has a fever. After saying Ave Marias and other incantations, it is to be left until Wednesday, at which time it should be thrown into the fire. Then the fever will disappear. Michael’s prayer for himself, addressed to St. Sebastian, is more straightforward: “St. Sebastian, your faith is great, intercede for me Michael, a miserable sinner, to Lord Jesus Christ, and may I deserve to be freed from plague, epidemic, and illness by your prayers.”⁸⁷

Michael records that he “received the steelyard”—the official weighing station of Venice—on January 28, 144[5]. He must have been an old man, at least by fifteenth-century standards. His life at sea was over and he died not long after, although the exact date of his death is unknown. Thereafter, others used his writings. His second notebook, the *Raxion de’ marinieri* formerly attributed to Pietro di Versi, was actually given (or more likely sold) to Pietro in the 1440s. As we know from the will written into the end of Michael’s first book, it was carried in the sack of a mariner as late as 1473. The shipbuilding section was copied in the early sixteenth century.⁸⁸

The book of Michael of Rhodes thus provides an important resource for further investigation of Venetian culture and society. Yet sight should not be lost of the imprint of Michael’s own individuality on his unique manuscript, or the highly original task that he set out for himself in creating it, given his particular background and place in Venetian society. Perhaps the most notable stamp of

86. In her first will, Michael’s wife Cataruccia names an adoptive daughter Pulizina who could well have been Michael’s daughter from his marriage with Dorotea, and in both her wills she mentions a granddaughter or niece (“*nepta*”) as well. If Pulizina was Michael’s daughter, the fact that she is not mentioned in his own will makes it virtually certain that she had died before he made it. See vol. 1, 514–516 (for Cataruccia’s wills), and vol. 2, 608–615 (for transcription and translation); and Stahl’s essay, 78–79.

87. MOR, fols. 183a–183b (for antidote prayer) and 183a (for Michael’s own prayer).

88. Pietro di Versi, *Raxion de’ marinieri*, ed. Conterio. The copy of the shipbuilding treatise is in Florence, Biblioteca Nazionale Centrale, Ms. Magliabechiano, cl. XIX, cod. 7: *Fabrica di galera*, ca. 1510, and was published in the nineteenth century by Jal, *Archéologie navale*, 2: 6–133.

that individuality is the coat of arms that he appears to have invented for himself, appropriating a device normally possessed only by noble and aristocratic families. Michael has inscribed his own coat of arms with the letter M flanked by two turnips and surmounted, as Dieter Blume explicates, by a standing mouse that has captured a cat in its paws (see the frontispiece of this volume).⁸⁹ Such a reversal may well stand for the ambitions that Michael attempted to achieve through authorship. It reveals a wonderfully comic sense of humor as well!

89. See Dieter Blume's essay in this volume, 177, and see also Stahl's essay, 88 and note 342.