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SPECIAL ISSUE

THE VIEW FROM THE SEA. THE PRACTICE OF EARLY MODERN TRANSOCEANIC COMMERCIAL NAVIGATION

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ARTICLE

Foreword

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Abstract

The Foreword to this special issue of *Itinerario* describes the historical questions that inspired the Global Sea Routes project, from which the essays in the issue derive. It then illustrates the particular sources used in the project, namely logbooks, specifically those of the English East India Company, whose characteristics and interpretation problems are briefly presented. Then, it illustrates the digital tools used in the analysis of those sources and to obtain the digital graphic and cartographic representation of the research results; and finally, it introduces each individual essay contained in the issue.

Keywords: Early modern global navigation; Global history; History of navigation; Digital history

The importance of transoceanic maritime connections in the processes of early modern globalisation certainly does not need to be emphasised. Nor does the centrality of the history of shipping—merchant, military, exploratory—in every possible aspect: technical-scientific, organisational, political-institutional, economic, cultural, biographical. Historiography is naturally impressive on the maritime and commercial expansion of early modern Europe, which is closely connected with the history of European maritime powers and their evolution as highly organised state formations. This expansion also underlies the processes of economic, political, and cultural proto-globalisation. However, when the Global Sea Routes (GSR) geodatabase project took shape at the beginning of 2019, there were still questions waiting to be answered, particularly with regard to the history of trade navigations, through which—with the sea exchange of goods, knowledge, and ideas to European and overseas markets—the first forms of continuous economic and cultural interconnection on a global level took place.

Our starting question was very simple: do we know what the actual duration of maritime voyages over long intercontinental distances was in the early modern era? Do we know how numerous were the commercial voyages between Europe and the rest of the world from the time of the great geographical discoveries until the emergence of steam navigation? Do we know how intensively those voyages had evolved over almost four centuries, and how dense the network of global maritime connections of a commercial nature had become over the years? And how much had the duration of those voyages and the average speed on those routes changed? These are challenging questions, for which scattered and fragmentary data were certainly available, gleaned from printed travel reports and a multiplicity of archival documents. But how much better to attempt to

recompose this data in a framework that was both synthetic and comparative. Very challenging questions, and even more so if another one was added: how could we employ digital technologies to produce a visual representation of the development of transoceanic commercial shipping in the early modern age? And, above all, a representation that would be able to jointly bring out and understand the dimensions of time and space. The combination of these questions raised the possibility of bringing together global history and digital history, in what evolved into a certainly challenging but also very stimulating project.

As is often the case, when a project comes to life and begins to be translated into practice, no matter how solid the problematic and methodological foundations are, the problems become clearer and their complexity emerges more visibly through the confrontation with the available sources and digital instrumentation, especially if one is moving in highly innovative and uncharted terrain. Since the beginning of 2019, when the Global Sea Routes project took its first steps, the focus on the complexity of the problems allowed us to imagine the next steps through which the achievement of our objectives could take place and led us to limit our efforts to an initial smaller set of objects of analysis. The availability of a great concentration of archival sources and the richness of the historiographical framework led us to identify the world of the English East India Company as offering the best field of investigation on which to start our experiments, with the idea of tackling in successive stages the great navigations of the other European maritime powers: the Iberian states, Holland, and France. It was in this way that the exceptional quantitative and qualitative importance of the great repository of logbooks of the East India Company's ships held in the India Office Records and Private Papers at the British Library came to the fore. And it was precisely on this material that the first in-depth studies and experiments were launched, made possible, from the point of view of digital technologies, by the use of the Nodegoat platform for data-driven research and the interactive web applications developed by LAB1100 at The Hague. Their collaboration proved decisive for the creation of the final product we imagined for our research: an online geodatabase, accessible first with a provisional public interface (http://gsr.nodegoat.net/viewer.p/57/2230/types/all/list/) and now with a new interface entirely designed from scratch and publicly accessible (https://globalsearoutes.net/).

The analysis of the logbooks revealed their exceptional importance not only as tools for route reconstruction, but also as mirrors of lived reality, of the practical experience of transoceanic European voyages, in this case to Asian destinations and back. The logbook presented itself to our eyes as something more than a technical tool: it provided an open window (at least partially) on the everyday life of long-distance navigations, on their protagonists, on the culture of the navigators, on the facts that accompanied the practice of transoceanic navigation day by day. To the initial challenge—to construct a visual spatio-temporal representation of global routes—a new one soon was added: to construct narratives by means of nonnarrative sources such as logbooks, and to reinsert substantially unknown and anonymous voyages into the historical contexts of which they were part by means of the intersection with documentary sources of other kinds capable of restoring concreteness to experiences never before recounted.

This special issue of *Itinerario* intends to bring to the attention of the scientific community the fruits of this second part of the Global Sea Routes project in particular, and to present the work of the researchers who, in different ways and with different types of contributions, made the development of the project possible in its initial phase of life. I have decided to leave the floor entirely to them, because it is thanks to them that Global Sea Routes was able to blaze new trails of research and arrive at an initial set of results. We felt it was appropriate that the four contributions from GSR team members should be joined by a fifth from a scholar who, through his participation in the

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Climatological Database for the World's Oceans (CLIWOC) project, has acquired significant knowledge and experience in analysing logbooks from the perspective of navigation history and historical climatology.

The following five contributions are designed to give the reader as complete a view as possible of the set of problems the project addresses. The introduction by Giulia Iannuzzi presents the main questions, the sources that are used, and the digital technologies employed to obtain results that, in terms of originality, stand out in the panorama of digital history projects on comparable subjects. Erica Grossi's and Filippo Chiocchetti's essays are two case studies that effectively show the enormous informative potential of logbooks and the fact that the navigational experiences of the East Indiamen towards India in the first and second half of the eighteenth century, if studied closely, cannot be traced back to a uniform pattern, but are profoundly influenced by a great number of variables, impossible to grasp except through the analysis of logbooks and other coeval sources.

Phillip Reid's essay also deals with case studies of eighteenth-century transoceanic sailings, but this time in the North Atlantic: the analysis of three experiences of crossings made by British ships during the eighteenth century reveals the difficulties and the empirical methods for overcoming them adopted by navigators. Clive Wilkinson's essay develops exactly this point, not with reference to case studies, but by describing in general the problematic features of early modern sail navigation methods and insisting above all on the importance of environmental observation in an era, between the seventeenth and eighteenth centuries, in which scientific progress still struggled to translate what were essentially empirical methods into new technical aids for navigation..

Before closing, I need to mention that the GSR project was made possible thanks to the financial support of the Italian Ministry for University and Research, the Friuli Venezia Giulia Region funding programs for research, the Foreman Casali Foundation in Trieste, and additional support from the University of Trieste; my thanks go to all of these agencies. Of great importance and impossible not to mention is the project for the digitisation of logbooks of the East India Company relating to navigation in the Persian Gulf and Indian Ocean area carried out by the Qatar Digital Library at the Qatar National Library; without the availability of these digitised sources nothing would have been possible to the extent that has been achieved so far. Thanks also to our Dutch friends from LAB1100, Pim van Bree and Geert Kessels, who introduced us to Nodegoat and assisted us in setting up an original geodatabase, and agreeing to develop the potential of the platform to meet our needs. Vanessa Di Stefano competently edited linguistic revisions of essays by nonnative-English-speaking authors.

Finally, my heartfelt thanks go to *Itinerario* for accepting our proposal for a monographic issue, which we hope will meet the journal's and the readers' expectations.

Acknowledgments. My heartfelt thanks to the scientific direction and editorial staff of *Itinerario* for accepting our works into the journal.

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Guido Abbattista is Professor of Modern History at the University of Trieste, where he teaches Global History, Methodology of Historical Research and Digital History. He is a specialist in the history of Anglo-American political culture in the eighteenth century, the history of the European Enlightenment with particular reference to colonial and imperial issues and the theme of ethno-anthropological diversity. He has been Visiting Professor at the École des Hautes Études en Sciences Sociales, Paris, and at the Nanjing University (PRC). He is a member of the Academia Europaea for the section "History and Archaeology", the World History Association, the Hakluyt Society, the International Committee for the History and Theory of Historiography and the inter-university research centre "Globhis-Network for Global history". Among his publications there are books, essays and critical

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editions of authors such as James Mill, Lord Bolingbroke, Edmund Burke, abbé Raynal, A.-H. Anquetil-Duperron. His most recent works include: *Law, Justice and Codification in Qing China. European and Chinese Perspectives. Essays in History and Comparative Law*, edited by Guido Abbattista (Trieste: EUT, 2017); *La Rivoluzione Americana: A New Edition with a Postface* (Rome-Bari: Laterza, 2021), *Ethnic Expositions in Italy 1880-1940. Humans on Exhibitions* (London: Routledge, 2024, Eng. transl. of *Umanità in mostra: Esposizioni etniche e invenzioni esotiche in Italia (1880–1940)* (Trieste: EUT, 2013)). As a digital historian he is the P. I. of the research project, the geodatabase and the website "Global Sea Routes", 2019-current.

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INTRODUCTION

Introducing *The View from the Sea. The Practice of Early Modern Transoceanic Commercial Navigation*

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Abstract

Research into maritime history using digital tools is a growing field, with projects that in recent years have focused on the role of sea spaces in the dynamics of globalisation on an economic and juridical level as well as on a cultural level, with respect to the circulation of knowledge. In this introduction to our special issue, we offer some historiographical observations on the codification of knowledge in seafaring practice, emphasising how the use of digital tools to process and represent primary sources may encourage historians to formulate new questions about the relationship between European culture and the sea during the early modern age. In order to present the articles in this issue and the original contribution they make to the field, we also focus on the historical and cultural significance and methodological challenges posed by primary sources such as logbooks. We illustrate how the analysis of logbooks in a digital environment such as Global Sea Routes (GSR), a project conceived and coordinated by Guido Abbattista, can foster a better understanding of the role of routine navigations in early commercial globalisation.

Keywords: maritime history; history of navigation; logbooks; digital history; Global Sea Routes

Early Globalisation through Logbooks: Introductory Remarks

This special issue of *Itinerario, The View from the Sea. The Practice of Early Modern Transoceanic Commercial Navigation* addresses the role of the commercial voyages of European companies in the era of early globalisation. The contributions presented here are set against the backdrop of maritime history and the history of navigation, which are transnational domains par excellence given the circulation of people, goods, and knowledge that characterised sea spaces as connective tissues exploited for human activities. The case studies examined focus on the English East India Company and the Royal Navy between the sixteenth and nineteenth centuries, with a particular emphasis on the eighteenth century.[1] The starting hypothesis is that a particular kind of documentation—logbooks—produced by sea voyages which formed the infrastructure of early commercial

[1] The bibliography on the history of the fleets and Asian sailings of the major European companies is endless. We only mention here, for the East India Company, the works of Jean Sutton, *The East India Company's Maritime Service, 1746–1834: Masters of the Eastern Seas* (Woodbridge: Boydell Press, 2010); and *Lords of the East: The East India Company and Its Ships, 1600–1874* (London: Conway Maritime Press, 2000); for the Dutch company, J. R. Bruijn and F. S. Gaastra, eds., *Ships, Sailors, and Spices: East India Companies and Their Shipping in the Sixteenth, Seventeenth, and*

globalisation may shed light on the actual practice and daily experience of transoceanic navigation and the kind of knowledge which supported it and at the same time contributed to increasing it—a perspective that has yet to be fully investigated.

The scientific contributions gathered in this monographic issue share important methodological aspects and stem from an interest in the cultural aspects of the history of navigation, and in particular in the processes of knowledge creation, circulation, and organisation in the field of navigation practice, and beyond. All of these studies focus on the connections that the history of navigation has with the broader political, social, and cultural phenomena and contexts that have characterised the relations between humankind and the sea. A number of the articles in this issue present research that has made use of digital tools in the handling and processing of primary sources, and in the collection, analysis, and reporting of information. The attention to the practice of seafaring as a junction of cultural processes, coupled with the use of digital research environments, provides an original contribution to existing historiography. This special issue puts forward new fundamental questions that can shape historical research and introduces new ways to interrogate sources while examining unpublished manuscript documents and under-studied cases. In so doing, the analysis fosters a better understanding of navigation in the early modern period, understood both as a practice that lies at the intersection of a wealth of disciplinary knowledge and skills and as a collective and individual experience. Furthermore, it offers original analyses of how this experience was represented through the reading of primary sources such as ship's logbooks.

How, in the absence of the diary or narrative accounts typical of major sailings, can we represent the routine navigations of the trading companies of the early modern age in such a way as to depict the actual daily progress of their transoceanic routes, given the large number of variables and the different impact of those variables in different historical contexts and periods? How can we capture life on board and the contribution of daily observations and activities to the production of knowledge fundamental to the art of navigation? Can such an analytical approach serve to give a more nuanced representation of what is revealed by the serialisation studies carried out, for example, by those who have attempted to examine the speed of maritime transport or the quantitative analysis of its economic impact? Here we propose possible answers to these questions. What emerges is the centrality of the logbook as a source for georeferenced digital representations of routes as part of the complexity of everyday navigation, offering a repository of nautical data and descriptive elements. This information substantiates the contribution of the Royal Navy's and East India Company's navigations to the development of geographical, nautical, meteorological, and naturalistic knowledge and helps to form a more precise idea of the operations characterising daily life on board sailing ships engaged in transoceanic routes.

Three of the contributions collected in this issue are based on an in-depth reading and georeferenced analysis of ship's logs. Logbooks are historical sources of a technical nature. They contain records kept daily by captains or other officers on board, using formats and conventions that changed through time. They focus primarily on aspects of navigation such as date, time, port of departure, destination, the ship's daily position (latitude and longitude measured by different methods), and the direction and progress of the course, distances travelled, direction and strength of winds, depths, sea currents, weather conditions, seabed, characteristics of coastlines, and other details of a similar kind. In addition to this type of data, logbooks may also contain concise notes on various events that

Eighteenth Centuries (Amsterdam: NEHA, 1993); and for the French company, Philippe Haudrère, ed., *Les flottes des Compagnies des Indes, 1600–1857* (Vincennes: Service historique de la marine, 1996).

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accompanied the day-to-day navigation.[2] By reconstructing voyages in their complexity, these three contributions offer an original methodological example of how it is possible to "make the ship's logs speak." By cross-referencing the logbooks with logs and diaries of similar voyages, manuals and instructions on contemporary navigation and cartography, and secondary literature, these articles retrace the untold stories of the voyages they deal with, and render the events of those voyages tangible. By focusing on routine navigations, these articles offer the results of analyses and representations capable of capturing the real day-to-day progress of transoceanic navigations, within the complexity of the innumerable variables involved and the changes resulting from the differences between historical and geographical contexts, thus updating the seminal contributions that have paved the way in past decades with the possibilities provided by new digital tools and historiographical insights.[3]

Maritime History, Cultural Studies, Digital Tools

There is a rich and lively historiography on European shipping companies in the early modern era, which in recent years has advanced our understanding of political and institutional,[4] diplomatic and military, economic and commercial,[5] and labour and employment aspects,[6] as well as the technical and scientific knowledge involved in the practice of navigation and its evolution,[7] and, of course, the role of commercial shipping in the processes of globalisation and the development of transcontinental and (inter-) regional connectivity.[8] Recent contributions have also explored the accumulation and circulation of knowledge related to European trade initiatives in fields such as natural history, meteorology, geography, cartography, navigation tools and skills, and "travel knowledge" in general.[9] An exhaustive review of the changes that have affected the interdisciplinary field of maritime history or even just the historiography related to the role of

[2] W. E. May, "The Log-Books Used by Ships of the East India Company," *Journal of Navigation* 27:1 (1974), 116–8, https://doi.org/10.1017/S0373463300025236; Phillip Reid, *The Merchant Ship in the British Atlantic, 1600–1800: Continuity and Innovation in a Key Technology* (Leiden: Brill, 2020), 175–82; Margaret Schotte, "Expert Records: Nautical Logbooks from Columbus to Cook," *Information & Culture* 48:3 (2013), 281–322; Clive Wilkinson, "The Non-Climatic Research Potential of Ships' Logbooks and Journals," *Climatic Change* 73:1 (2005), 155–67.

[3] Elena Fasano Guarini, "Au XVIe siècle: comment naviguent les galères," *Annales. Histoire. Sciences Sociales* 2 (1961), 279–96.

[4] Adam Clulow and Tristan Mostert, eds., *The Dutch and English East India Companies: Diplomacy, Trade and Violence in Early Modern Asia* (Amsterdam: Amsterdam University Press, 2018).

[5] Peter M. Solar, "Opening to the East: Shipping between Europe and Asia, 1770–1830," *Journal of Economic History* 73:3 (2013), 625–61; Richard W. Unger, ed., *Shipping and Economic Growth, 1350–1850* (Leiden: Brill, 2011).

[6] Sara Caputo, "Alien Seamen in the British Navy, British Law, and the British State," *Historical Journal* 62:3 (2019), 685–707.

[7] Simon C. Davidson, "Marine Chronometers: The Rapid Adoption of New Technology by East India Captains in the Period 1770–1792 on Over 580 Voyages," *Antiquarian Horology* 40:1 (2019), 76–91; Peter M. Solar and Pim de Zwart, "Why Were Dutch East Indiamen So Slow?," *International Journal of Maritime History* 29:4 (2017), 738–51, https://doi.org/10.1177/0843871417725487; Peter M. Solar and Luc Hens, "Ship Speeds during the Industrial Revolution: East India Company Ships, 1770–1828," *European Review of Economic History* 20 (2015), 66–78.

[8] David Abulafia, *The Boundless Sea: A Human History of the Oceans* (Oxford: Oxford University Press, 2019); Jan De Vries, "Connecting Europe and Asia: A Quantitative Analysis of the Cape-Route Trade, 1497–1795," in *Global Connections and Monetary History, 1470–1800,* ed. by Dennis O. Flynn, Arturo Giráldez, and Richard von Glahn (Aldershot: Ashgate, 2003), 34–106; Arturo Giráldez, *The Age of Trade: the Manila Galleons and the Dawn of the Global Economy* (Lanham, Md.: Rowman and Littlefield, 2015); Manuel Perez-Garcia et al., "Big Data and 'New' Global History: Global Goods and Trade Networks in Early Modern China and Europe," *Itinerario* 46:1 (2022), 14–39, https://doi.org/10.1017/S0165115321000310.

[9] "Alternative Histories of the East India Company," special issue, *Journal for Early Modern Cultural Studies* 17:3 (2017); Aske L. Brock, Guido van Meersebergen, and Edmond Smith, eds., *Trading Companies and Travel Knowledge in*

navigation in globalisation processes would go far beyond the scope of these pages.[10] Nonetheless, it is useful for us to note some general trends that the articles collected in this issue deal with. Royal navies and privileged companies have been analysed as sources of written information of different types in terms of purpose, recipients, and political charge, from voyage reports to correspondence, instructions, and port documents. Individuals and organisations involved in commercial shipping enterprises have been studied not only as economic and institutional agents but also as producers of culture and bearers of emotions.[11] Alongside the economic, jurisprudential, and technological strands of history with which the transnational dimension inherent in maritime history has been examined, a variety of social, cultural, and linguistic dimensions have also been increasingly revealed. Through the typological variety of primary sources, a multitude of subjectivities and agencies at various levels within the companies have been brought to light. Ambassadors, merchants, ship captains and ensigns, soldiers, agents, intermediaries, and local and indigenous correspondents have been studied as employees or collaborators within the organisational and institutional apparatuses of the companies, as well as producers of information, mediators of intercultural encounters, promoters of private or special interests, sometimes in competition and sometimes in conflict with each other.[12] Against this background, this special issue makes an original contribution by considering primary sources that have been rather rarely studied before with these intents and objectives, and by presenting research results obtained with the aid of innovative digital tools.

Some of the research presented in this issue was developed with and is the result of the Global Sea Routes project, or GSR. Conceived and coordinated by Guido Abbattista of the University of Trieste, GSR employs a geodatabase, which is a relational database with an associated geo- and chrono-referencing system. This allows "objects" such as routes, ports, or docks to be located within a geodetic reference system.[13] This environment enables dynamic visualisations of voyages (which are also offered to external users via a web interface) whose time scale is customisable.[14] Routes and times may be analysed and represented, with specific reference to European trading companies and the practices, knowledge, and experiences of those involved "in the field." These tools make it possible to transform the analysis of historical sources such as ship's logs into an analytical

the Early Modern World (London: Routledge, 2022); Richard Dunn and Rebekah Higgitt, eds., *Navigational Enterprises in Europe and Its Empires* (New York: Palgrave, 2015).

[10] For a historiographical survey, see John J. Hattendorf, "Introduction," in *The Oxford Encyclopedia of Maritime History*, 4 vols. (Oxford: Oxford University Press, 2007), 1: xviii; Jari Ojala and Stig Tenold, "Maritime History: A Health Check," *International Journal of Maritime History* 29:2 (2017), 344–54, https://doi.org/10.1177/0843871417695490; David M. Williams, "Maritime History: Contexts and Perspectives," *International Journal of Maritime History* 32:2 (2020), 370–5, https://doi.org/10.1177/0843871420921268.

[11] Sara Caputo, "Exploration and Mortification: Fragile Infrastructures, Imperial Narratives and British Naval Discovery Vessels 1760–1815," *History of Science* (2020), 1–20, https://doi.org/10.1177/0073275320970042.

[12] Tim Riding, "Managing Expertise: The Problem of Engineers in the English East India Company, 1668–1764," *Itinerario* 45:2 (2021), 228–51, https://doi.org/10.1017/S0165115321000140.

[13] In this case the World Geodetic System 1984, EPSG:4326; on Geographic Information Systems and spatial humanities, see Alberto Giordano, Shih-Lung Shaw, and Diana Sinton, eds., "The Geospatial Humanities: Transdisciplinary Opportunities," special issue, *International Journal of Humanities and Arts Computing* 14:1–2 (2020). GSR employs the digital research environment Nodegoat, developed by LAB1100, https://nodegoat.net/.

[14] See the public website of GSR—Global Sea Routes, PI Guido Abbattista, 2021, http://gsr.nodegoat.net/ (CC BY-NC-ND 4.0); see also the website https://globalsearoutes.net/; see also Guido Abbattista and Andrea Favretto, "Global Sea Routes: An Historical Geodatabase of Global Navigations in the Modern Age (16th–19th Centuries)," in *International Conference on Innovations in the Social Sciences and Humanities ISSH 2019: Conference Proceedings* (Ho Chi Minh City: Ton Duc Thang University, 2019), 61–6; Erica Grossi and Filippo Chiocchetti, "Global Sea Routes: La navigazione europea commerciale transoceanica tra XVI e XX secolo", *Quaderni storici* 1 (2022), 273-86, https://www.rivisteweb.it/doi/10.1408/106206..

reconstruction of the routes that is faithful to the spatiotemporal dimension of the voyages, capable of graphically showing both the temporal development of individual routes and the long-term historical evolution (1500–1900) of maritime connection systems. In addition, the relational model of the database allows each voyage and each route segment to be linked to information pertaining to a number of elements—from the fleet to the identity of notable roles and persons on board (e.g. crew members and dignitaries), from the nautical and cartographic instruments used to the commodities transported and exchanged. The GSR analyses commercial ship's logs in a way that has hitherto been reserved for isolated cases of particular historical relevance (such as notable scientific circumnavigations or diplomatic voyages), in a systematic manner and with attention to the informative details that these sources contain on a variety of aspects of navigation, which are not only strictly technical. The case studies presented in this issue provide ample evidence of this.

The logbook has attracted particular attention in historiography of recent decades, illustrating how the information recorded in it can be exploited according to a multitude of multidisciplinary interests.[15] In the field of historical climatology, large-scale transnational projects such as the Climatological Database for the World's Oceans (CLIWOC),[16] covering 1750–1850, and Recovery of Logbooks and International Marine Data (RECLAIM), focusing on the nineteenth century,[17] have extracted and digitised data from thousands of logbooks from modern and contemporary times (mainly English, French, Dutch, and Spanish). The logbooks have proven to be valuable mines of meteorological, oceanographic, and biosphere-related observations which were fed into datasets aimed at climate research from a diachronic perspective. In this field significant efforts were also made at a transnational standardisation of data models.[18]

Digital history has increased the speed and ease of both selection and access to information and the heuristic potential of pre-existing studies through new tools. An example of this is the database dedicated to Dutch-Asiatic shipping between the seventeenth and eighteenth century, created from the publication *Dutch-Asiatic Shipping* produced in the 1970s and 1980s.[19] The original research made use of the data contained in administrative documents on Asian trades (*Uitloopboeken*), ship registers, and reports on vessels entering and leaving Batavia and other Asian ports contained in the Overgekomen Brieven en Papieren to record and index the voyages of the Voorcompagnieen and Verenigde Oostindische Compagnie (VOC) between 1595 and 1795.[20] The creation of a database made it possible to exploit data, such as the speed of vessels, to give just one example, for a quantitative analyses of various aspects of the history of Dutch trade in Asia, and more generally from a comparative perspective.[21]

[15] Schotte, "Expert Records."

[16] CLIWOC: Climatological Database for the World's Oceans 1750–1850 (2001–2003), https://webs.ucm.es/info/cliwoc/; Ricardo García Herrera et al., *CLIWOC Final Report,* 2003, https://webs.ucm.es/info/cliwoc/Cliwoc_final_report.pdf.

[17] RECLAIM: Recovery of Logbooks and International Marine Data, http://icoads.noaa.gov/reclaim/; Clive Wilkinson et al., "Recovery of Logbooks and International Marine Data: The RECLAIM Project," in "Achievements in Marine Climatology," special issue, *International Journal of Climatology* 31:7 (2011), 968–79, https://doi.org/10.1002/joc.2102.

[18] ICOADS: International Comprehensive Ocean-Atmosphere Data Set, hosted by the U.S. National Oceanic and Atmospheric Administration (1985–), https://icoads.noaa.gov/.

[19] "The Dutch East India Company's Shipping between the Netherlands and Asia 1595–1795," http://resources.huygens.knaw.nl/das; Robert Parthesius, *Dutch Ships in Tropical Waters: The Development of the Dutch East India Company (VOC) Shipping Network in Asia 1595-1660* (Amsterdam: Amsterdam University Press, 2010), 15–28; Jaap R. Bruijn et al., eds., *Dutch-Asiatic Shipping in the 17th and 18th Centuries,* 3 vols. (The Hague: Martinus Nijhoff, 1975–1987).

[20] Bruijn, *Dutch-Asiatic Shipping,* 3: 195–209.

[21] Solar and de Zwart, "Why Were Dutch East Indiamen So Slow?"

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The interest in economic and commercial aspects of shipping and their role in the creation of stable networks of transnational relations has guided the construction of wide-ranging projects such as Navigocorpus, a database dedicated to commercial maritime transport mainly in the Mediterranean between the seventeenth and twentieth centuries,[22] GECEM—Global Encounters between China and Europe: Trade Networks, Consumption and Cultural Exchanges in Macau and Marseille, 1680–1840,[23] and World Seastems, a database for the collection and graphic representation of maritime traffic flows on various geographic and temporal scales from the early eighteenth century onwards, with the aim of highlighting hierarchical structures and regional articulations within the dynamics of globalisation.[24]

While Seastems relied on a homogeneous set of sources (Lloyd's printed registers), Navigocorpus brought together data extracted from primary archival sources, such as port and consular registers, as well as Health Offices records, and integrated a number of pre-existing datasets. GECEM, on the other hand, pooled data dispersed in Spanish, Portuguese, French, and Chinese primary sources, and modelled a relational structure to include in its database information on merchants, types of goods, geographical locations, ship routes, tariffs and taxes, and institutions. Guided by interests that lay primarily in economic history, the use of digital tools in these projects has made it possible to overcome the geographical fragmentation of archives and the typological fragmentation of sources, fostering a new understanding of changes in the circulation of goods, consumption, and the functioning of trade networks between the sixteenth and nineteenth centuries. Navigocorpus and GECEM in particular have exemplified, in different ways, the potential of data modelling—that is, the way data is categorised, stored, and linked together in a database—to provide knowledge infrastructures that are sufficiently flexible and open to allow the integration of different datasets, thus enabling the use of pre-existing information in new ways. Projects such as Navicorpus demonstrate the fruitfulness of giving pre-existing data a "second life." Particularly in the case of Navigocorpus, this has enabled the creation of a meta-database.

Increasing consideration of the durability and sharing of data is leading to the adoption of open standards to promote the dissemination and reuse of data and its preservation in the medium and long term. Several projects mentioned here, including GSR, make their data available under open licences and in formats that maximise interoperability.[25] Similar considerations on the amassing of dispersed archival sources and the use of big data in historical research could be made with regard to another long-standing large-scale

[22] Navigocorpus: Corpus Itineraries of Merchant Ships XVIIe–XIXe Siècles, Silvia Marzagalli, Pierrick Pourchasse, and Jean-Pierre Dedieu, project directors (2007–2011), http://navigocorpus.org/; see also the project's weblog for details on further development: Navigocorpus, https://navigocorpus.hypotheses.org/; Jean-Pierre Dedieu et al., "Navigocorpus: A Database for Shipping Information, a Methodological and Technical Introduction," *International Journal of Maritime History* 23:2 (2011), 241–62.

[23] GECEM: Global Encounters between China and Europe: Trade Networks, Consumption and Cultural Exchanges in Macau and Marseille, 1680–1840, principal investigator Manuel Perez-Garcia (2015–2021), https://www.gecemdatabase.eu/; Manuel Perez-Garcia and Manuel Diaz-Ordoñez, "GECEM Project Database: A Digital Humanities Solution to Analyse Complex Historical Realities in Early Modern China and Europe," *Digital Scholarship in the Humanities* (2022), https://doi.org/10.1093/llc/fqac046.

[24] World Seastems, principal investigator César Ducruet (2013–2018), https://www.world-seastems.cnrs.fr/; César Ducruet, ed., *Advances in Shipping Data Analysis and Modeling: Tracking and Mapping Maritime Flows in the Age of Big Data* (London: Routledge, 2017); for the geodatabase, see especially, César Ducruet and Mattia Bunel, "GeoSeastems: An Innovative Tool to Map Global Shipping Flows: Application to the Mediterranean Region," *Portus Online* 33 (2017), https://portusonline.org/geoseastems-an-innovative-tool-to-map-global-shipping-flows-application-to-the-mediterranean-region/.

[25] GSR: Global Sea Routes open access dataset, dataset 1.0.0, 25 August 2022, https://doi.org/10.5281/zenodo.7022766

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digital history project, Slave Voyages, in which the aspect of visual processing, including cartographic and animated visualisations, contribute to the understanding of information and dissemination of research results in a critical way.[26]

Aspects of social and labour history have been at the heart of other projects, such as Seafaring Lives in Transition: Mediterranean Maritime Labour and Shipping 1850s–1920s (SeaLiT), which focuses on the impact of the transition from sailing to steam navigation on seafaring communities in the Mediterranean and Black Sea area between the nineteenth and twentieth centuries.[27] Alongside logbooks, SeaLiT also used various types of archival sources, from commercial guides to crew lists, notarial deeds, and personnel records. A project such as SeaLiT brought to the fore once more the archival dispersion and the multilingual nature of primary sources of interest in (Mediterranean) maritime history, and sought to provide scholars with a bridging tool to facilitate access to these materials. Other projects launched in recent years, such as Rutter, have opened up promising avenues of research. Using early modern nautical rutters (sailing directions) as well as logbooks, Rutter has begun to explore the evolution of global concepts about the earth and the growth of scientific descriptions of the globe in the sixteenth and seventeenth centuries that these sources document.[28]

While far from constituting an exhaustive review of existing digital history projects, even if only with reference to maritime connections in the early modern era, these examples do illustrate some of the central issues that have been addressed by the use of digital tools since the 2000s, and some of the new questions that digital cognitive infrastructures have enabled historians to ask of known sources. Digital history projects have made it possible to store, organise, and make searchable large amounts of data, giving new impetus to quantitative and comparative research. This has resulted in the development and enhancement of opportunities made available virtually by archival sources and their catalogues.

The Global Sea Routes (GSR) project fits well in this lively context. As briefly mentioned above, GSR stores in a relational structure information on the routes of European trade voyages and the institutional and human actors involved, along with a wealth of information on the equipment (technological, cartographic) with which they were provided, their goals, exchanges of goods, meetings with other vessels, and more.[29] This information is in significant part drawn from logbooks, cross-examined through a number of other primary and secondary sources. However, unlike some of the projects mentioned so far, GSR goes beyond simply demonstrating the multiple and comparative value that can be derived from collecting information on numerous voyages within a single environment: The project also aims to develop a representation of each voyage under consideration, one that is accurate in its spatiotemporal coordinates.[30] Transforming the navigation and voyage data contained in a logbook into a georeferenced representation entails selecting a series of

[26] Slave Voyages 2.0: Trans-Atlantic and Intra-American Slave Trade Databases (current website 2015–), https://www.slavevoyages.org/; David Eltis, "A Brief Overview of the Trans-Atlantic Slave Trade," Slave Voyages: The Trans-Atlantic Slave Trade Database (April 2018), https://www.slavevoyages.org/voyage/about.

[27] SeaLiT: Seafaring Lives in Transition, Mediterranean Maritime Labour and Shipping, 1850s–1920s, project director Apostolos Delis (2017–2021), https://www.sealitproject.eu/.

[28] Rutter: Making the Earth Global, Henrique Leitão, principal investigator (2019–), https://rutter-project.org/.

[29] On the concept of relational databases in the context of humanities research, see Stephen Ramsay, "Databases," in *A Companion to Digital Humanities,* ed. by Susan Schreibman, Ray Siemens, and John Unsworth (Oxford: Blackwell, 2004), http://www.digitalhumanities.org/companion/.

[30] For background on visualisation in the context of digital history, but also with regard to the much longer history of visual representation in the study and understanding of the past, see John Theibault, "Visualizations and Historical Arguments," in *Writing History in the Digital Age,* ed. by Jack Dougherty and Kristen Nawrotzki (Ann Arbor: University of Michigan Press, 2013), 173–85.

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recorded positions on each voyage and translating each one into coordinates that individuate its geographical location in a current reference system. This is far from a mechanical or simple operation when dealing with logs in which the determination of the ship's daily position (and of longitude in particular) in open seas was far removed from today's techniques, fixed points, and standards, and followed different conventions depending on the historical period and origin of the vessel. Just think, to mention a feature of early modern logs that is particularly evident to today's reader, of the use of different zero meridians: more than six hundred have been identified in European transoceanic navigation records between the seventeenth and the nineteenth century. The frequency and accumulation of errors in longitude estimated by dead reckoning results in more than 50 percent of the ship routes recorded in logbooks needing major revisions in order to be replotted in a credible manner on today's cartographic backgrounds, in other words, so that they do not "sail on dry land." Likewise the parallel recording of longitude calculations made using different techniques may require particular methodological reflections and decisions from today's historian.[31] These are problems that the articles in this issue examine, highlighting the role of commercial navigations and their protagonists within processes of knowledge accumulation that have been anything but linear, and showing the capacity of the georeferencing and visual representation system offered by GSR to help in the reading of primary sources and in their cross-examination, both thanks to other coeval experiences and sources and to the comparison with today's cartographic knowledge and conventions. In this sense, GSR's approach to the logbook as a primary source has revived its historicisation as a textual, graphic, and typographic repository in which the concrete navigational experiences of practitioners within the difficult oceanic "medium" are deposited—to paraphrase the words of Clive Wilkinson in his article in this issue.

Early Modern Transoceanic Commercial Navigation from the Practitioners' Perspective

As anticipated above, this monographic issue aims at advancing our understanding of how the logbooks of commercial voyages in the early modern era contribute to the accumulation of knowledge in the field of oceanic navigation, based on processes that are far from being a progressive summation, and instead consist of mechanisms of trial, error, and correction in which the singular experiences of practitioners of navigation were critical. Clive Wilkinson's contribution presents a rich overview of European sailors' observations of the environment and emphasises their role—alongside that of formalised disciplinary knowledge such as mathematics and astronomy—in determining the daily position of the ship, which was a distinctive concern of European and North American navigation. Through logbooks of British voyages, as well as journals, voyage accounts, and sailing directions, it is possible to note the role of the observation of landfalls and soundings of the seabed and their use in reducing margins of error in position estimation, the reading of clouds, fog banks, and other elements, as well as knowledge of weather systems, in the prediction of weather conditions, the observation of marine fauna to estimate

[31] David Philip Miller, "Longitude Networks on Land and Sea: The East India Company and Longitude Measurement 'in the Wild,' 1770–1840," in Dunn and Higgitt, *Navigational Enterprises in Europe,* 223–47; on zero meridians and longitude errors: *CLIWOC Final Report,* 11–3; Clive Wilkinson, *British Logbooks in UK Archives 17th–19th Centuries: A Survey of the Range, Selection and Suitability of British Logbooks and Related Documents for Climatic Research* (National Oceanic and Atmospheric Administration and Climate Database Modernization Program, 2009), 26; Andrew Jackson et al., "Four Centuries of Secular Geomagnetic Variation from Historical Records," *Philosophical Transactions: Mathematical, Physical and Engineering Sciences* 358:1768 (2000): 957–90.

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orientation, and the use of magnetic field detection to determine the ship's course. Wilkinson's work valorises the natural environment as a complex canvas of the practitioners' observations and interpretations. It delineates the genetic link that textual genres such as sailing directions had with the knowledge accumulated in the field and transmitted through logbooks and correspondences. The centrality of environmental observation and the transmission and systematisation of knowledge derived from it was linked to a crucial problem in the age of sail: the need to find the best route to a given destination in terms of environmental conditions, upon which the movement of the ship was naturally dependant. This practical need gave rise to the information gathering and processing initiatives that resulted in thousands of logbooks and journals being summarised and published in sailing directions and charts.

Wilkinson refers to the eighteenth century as a pivotal moment in the codification of knowledge and practices, for instance with regard to the measurement of water temperature being used to estimate the distance to the shore or as a warning of the proximity of ice. The articles by Phillip Reid, Erica Grossi, and Filippo Chiocchetti show the critical process which characterised the eighteenth century through specific case studies. In Reid's contribution, the Atlantic crossings of the American-built British schooner *Sultana* (1768–72), the scow *George,* and the brig *Reward* (1805–6) are reconstructed through logbooks, paying particular attention to the techniques by which currents and winds in the North Atlantic were managed while navigating the different crossings. The geographical visualisation produced within the environment provided by GSR made it possible to highlight and analyse in depth the sharp contrast between the jagged westward route and the clean-cut curve of the eastward return. Thanks to GSR it was possible to connect this evidence to observations from the ship's logs on weather conditions, sail combinations used, and the tactics employed by the crew to adapt to continuous and drastic changes in wind strength and direction, sea state, and visibility. Based on the analysis of voyages made by GSR, Reid's article offers a vivid reconstruction of the struggles to survive Atlantic storms on journeys that were "ordinary" at the time but risky nonetheless.

While information on the technical aspects of navigation naturally springs from the primary purposes for which logs were kept, they are also important for other cultural-historical elements that can be found in the "remarks" column, or between the lines, thus making the logbook an "epistemic genre" of particular polysemic value.[32] The articles by Grossi and Chiocchetti give intriguing examples of this, focusing on two voyages from England to Asia that were engaged in intra-Asian trade: those of the East Indiamen *Compton* to Bombay (1723–6) and the *Nassau* to India and China (1781–5). Both, in different ways, enrich our view of the complex (inter-)cultural elements involved in the practice of sailing, and open up unusual glimpses into historical processes and events as "seen from below" and as "seen from the sea."

The logbook kept by Captain William Mawson on the *Compton* makes it possible to exploit the source's potential for reconstructing daily life on board, beyond the explicitly technical-administrative purpose for which the record was kept. Grossi's research brings to light the singularity of voyages which, due to their commercial ordinariness, are rarely made the object of specific reconstructions, and tend to "disappear" within broader datasets and statistics. This work echoes the recent trends in cultural history and postcolonial historiography that invite us to give full recognition, in the reconstructions of sea voyages, not only to the institutional agency and economic interests of bureaucratic-administrative apparatuses such as that of the East India Company, but also to the presence and role of the actors in the field, even if they were not direct

[32] Gianna Pomata, "Observation Rising: Birth of an Epistemic Genre, 1500–1650," in *Histories of Scientific Observation,* ed. by Lorraine Daston and Elizabeth Lunbeck (Chicago: University of Chicago Press, 2011), 45–80.

producers of documents preserved in the archives and we may find their voices in between the lines of sources such as logbooks.[33] The focus on the captain's voice allows Grossi to highlight the value of the linguistic aspects of the log and use them to draw out local interlocutors and collaborators, and to outline the multilingual quality of life on board the Company's ships, as well as the importance of nautical and commercial jargons and trade languages. The reconstruction of the *Compton*'s voyage and its geo- and chrono-referenced visualisation in GSR shows the density of crossings in the inter-Asian phase of the voyage and the central role of navigation along the coast or through gulfs and straits compared to the long transoceanic routes. This also invites a reassessment of the relative importance of contingent elements and local constraints during the voyage compared to the orders from above with which the ship set sail.

The case of the East Indiaman *Nassau,* analysed by Chiocchetti with reference to a number of other voyages encountered or comparable, is paradigmatic of the peculiarities that in the eighteenth century rendered unique those voyages often considered by historiography as routine, and whose exceptionalities tend to become invisible within studies and representations of "average" routes. The *Nassau*'s trading activities from India to the China Seas were profoundly shaped by military events and necessities, as the vessel became involved in the operations of the Second Anglo-Mysore War (1780–1784) both directly and by transporting troops. Chiocchetti's article gives us an eloquent example of a "history seen from the sea," shedding new light on known events, thus giving us a deeper and more concrete understanding of the Anglo-Mysore conflict and of Anglo-American relations during those years. The case of the *Nassau* clearly illustrates the well-known political-military role of the East India Company in the Asian theatre.[34] The comparison of the voyage to others, coeval and analogous in destination, also makes it possible to highlight common structures and trends, for example elements of seasonality or the increase, in the last quarter of the century, of East India Company ships extending their voyages from India to China. The comparative analysis carried out in GSR enables the information contained in the logbook to be linked to specific route segments, allowing the researcher to detect and analyse errors in longitude calculation as well as the consequences on the ship's mobility arising from the use of "wetware" in navigation, episodes of desertion, insubordination, violence, and military engagements.

Navigations such as those of the *Nassau* and the *Compton* give us a picture of an ocean made up of anything but deserted expanses of water, populated as it was by a biosphere whose observation was crucial and profoundly anthropised, ploughed by innumerable routes and vessels that made each voyage dense with encounters and exchanges of information as well as risks and potential conflicts. Grossi and Chiocchetti's articles focus on the East India Company's sailing experiences to draw widely transnational, or rather transimperial and multicultural pictures, on board the vessels, in the ports, and in the encyclopaedia of knowledge and skills shared by the practitioners of navigation.

[33] Samuli Kaislaniemi, "The Linguistic World of the Early English East India Company: A Study of the English Factory in Japan, 1613–1623," in "Alternative Histories of the East India Company," special issue, *Journal for Early Modern Cultural Studies* 17:3 (2017), 59–82; Dunn and Higgitt, *Navigational Enterprises*; "Alternative Histories of the East India Company," special issue, *Journal for Early Modern Cultural Studies* 17:3 (2017); Brock, van Meersebergen, and Smith, *Trading Companies*; Anna Winterbottom, *Hybrid Knowledge in the Early East India Company World* (London: Palgrave MacMillan, 2016).

[34] Julia Schleck and Amrita Sen, Introduction, "Alternative Histories of the East India Company," special issue, *Journal for Early Modern Cultural Studies* 17:3 (2017), 1–9; Philip Stern, *The Company-State: Corporate Sovereignty and the Early Modern Foundations of the British Empire in India* (Oxford: Oxford University Press, 2012); Clulow and Mostert, *The Dutch and English East India Companies.*

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Concluding Remarks

This special issue of *Itinerario, The View from the Sea. The Practice of Early Modern Transoceanic Commercial Navigation,* proposes a new appreciation of the practitioners' experience in improving navigation in terms of safety and efficiency, alongside aspects hitherto more closely examined by existing historiography, such as advances in scientific disciplines like mathematics and astronomy and the development of instruments like the quadrant, the sextant, and the marine chronometer. The cases of the *Sultana,* the *Compton,* and the *Nassau* brilliantly exemplify and substantiate the role of observation and practical know-how of which Wilkinson's analysis provides a broad overview. Against the technical and cultural background outlined by Wilkinson, there is a methodological value that Reid, Grossi, and Chiocchetti's contributions share, which concerns the deciphering of the eighteenth-century logbook, its processing through GSR, and the exploitation of its heuristic potential. The use of standardised grids and tables, of abbreviations in numerical and descriptive entries, of implicit conventions in estimations and computations, the very criteria for recording events and circumstances, and the presence of "blank spaces," so to speak, in other words of all those elements that are not normally mentioned in a log, all are aspects that make these sources textual objects in need of specific decoding tools in order to be read, interpreted, and reconciled with contemporary systems of measuring space and time. Added to this is the particular moment of change that affected the structure of logs in the eighteenth century, which was the development of the preprinted template by the Royal Navy, as well as by the East India Company, as discussed in Reid's and Grossi's articles, and the subsequent addition of a specific space dedicated to the recording of longitude as calculated with the aid of the chronometer or "time piece," the introduction of which, as Wilkinson points out in his contribution, brought with it specific new problems.

This special issue delivers the results of a project, GSR, that may yet yield many further results about particular case studies as well as from a comparative perspective. The research presented here makes it possible to grasp aspects, moments, and methods, as well as forms of life on board and forms of the production of knowledge fundamental to the art of navigation, providing a complementary foundation to studies that in recent years have exploited similar primary sources but that only subjected them to quantitative, serialised, and statistical approaches. In this sense, the use of digital tools in the analysis and visual representation of the case studies analysed in some of these articles demonstrates the fruitfulness of understanding quantitative and qualitative approaches to using the digital—"distant" and "close" readings of sources to use Franco Moretti's terms—in a complementary sense. This is exemplified with particular clarity by the contributions that derive nautical data from the analysis of logbooks, allowing for the georeferenced digital representation of routes in their everyday complexity, as well as descriptive elements that enable the understanding of commercial voyages as they actually occurred. This type of information processing in a digital environment opens up new perspectives on how these experiences and sources have participated in the elaboration of climatological, ecological, and human–environmental knowledge, as well as presenting new possibilities for enhancing their testimonial potential within linguistically and cross-culturally historiographical narratives.

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ARTICLE

Navigating a Hostile Medium: Observations of the Environment As an Aid to Oceanic Voyaging in the Age of Sail

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Abstract

European navigation in the age of sail owes much to the scientific revolution of the seventeenth century and the development of instruments and advanced mathematical techniques. Important though these developments were, it is argued here that close observation of the environment: of the weather, ocean currents, clouds, birds, mammals, and a host of other factors played a far more important role in safe navigation from one part of the globe to another.

Keywords: navigation; meteorology; geomagnetism; winds; currents

Western navigation is a science involving observation, measurement, mathematics, and a range of instruments of varying sophistication. Many aspects can be seen as a part of the scientific revolution of the seventeenth century. However, there are many skills that the experienced mariner could bring to bear on the problem of navigating from one part of the globe to another. These skills, which involve close observation of the environment, are also common to indigenous peoples who navigated the Indian and Pacific Oceans. The experienced mariner is a keen observer of the environment and is able to use his or her observations and experience to navigate safely. The nature and movement of clouds, the colour of the sea, the behaviour of birds and sea mammals, the composition of the sea bed in shallow waters, the temperature of the sea, the direction of waves and sea swell, invisible signs such as the Earth's magnetic field, and many more factors of the marine environment can be deployed to navigate safely. These are elements that contribute to what we might collectively refer to as "seamanship."

In modern times, navigation and seamanship can be seen as distinct and separate skills, even though the experienced mariner will be proficient in both. Modern navigation over recent centuries has made use of instruments such as the sextant and the marine chronometer to fix a position and help determine a course towards a destination. These instruments are used in conjunction with charts of variable accuracy and sailing directions providing recommended routes and approaches to coasts and harbours. In Western culture, these are all developments of the so-called scientific revolution of the seventeenth century, yet they are firmly rooted in the much earlier sciences of Islam and Arabia, particularly astronomy and mathematics. It is these last two that often create the impression that navigation, that is Western navigation, is a complex and difficult skill that requires

careful measurement of the altitude of the sun or stars, and sometimes hours of calculation, with reference to tables of logarithms and the application of mathematical techniques such as of spherical geometry. Determining the longitude by a lunar observation, or setting a course by a Great Circle, might be typical examples.

Although many of history's great navigators, such as Cook, Bligh, La Perouse, and many others were skilled in astronomy and mathematics, many equally famous and competent navigators, such as Columbus and Magellan, had fewer of these resources and skills to call upon. Furthermore, the common mariner, including many ships' officers, would have had only a rudimentary education, if any at all, and would have found higher mathematics both baffling and unnecessary. In his biography of Columbus, S. E. Morison remarks that the mathematics and navigational tables of the time were so complicated that the best professional seamen could do little with them.[1] Their navigational skills rested on seamanship. Today we would associate seamanship with boat handling, proficiency with knots, pilotage, steering a vessel, sail handling, and a host of other mundane tasks. In the premodern period and arguably even today, seamanship meant far more than this. Seamanship includes navigational skills not associated with instruments and mathematics, but with the close observation, understanding, and exploitation of the ocean environment.

With few or no instruments for determining position, the mariner needed to rely on best estimates. In early modern Western navigation, this is called "dead reckoning" and gives an approximate position based on speed and direction of travel from a previous position (also estimated), and adjusted if possible to account for leeway, current, and drift. Leeway is the amount of deviation from your intended course due to the force of the wind on the sails and the hull of the ship. Current is the movement of surface water, rather like a river in the ocean. Drift is the movement of the entire body of the ocean, and this latter is impossible to measure. Fixing one's position at sea was not possible with any precision, and navigation always needed to take account of a generous margin of error.

Attempting to work out a daily position was very much a feature of Western navigation. The peoples bordering the Indian Ocean and inhabiting the Pacific islands navigated without instruments, and without them saw no need to try to fix or record a daily position. European navigation was concerned with position finding, Polynesian navigation, for instance, was concerned with the direction of the intended destination, and a daily position while on passage was largely irrelevant. Instead, the indigenous Pacific navigators used star patterns, winds, clouds, birds, floating vegetation, the direction of the ocean swell and a host of other environmental observations in order to make their way from island to island and to undertake more lengthy voyages.[2] Yet despite this fundamental difference in determining a course towards a destination, European navigation and ancient Indo-Pacific navigational techniques had much in common. Europeans also used clouds, birds, ocean swell, and other environmental signposts to help navigate, using these to supplement their instruments and calculations or to act as substitutes when prolonged adverse weather conditions made instrumental navigation difficult or impossible.

Landfalls

A factor common to all navigation, whether ancient or modern, European or non-European, was the use of the landfall. Ancient voyaging consisted largely of coasting, moving along a familiar coastline with short passages out of sight of the land. In the case of the Pacific Islanders, this would mean passages between islands or island groups, with

[1] Samuel Eliot Morison, *Admiral of the Ocean Sea: A Life of Christopher Columbus* (Boston: Little Brown, 1942), 186.

[2] David Lewis, *We the Navigators: The Ancient Art of Landfinding in the Pacific* (Honolulu: University of Hawaii Press, 1994).

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frequent periods out of sight of land. Oceanic voyaging was an extension of this, with frequent sightings of landfalls, either an island or an easily identifiable coastal feature such as a headland or cape. For European voyagers, these landfalls were essential. They served the purpose of fixing a position and thereby reducing the accumulated dead reckoning or estimated navigational error to zero. In an early logbook or journal one will find frequent entries stating that some landfall had been sighted from which the vessel had taken a fresh departure. This meant that the commander had reset his dead reckoning estimate from the landfall rather than using his original port of departure. In early English logbooks (prior to the nineteenth century) these points of departure were used as zero meridians for each passage, rather than using a prime meridian such as London or Greenwich. A voyage consisted of separate passages from one landfall to another.[3]

As an example, a voyage to the more southerly part of North America or towards the Caribbean would first make a landfall off Madeira and then one of the Canary Islands, and from there use the northeast trade winds to progress westward before getting into the latitude of the destination port. Following a line of latitude was a common navigating technique, and even without instruments it was possible to make an approximation of latitude from the altitude of the pole star above the northern horizon, if necessary by some crude method such as the number of hand breadths, but more commonly with a quadrant and later a sextant. A ship making a voyage from a European port to Bombay would make landfalls off Madeira, then one of the Canary Islands, one of the Cape Verde Islands, then possibly Trinidada off the coast of Brazil, but more frequently Cape Agulhas at the southern end of Africa, one of the Comoros islands at the northern end of the Mozambique Channel, the Seychelles, then on to Bombay. All of these landfalls served to reduce navigational error to zero and provide a fresh departure point, and in the case of the Comoros islands, a place to stop for refreshment, repair, and to await the onset of the southwest monsoon. It is worth mentioning here that the length of any passage a ship could make was limited by the amount of fresh drinking water the vessel could carry for crew and passengers.[4] The final landfall would be near the vessel's port of destination. It was essential both to recognise the landfall or coastline and to ensure that the landfall was windward of the destination, so that the prevailing winds and currents would favour an approach to the port and not hinder it.

Bearing in mind the importance of making a good landfall, the obvious question is how was this possible, given the very imprecise nature of early navigation, whether using instruments or not? This is where knowledge and understanding of the ocean, the atmosphere, and other environmental factors comes into play. First consider any intended landfall as a target. Although the target landfall might be a cape or an island, it was possible to make the target area much bigger than the landfall itself. If you intended to make a landfall off one of the Canary Islands, Cape Verde Islands, or the Azores, the entire island group was one enlarged target many miles across. The highest point of Tenerife could be seen in ideal conditions more than one hundred miles distant. Tenerife itself could then be considered a target more than two hundred miles across. Under less-than-ideal conditions, the approach to the Canary group as well as the Cape Verde Islands could be determined by the fogs that would frequently occur near these islands. Therefore the navigator did not need to make a precise landfall, but merely achieve the sighting of a target that could be up to one hundred or more miles across.

Some common landfalls were much smaller targets, however, so how could the mariner be sure of making a sighting? Oddly, the answer was to deliberately miss the target, a port for instance, by off-setting or directing a course towards a point on a coastline that

[3] Based on the examination of hundreds of eighteenth-century naval and merchant shipping logbooks.
[4] Andrew S. Cook, personal communication.

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would guarantee that you were to windward of your destination. It did not matter where you sighted the coastline as long as you had a favourable wind and current to carry you along the coast to your destination.

As an example of off-setting, in this case a small island, let us look at St. Helena in the South Atlantic, a common landfall for European ships on their homeward passage after rounding the Cape of Good Hope. St. Helena lies in the southeast trade wind belt, meaning that an ideal approach to the island would be to windward, or southeast of the island. Ship tracks often show a direct line northwestward from the Cape to St. Helena. The vessels displaying these tracks would be able to determine their longitude by chronometer or lunar observation and sail directly to the island. However, before the use of chronometers, sailing directions and pilot books would instruct commanders to set a more northerly course from the Cape in order to reach the parallel (latitude) of St. Helena some 60 leagues or 180 miles to the east of the island and then sail westward until sighting the island.[5] It could often be distinguished by clouds hanging over the main part of the island or banks of fog directly to leeward of the island.[6]

Clouds

Clouds and fog banks were one of the many environmental signs used by mariners to navigate. Clouds can indicate the state of the weather, or foretell a change or the onset of a storm. Stacked cumulus clouds result from convection and could indicate the development of a thunderstorm. In mid-latitudes, high cirrus clouds signal an approaching weather front. Clouds also gave clues to the existence of land. A slow moving or stationary cloud amongst faster moving clouds would be a sign that land lay beneath. In the trade wind belts, clouds will pile up on the windward side of an island, especially over high ground, and appear relatively motionless, rather like a standing wave in a river. In other parts of the ocean convective clouds will form over an island, sometimes with a distinctive V shape, the cloud being the result of the heat differential between the land and the ocean. These signs of land were used by Pacific peoples but were also well known to Europeans.[7] Banks of fog could also indicate land nearby. A set of sailing directions for the Cape Verde Islands, probably from the eighteenth or nineteenth century, states: "the making of these islands is often difficult on account of the fogs that hang around them, while these fogs are often a mark of you being near them."[8] In the southeast Pacific, along the coast of Chile, a dense fog bank accompanied by a sharply defined band of high-level cloud defines the approach to the cold Peru Current that runs northward along the coast. It is an infallible sign of an approach to the land, and as the coastal shelf is very steep, there is no possibility of taking soundings to indicate the proximity of the shore. In June 1807, seeking to make landfall at Valparaiso, HMS *Cornwallis* under Captain Charles Johnstone experienced these fogs, a consequence of the thermal front associated with the Peru Current, while cruising north and south of Valparaiso for many days.[9] The fogs indicated the proximity of the shore, even though the land was invisible.

[5] For typical examples, see the georeferenced homeward routes of the East Indiamen *Blessing*, 1630–33, http://gsr.nodegoat.net/viewer.p/57/2230/object/8021-11267615; and *Compton*,1724–26, http://gsr.nodegoat.net/viewer.p/57/2230/object/8021-11879896, in Global Sea Routes (GSR).

[6] Alexander Findlay, *A Sailing Directory of the Ethiopic or South Atlantic Ocean* (London: Richard Holmes Laurie,1867), 156.

[7] Lewis, *We the Navigators,* 216–7.

[8] National Maritime Museum, Greenwich, PLT/77 (undated manuscript), "Directions for the Cape Verde Islands."

[9] The National Archive, London [hereafter TNA], ADM 52/3821, Log of Stephen Thomas, Master, HMS *Cornwallis.*

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Soundings

Another sign of approaching land was soundings, or the depth of the water under a ship. As well as sounding for the depth, it was also common to examine the bottom deposits using a tallow covered sinker to retrieve a sample. The nature of the sea bottom can change over short distances, and this information combined with the depth of the water can, with reference to a chart or other set of directions, provide an approximate position, especially in poor visibility. Observations were frequently recorded in logbooks and journals.

As well as shallow coastal waters, soundings could also be used to predict some of the common major landfalls. The Agulhas Bank for instance extends along the southern shore of Africa and on its westward side is made up of mud, while on the eastward side it is composed of sand with small shells like the husks of oatmeal. Directly south of the Cape, the Agulhas Bank is made up of fine sand, and eastward of this, coarse sand, coral, and stone. In addition to the evidence of the sea bottom, there were other signs that you were passing near or over the Agulhas Bank, such as the colour of the sea and sightings of seals and birds.[10]

Birds and Mammals

In his book on navigation, Lieutenant Henry Raper wrote, "the neighbourhood of land is often indicated by the presence of birds, and its position inferred from the direction in which they take their flight at sunset."[11] Land birds sighted at sea were a certain sign of land and their direction of flight at dusk would provide a bearing towards the land. The frigate bird, for instance, will hunt for fish at sea but cannot alight on the water and must return to the land to roost. Sighting one of these birds would mean that land was likely to be under seventy-five miles distant.[12] The Portuguese are said to have discovered the Azores Islands from observing the flights of birds, and the first landfall off the coast of Brazil, by Pedro Cabral in 1500, was preceded by sightings of birds and weed.[13]

On his epic voyage across the Pacific in an open boat, William Bligh recorded many observations of birds. Man-o'-war birds (frigate birds), boobies, and gannets were noted on 15 May 1789. On 19 May Bligh wrote, "saw many boobies and noddies, a sign of being in the neighbourhood of land," and on the 25th, "In the evening, several boobies flying near us, we had the good fortune to catch one of them. This bird is as large as a duck [. . .] they are the most presumptive proofs of being in the neighbourhood of land as any sea fowl we are acquainted with."[14]

Sightings of birds and sea mammals were routinely used, especially when the weather would not permit a sighting of the sun to fix a position. In 1875, the merchant ship *Galatea* under Captain Frederick Wherland, was en route from San Francisco to Liverpool. On 23 February, he rounded Cape Horn, sighting the island of Diego Ramirez which fixed his position. On the 28th, in light winds and overcast conditions, it was impossible to take a noon sighting, but an estimated position placed the *Galatea* at 53º south, 59º 20′ west, somewhere south of the Falkland Islands. Captain Wherland had soundings taken, which indicated no bottom at ninety-three fathoms. In the logbook he recorded, "the birds and seals

[10] Joseph Huddart, *The Oriental Navigator* (London: Robert Laurie and James Whittle, 1801), 46.

[11] Henry Raper, *The Practice of Navigation and Nautical Astronomy* (London:R.B. Bate, 1842), 327.

[12] Lewis, *We the Navigators,* 214.

[13] Morison, *Admiral of the Ocean Sea,* 213; Samuel Eliot Morison, *The European Discovery of America: The Southern Voyages 1492–1616* (Oxford: Oxford University Press, 1974), 222.

[14] William Bligh, *A Voyage to the South Sea in His Majesty's Ship* Bounty (London: George Nicol, 1792), 187, 191, 194.

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around the ship indicate our proximity to Beauchine island."[15] Beauchene Island is about thirty-three nautical miles south of the Falkland Islands, and Captain Wherland's estimated position was seven nautical miles southwest of Beauchene, consistent with his sightings of birds and mammals.

Sea Temperatures

It is not known when the first sea temperatures were recorded, probably in the early eighteenth century, but a Royal Society publication suggests the year 1749 as a possible starting point.[16] Recording the temperature of the sea surface involved the retrieval of a water sample, usually in a wooden but later a canvas bucket, and the immersion of a common thermometer. As an aid to navigation, experiments using sea temperatures to indicate an approach to land began in the late eighteenth century, and were widely published in the 1790s and the early nineteenth century.[17] Andrew Livingston published his conclusions after a voyage from New Orleans to Gibraltar in 1818, observing a drop in surface temperature off the coasts of the United States, the Azores, and Cape St. Vincent. Similar observations had been made off the Agulhas Bank by John Davey in 1816.[18] What these early scientists were observing is now known as coastal upwelling, where winds and currents drive warm surface water away from a coast, with the waters being replaced by colder water from the depths. Whether such observations were a practical aid to navigation is debatable, and probably less useful than soundings and sightings of birds.

Nevertheless the ever resourceful mariner did find practical uses for sea temperatures. Captain J. P. Wilson, commanding the East Indiaman *Hythe,* recorded the temperature of the Agulhas Current off the Cape of Good Hope. The main part of the current follows the edge of the Agulhas Bank and is always warmer than the water flowing over the bank itself. Captain Wilson noted that the waters in the main current were some eight to nine degrees (Fahrenheit) warmer than the surrounding seas, and warmest in the centre of the current. He wrote, "A ship may be kept in it by attending to changes in the temperature of the surface water, and thereby enabled to accelerate her progress to the westward during adverse winds."[19] Observing the sea temperature would also ensure that a ship did not cross the Agulhas Bank too far north and approach too close to the land. "All that is necessary in passing the Cape [in a westerly direction] is to preserve the temperature of the water above 70 degrees which is the temperature of the current setting SW and which will carry a vessel quickly to the west."[20]

Another application of sea temperature to navigation was to provide a warning of ice. The idea was that very low sea temperatures, or a sudden drop in sea temperature, would

[15] National Meteorological Archive, Exeter [hereafter NMA], 3561, Meteorological Logbook *Galatea* 1874–75.

[16] Joseph Prestwich, "Tables of temperatures of the sea at different depths beneath the surface reduced and collated from the various observations made between the years 1749 and 1868," *Philosophical Transactions of the Royal Society of London* 165 (1875).

[17] Some of the more notable authors were William Billings, Andrew Livingstone, James Mease, William Strickland, and Jonathan Williams, writing in such publications as the *Edinburgh Philosophical Journa*l (1820) and the *Transactions of the American Philosophical Society* (1793).

[18] Andrew Livingstone, "On the thermometer, as an indicator of a Ship's approach to Land or soundings, with extracts from a Thermometric Journal kept on board the ship *Asia* of Scarborough on a voyage from New Orleans to Gibraltar in August, September and October 1818," *Edinburgh Philosophical Journal* 3 (1820), 247–52; John Davey, "Observations on the Temperature of the Ocean and Atmosphere and on the Density of Seawater made during a Voyage to Ceylon," *Philosophical Transactions of the Royal Society* 107 (1817), 275–92.

[19] James Horsburgh, *The India Directory, or, Directions for sailing to and from the East Indies, China, Australia and the interjacent Ports of Africa and South America,* 2 vols. (London: William H. Allen, 1852), 1: xvi.

[20] W. H. Rosser and J. F. Imray, *The Seaman's Guide to the Navigation of the Indian Ocean and China Sea* (London: James Imray, 1867), 745.

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give a forewarning of icebergs, especially in conditions of poor visibility. Again the practical utility of this is debatable, but nevertheless in the second half of the nineteenth century it was widely practised. Ships using steam power as an auxiliary form of propulsion would routinely take sea temperatures to regulate the temperature of the engines and condensers, but sailing vessels would generally only take sea temperatures for some other practical purpose, such as sailing through regions known to have ice hazards. This applied in particular to high-latitude passages across the South Atlantic, Indian, and Pacific Oceans and was probably prompted initially by the 1857 publication of John Towson's "Icebergs in the Southern Ocean."[21] Towson published a list of ice sightings grouped by month to indicate the times of year and places where ice was likely to be encountered. This was accompanied by a chart showing regions where ice and icebergs were to be found, for instance on the eastern side of the Drake Passage and extending from there towards the Cape of Good Hope, and therefore bordering on both the outward and homeward bound tracks of ships taking passage around Cape Horn. Other regions included parts of the southern Indian Ocean and many high-latitude areas of the South Pacific. This information was supplemented over the years and featured prominently in all of the popular editions of sailing directions. There were also many articles published on this subject in professional journals.

Towson demonstrated the usefulness of sea temperatures by recounting the experience of Captain MacDonald of the *James Baines,* who reported that the temperature fell by four degrees Fahrenheit as he approached an iceberg and a further two degrees as he got to leeward of the iceberg. Captain Newland of the *Champion of the Seas* passed thirty-nine icebergs between the latitudes of 50ºS and 47ºS, with the sea and air temperatures dropping to 35 and 36 degrees Fahrenheit, despite the vessel moving northwards towards warmer latitudes. Yet Towson tempered his conclusions by recounting a single instance where an approach to an iceberg had no effect on either the temperature of the air or the sea.[22] Furthermore, on 18 February 1887, the merchant steam barque *Kaikoura* under Captain William Crutchley, sailing from Cape Town to Hobart, passed an iceberg at a distance of a quarter mile shortly after noon, in position 49º29′S and 112º18′E. Crutchley took twenty observations of the sea temperature as the vessel approached and passed the iceberg and noticed no more than half of a degree difference in the temperature.[23] Such examples must cast doubt on the utility of using a thermometer as a warning of ice, but nevertheless the routine observation of sea temperature was a regular occurrence in those places and at those latitudes where there was a history of ice sightings.

Geomagnetism

One element of navigation completely invisible to the eye, but detectable with one of the earliest navigational instruments, is the Earth's magnetic field. It is as much a part of the marine environment as any feature of the ocean or the atmosphere. The compass not only provided a course to follow or a bearing to a landmark, but also gave an indication of the local declination of the Earth's magnetic field, usually referred to as magnetic variation in ships' logs and journals.[24] Magnetic variation could be determined by taking a double altitude of the sun at equal times before and after noon, bisecting the difference (to find the

[21] John Towson, "Icebergs in the Southern Ocean," *Transactions of the Historic Society of Lancashire and Cheshire* 10 (1858), 239–54.

[22] Towson, "Icebergs," 247.

[23] NMA, 6795, Meteorological Logbook RMS *Kaikoura,* 1887.

[24] This should not be confused with magnetic deviation which is a correction applied to a compass due to the attraction of nearby metal objects on the ship.

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true or geographic north), and then comparing the result with the magnetic compass. The difference provided the variation between the north magnetic pole and true north.

Alternatively, comparing the bearing of the polestar with the magnetic compass achieved the same thing. Plotting these differences on an isogonic chart produced a map of the Earth's magnetic field where lines of equal magnetic variation were joined together. One of the earliest isogonic charts was produced by Alonso de Santa Cruz in 1530, and Edmund Halley famously created isogonic charts of the North and South Atlantic after his surveying voyage in 1700.[25]

As early as 1503, João de Lisboa, in his *Tratado da Agulha de Marear,* suggested that the magnetic variation was a solution to the problem of determining the longitude by using the lines of magnetic variation as they crossed the lines of latitude. Alas, such a simple and elegant solution was not to be, as the lines of magnetic declination were not fixed but had a secular variation that changed over time.[26] Despite "isogonic navigation" being impractical, updated isogonic charts continued to be published, and lines of magnetic declination still appear on some modern charts.

Logbooks and journals of vessels heading south towards the Atlantic equator recorded the magnetic variation, usually commencing at or soon after leaving the Cape Verde Islands, so there must have been some practical value to these observations not directly connected with the determination of the longitude. It lay in setting a southward course to pass through the equatorial calms or doldrums. The danger for ships making this passage was to be becalmed or subject to light variable winds for long periods of time. Under these conditions, if a vessel tried to cross the equator too far to the west, the north equatorial current would carry the ship on to the coast of Brazil, where a northward flowing current would then take the vessel in the wrong direction. A crossing too far east and the vessel might find itself subject to the east flowing equatorial counter current and be swept into the Gulf of Guinea. The optimum track southward threaded a course that avoided both of these outcomes, and depending on the season of the year, ensured that the width of the equatorial calms was at a minimum. All of the information needed to determine this optimum course had been carefully compiled over decades of observations recorded in logbooks and journals and collated, notably by Dutch hydrographers, into charts and sailing directions. The Dutch in the mid-eighteenth century gave this optimum track or corridor a name, Wageweg, or Cart Track.[27]

The points and lines delineating the Cart Track seem quite precise, and were plotted from bearings and distances to landmarks in the Cape Verde Islands, the coast of Africa, and St. Paul's Rocks to the west of the track and just north of the equator. At the time, the precise longitude of these landmarks was not known and the position of the Cart Track was therefore an estimate. Despite this, the Cart Track was effective because of the way it was navigated. To enter the northern end of the Cart Track and to stay within the boundaries set out on the chart did not require the estimation of a longitude by the usual means. The navigation of the track was undertaken by observing the magnetic variation of the compass, hence the recording of this information in the ship's log after leaving the Cape Verde Islands. Dutch mariners knew that as they sailed southward to approach the northern end of the Cart Track and as they sailed within the track itself, they needed to keep to a particular magnetic variation of the compass. If they sailed

[25] D. Brand, "Geographical Exploration by the Spaniards," in Dennis O'Flynn et al., *European Entry into the Pacific* (Aldershot: Ashgate, 2001), 3; N. Thrower, *The Three Voyages of Edmond Halley in the* Paramore, *1698–1701* (London: Hakluyt Society, 1981).

[26] A. R. T. Jonkers, *Earth's Magnetism in the Age of Sail* (London: John Hopkins University Press, 2003), 49.

[27] W. F. J. Morzer Bruyns, "Navigation on the Dutch East India Company Ships around the 1740s," *Mariners Mirror* 78 (1992), 143–54. See also Jonkers, *Earth's Magnetism.*

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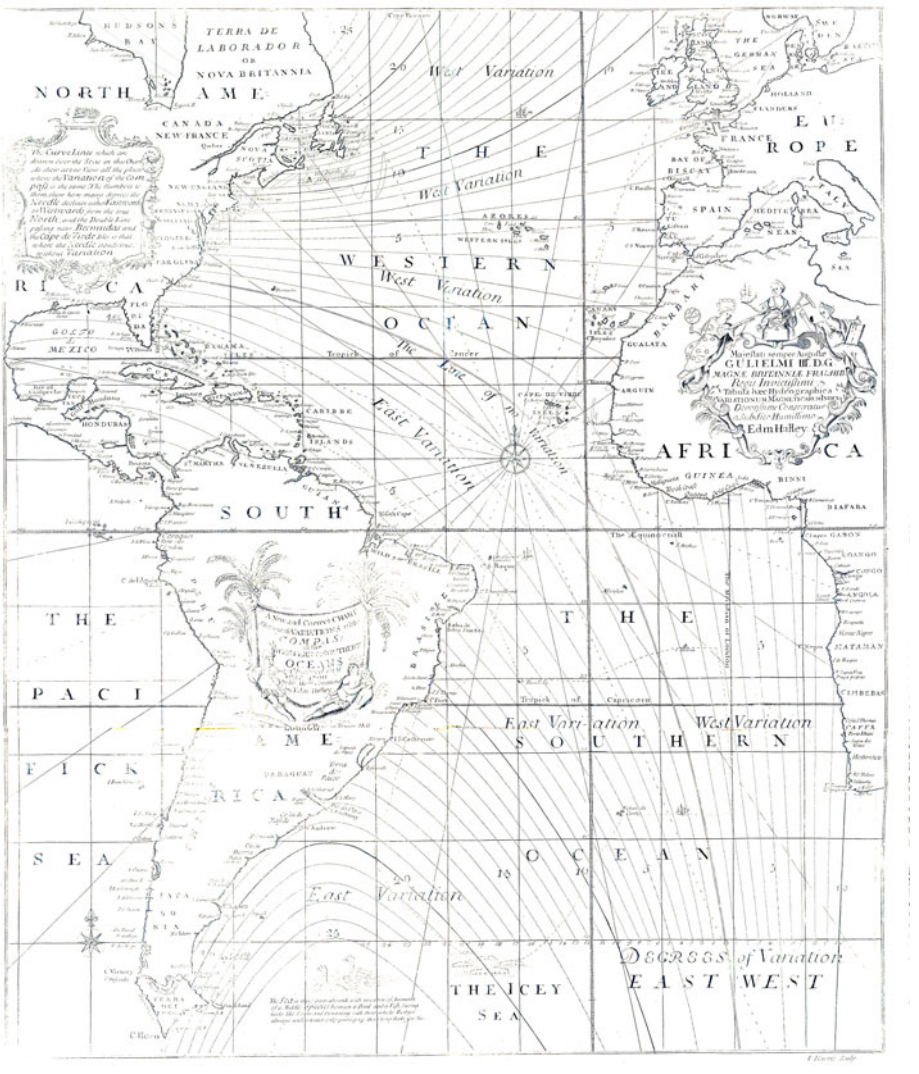

Figure 1. Edmond Halley's isogonic chart of 1700. Reproduced on Wikimedia Commons, https://en.m.wikipedia.org/wiki/File:Halley_isogonic_1701.jpg. An original copy of this chart is held by the Royal Geographical Society, London.

too far westward the variation would diminish, and if they sailed too far eastward, the variation would increase. In the short term, secular changes in the magnetic field were not of concern as this was not an attempt to obtain a position, but rather to maintain a course by keeping the magnetic variation within a range of values. This was just one application.

Other practical applications of magnetic variation can be found in Samuel Dunn's *New Directory for the East Indies.* Dunn explained that it was possible to make a course change by using the variation of the compass instead of sighting a landmark. As an example he cited the islands of Amsterdam and St. Paul in the southern Indian Ocean, a landfall used by some East Indiamen to set a more northerly course towards India and China. It is an

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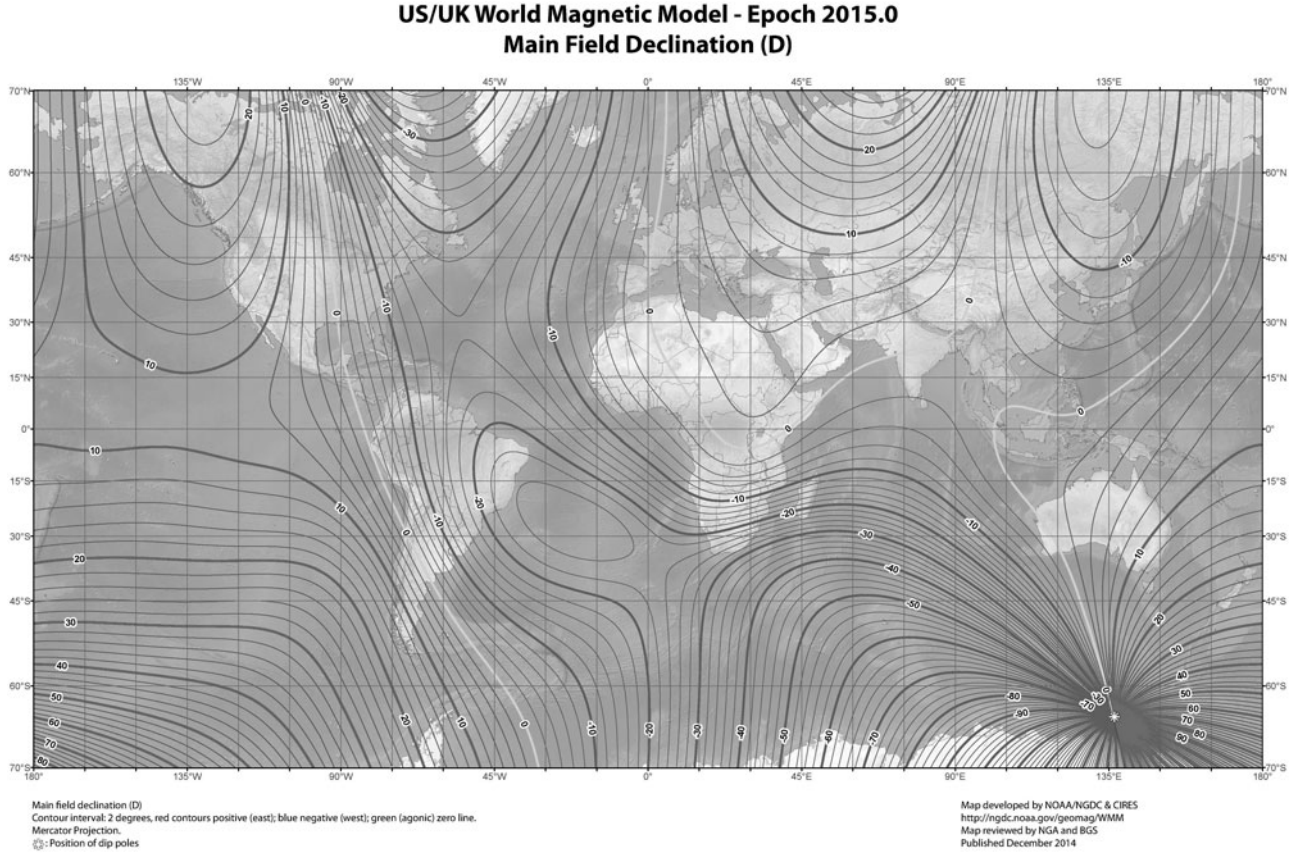

Figure 2. Map of magnetic declination in 2015, NOAA Center for Environmental Information. http://commons.wikimedia.org/wiki/File:World_Magnetic_Declination_2015.pdf

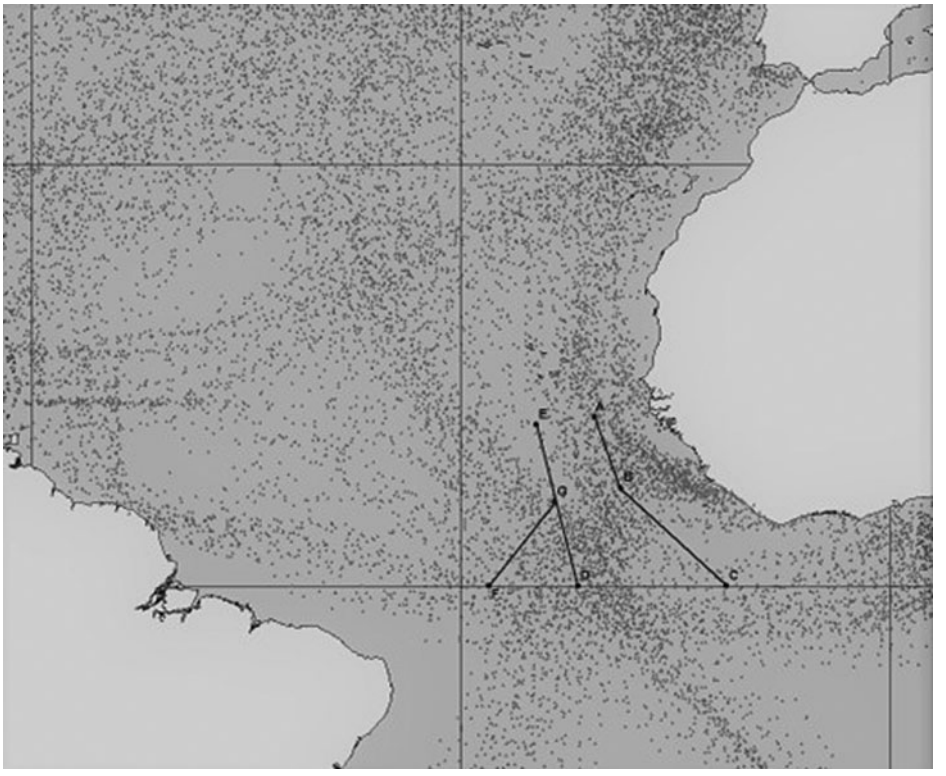

Figure 3. The Wageweg, or Cart Track, providing the optimal southbound approach to the Atlantic equator. Plot by Frits Koek, KNMI, de Bilt, for the author.

extraordinary fact that these islands lie on virtually the same meridian as Cape Comorin at the southern tip of the Indian sub-continent, providing an excellent point of reference to effect a course change. Allowing the magnetic variation near these islands to be 18º45′W or 19ºW, it was possible to make the course change without sighting the islands themselves.[28]

Another important course change on the route to India was towards the southern entrance to the Mozambique Channel, after rounding the Cape of Good Hope. It was usual to make at least fifteen degrees of longitude east of Cape Agulhas at the southern tip of Africa before heading north into the Mozambique Channel. Estimating the necessary distance before changing course was complicated as the ship could be impeded by the west flowing current. This is what happened to the East Indiaman *Doddington* in 1755. Thinking he had made fourteen degrees of longitude from the Cape, the Captain set a northerly course, but, having in fact only sailed seven degrees of longitude, he put the ship ashore in Algoa Bay. Samuel Dunn makes reference to this incident in his sailing directions:

> The variation [of the compass] hereabout as well as several other parts, may be looked upon as a principle and sure guide to navigation. This unfortunate ship should be a caution for all navigators to be very cautious not to haul up to the northward

[28] Samuel Dunn, *A New Directory for the East Indies* (London: Gilbert and Wright, 1791), 293.

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> too soon; for the currents are very deceiving [. . .] When a ship in latitude 35ºS has made 15ºE longitude and has increased her [magnetic] variation to 27º, she may haul to the northward in safety.[29]

Dunn was clearly pointing out that the magnetic variation was an infallible indication of the point at which a course change could be safely made whereas the dead reckoning estimate of longitude was at best a poor guess, heavily compromised by the local ocean currents.

Avoiding and Exploiting Weather Systems

For centuries, mariners collected information about the winds in different parts of the globe, and this data, as recorded in logbooks and journals, was collated and analysed by hydrographers and men of science. The results were given formal expression in sailing directions and charts issued by state sponsored hydrographic departments and by private individuals and publishers. Early on, this knowledge was of great commercial advantage, but keeping it secret was nearly impossible. Over the centuries the nature of the trade winds, the Asian monsoon winds, the equatorial calms, and the seasonal nature of hurricanes and typhoons became better known, although the physical processes that produced these phenomena were not known or were only imperfectly understood. Up until the nineteenth century, for instance, storms and hurricanes would still be considered acts of god by many.

Although the nature of many of the wind systems was generally understood and regularly exploited, the refinement of that knowledge through scientific progress led to many improvements in navigation. Scientific societies in Britain, Europe, and the United States were encouraged to engage in the advancement of marine knowledge as both state governments and commercial companies saw the economic and strategic advantages to improvements in navigation. The American naval officer M. F Maury, for instance, analysed ship tracks and wind vectors, producing charts and sailing directions indicating the sailing routes that were likely to encounter the most favourable winds. Thus, the length of voyages could be reduced, sometimes by weeks.[30]

Experienced mariners could anticipate changes in the weather and recognise the portents of storms from the clouds, the feel and the motion of the air, the swell of the sea, and a host of other signs. By the late eighteenth and early nineteenth century, instruments such as the marine barometer and the sympiesometer[31] gave a measurable expression to these portents. Still, the chief source of information for weather advice concerning a voyage was always the sailing directions. These publications and their advice reflected what mariners actually experienced at sea, and scientific refinements were of limited value or relevance to most sailors. An exception to this would be the tropical revolving storm and the mid-latitude storms and depressions. Despite one commentator stating that almost all measures taken to avoid typhoons were of little use,[32] the nineteenth century saw a significant advancement in the understanding of storms and weather systems. Research centred first around determining that storms were cyclonic or rotary in nature

[29] Dunn, *New Directory for the East Indies,* 285–6.

[30] Mathew Fontaine Maury, *Explanations and Sailing Directions to Accompany the Wind and Current Charts* (Washington: C. Alexander, printer, 1851).

[31] The sympiesometer was invented by Alexander Adie in 1818. Using almond oil and hydrogen gas, it was more sensitive than a mercury barometer and was therefore widely used on ships in the second quarter of the nineteenth century as a storm prognosticator.

[32] F. Labrosse, *The Navigation of the Pacific Ocean and China Seas* (Washington: Government Printing Office, 1875), 27, 29.

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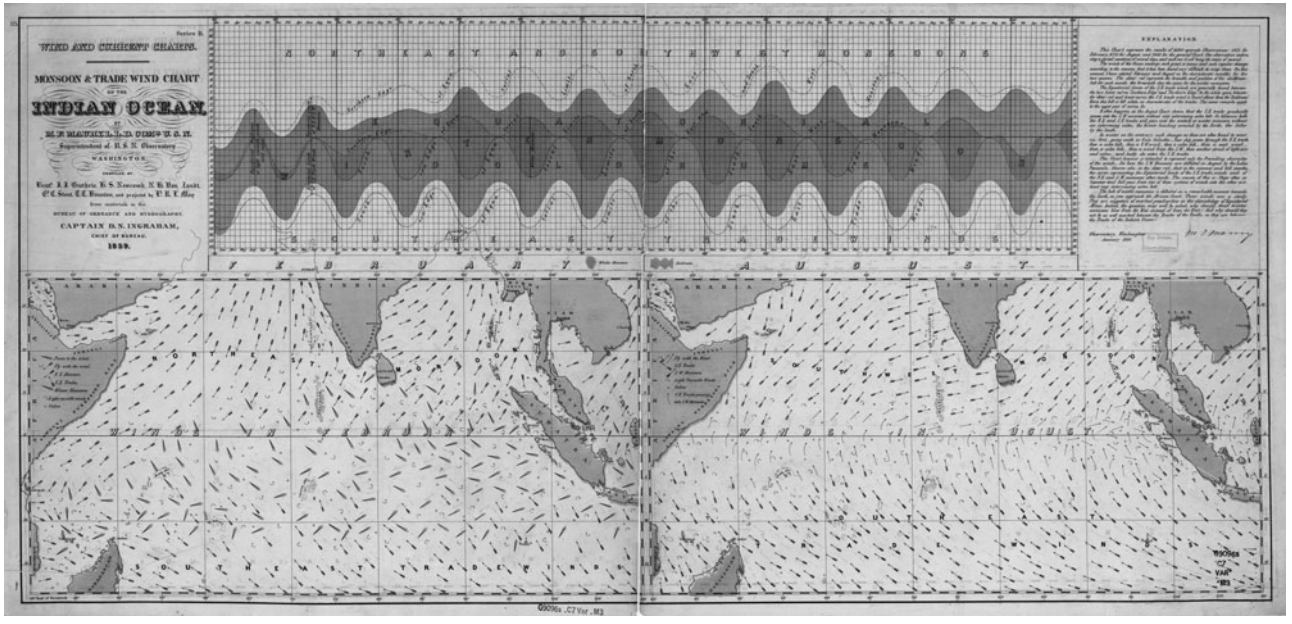

Figure 4. M. F. Maury, Monsoon and Trade Wind Chart of the Indian Ocean 1859, showing the different wind regimes of February and August. Library of Congress. https://www.loc.gov/item/2009575919

and that they followed a predictable pattern and track, the so-called law of storms. Notable among those scientists working on this problem were William Redfield, William Reid, Heinrich Dove, Charles Meldrum, Bernhardus Varenius, Benito Vines, William Birt, Henry Piddington, and John Eliot. A detailed and very useful account of the history and development of the science of cyclones and cyclone theory from the time of Columbus to the later nineteenth century can be found in William Henry Rosser's *The Law of Storms Considered Practically,* published in 1876.[33]

First came the theory that hurricanes and typhoons were rotary storms, a theory confirmed by the accumulation of thousands of observations from logbooks and journals as well as land-based observations, and published for the benefit of mariners and the scientific community, most notably by Charles Meldrum, the director of the Meteorological Observatory at Mauritius, and also Henry Piddington, who wrote twenty-three "storm memoirs" published in the *Journal of the Asiatic Society of Bengal.*[34] The second problem was the storm track and the noted recurvature of hurricanes and typhoons, the latter a phenomena that Maury noted as being a puzzle to both scientists and navigators.[35] The result of this scientific work was not an ability to forecast storms and hurricanes, as that required a network of observers and an effective means of communicating the observations. Instead, the writers of sailing directions and the many iterations of the law of storms were able provide detailed descriptions of the meteorological signs of an approaching hurricane or typhoon, and offer detailed instructions for avoidance or mitigation depending on where a vessel might find itself in relation to the storm and its track.[36]

However, one of the most astonishing discoveries in cyclone research was the potential to exploit depressions and storm tracks. William Birt was probably one of the first to formalise the idea of using the track of a cyclone, in this instance on the passage from the meridian of the Cape of Good Hope towards Australia, in 1853. Bearing in mind that depressions in the southern hemisphere rotate in a clockwise direction, Birt wrote:

> by sailing on a course nearly parallel with the centre of the storm and at such a distance from it on the northern radius as to get a steady breeze from the westward, they will make very good runs, and reach their destination with but little if any delay.[37]

The genesis of the idea of "storm sailing" may have come from Captain John Erskine of HMS *Havannah* in 1848. In a letter to Henry Piddington, Erskine discussed how he was not only able to corroborate the rotary theory of storms, but also use a barometer to anticipate and exploit the expected winds.

> The winds we experienced were a succession of cyclones, and [. . .] by paying attention to the barometer and sympiesometer, and keeping in the left-hand semicircle or

[33] Fiona Williamson and Clive Wilkinson, "Asian Extremes: Experience, Exchange and Meteorological Knowledge in Hong Kong and Singapore c. 1840–1939," in M. Mahoney and A. M. Caglioti, eds., *Relocating Meteorology: History of Meteorology* 8 (2017), 165; W. H. Rosser, *The Law of Storms Considered Practically* (London: Charles Wilson, 1876).

[34] Williamson and Wilkinson, "Asian Extremes," 165.

[35] M. F. Maury, *Explanations and Sailing Directions to Accompany the Wind and Current Charts* (Washington: William A. Harris, printer, 1858) vol.1, 262.

[36] Rosser and Imray, *Seaman's Guide,* 148–9; W. H. Rosser, *The Law of Storms Considered Practically* (London Charles Wilson, 1876); William Birt, *Handbook of the Law of Storms* (London: George Philip, 1853); and William Reid, *Progress of the Development of the Law of Storms* (London: John Weale, 1850).

[37] William Birt, *Handbook,* 88.

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> that of the westerly winds, I was enabled to make passage from Simon's Bay to Port Jackson in comparatively moderate weather in 34 days including 3 or 4 days of light winds.

When HMS *Havannah* was overtaken by a third cyclone, Erskine went on to describe how the cyclone

> made known its approach by a gradual fall of the barometer . . . the glasses rising and falling occasionally as she [the ship] outstripped or fell short of the velocity of the storm. . . . on heaving to for an hour and a half on the night of the seventeenth, to allow the centre to pass ahead, the barometer rose immediately and continued steady. [. . .] It [the cyclone] finally got ahead on the 21st, having apparently run 1,185 miles in five days or at the rate of nearly ten knots an hour.[38]

Erskine's careful observations and detailed analysis of the winds and barometric pressures are remarkable, but typical of the scientifically minded naval and merchant naval officer of the time.

An article on storm sailing published in 1854 refined the process further. An anonymous writer took wind and pressure data from the logbook of the merchant ship *Duke of Richmond,* Captain T. Barclay, on her passage across the high latitudes of the South Pacific in July 1853. This data was then used to reconstruct the track of a cyclone encountered by the vessel at 53º south latitude, and between the longitudes of 154º and 120º west.

Once this reconstruction was completed, it enabled the writer to formulate a strategy or principle by which a ship could use the winds circulating around a depression. This included how to identify if the vessel was in the most favourable quadrant of the cyclone.

If the ship found itself in the wrong quadrant, for instance on the southern side of the depression, the winds could be used to temporarily reverse course and use the wind circulation to sail around the back of the cyclone and into the northern quadrant, and there await the next depression to arrive along the storm track.[39] These were the very principles used to great effect in the extraordinary voyages of some of the great nineteenth-century clipper ships such as the *Lightning, Marco Polo, Thermopylae, Cutty Sark,* and others.

The Importance of the Environment to Navigation

We can summarise the chief environmental considerations in navigating a route from one part of the world to another. Two points stand out above all others: firstly the expected direction and force of the wind, and secondly the expected state of the weather on the intended route. The diagram below shows the most efficient direction of the wind in relation to a vessel, in black, grey, and white. A square rigged vessel is illustrated but the extent of the areas of most efficiency [white] will vary according to the type of ship and the rig.

Sailing ship routes differ significantly from steamship routes because a sailing vessel must follow the circulation of the atmosphere and attempt to keep the aspect of the winds in the white zone illustrated below. Working out the best routes to cross the oceans and making best use of the environmental conditions was a matter of gathering and analysing individual experiences and weather data from thousands of logbooks and journals

[38] TNA, ADM 53/3629 & 3630, Ship's Logbook HMS *Havannah* Jan 1848–Jan 1849; Henry Piddington, *The Sailor's Horn-book for the Law of Storms* (London: Williams and Norgate, 1860), 40–41.

[39] Anonymous, "On the Occurrence of a Revolving Storm in the South Pacific Ocean," *Mercantile Marine Magazine* 91 (1854).

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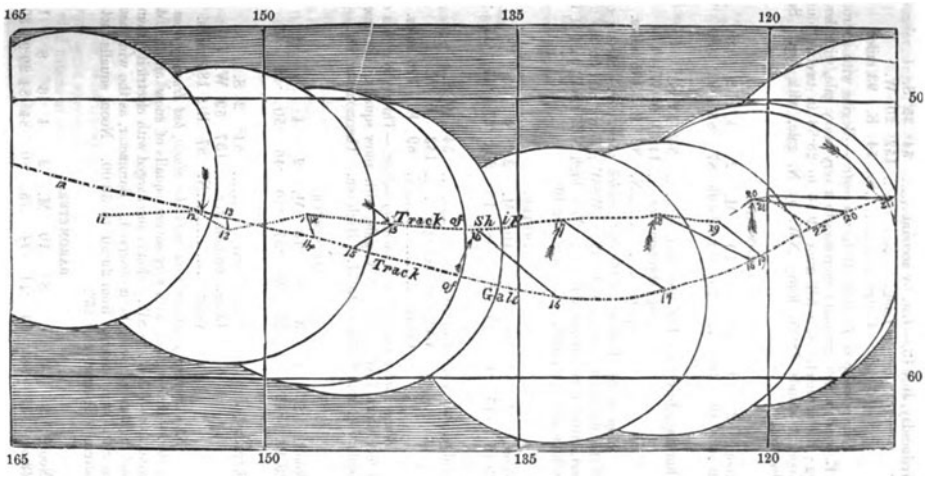

Figure 5. Track of the *Duke of Richmond* and Cyclone, South Pacific July 1853, from *Mercantile Marine Magazine* 91 (1854).

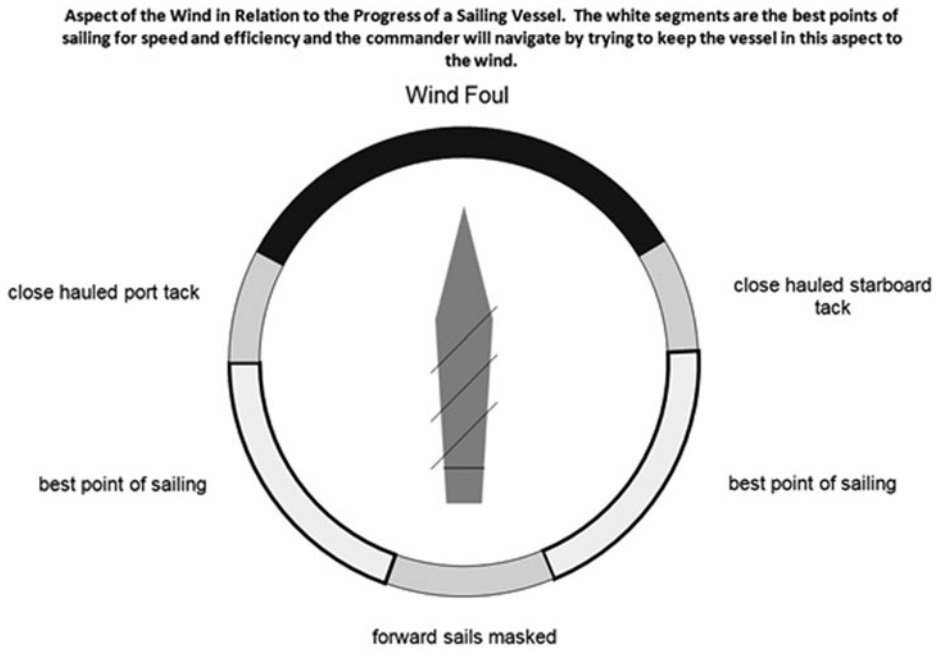

Figure 6. Wind Directions and the Progress of a Sailing Vessel. Diagram by the author.

and publishing the results in sailing directions and charts. Over decades and centuries an accretion of knowledge and experience based on close observation of the environment led to improvements in navigation. Arguably this is as important as the development of sophisticated navigational instruments such as the quadrant, sextant, and chronometer. It was Mathew Maury's analysis of the winds and currents that led to shortened journey times, not improvements in instruments. It was a better understanding of cyclones,

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hurricanes, typhoons, and their storm tracks that led to safer navigation, not improvements in instruments. In fact, the benefits that the perfection of the chronometer and the improved determination of longitude brought to safe navigation are over-rated.

The chronometer in fact created a whole new set of problems. In 1792, the East Indiaman *Winterton* took the middle passage northwards through the Mozambique Channel. Captain Dundas was confident in his two timepieces, and his calculation of the longitude was almost certainly correct. He believed himself to be some sixty miles off the land and therefore took no soundings. During the night the *Winterton* struck a reef six miles off the shore of Madagascar, and about sixty-three miles north of St. Augustine.[40] The position of the ship was correct, but the position of the shore, according to the chart, was not, because at that time charts had not been drawn with the benefit of chronometer positions. This is why there was a flurry of hydrographic work and the production of new improved charts in the nineteenth century.

Successfully navigating the hostile medium of the world's oceans under sail meant doing so both safely and efficiently. Every commander would do his best to achieve this, and some would even experiment with unusual routes to meet this end. We can conclude with the notes from the logbook written by Captain C. Grey (RNR), commanding the merchant sailing ship *MacMillan* on a voyage from Flushing (Vlissingen, Netherlands) to San Diego, California, in 1881. One would expect a voyage of this sort to go westward via Cape Horn, but Captain Grey took an eastward passage via the Cape of Good Hope and south around Australia and thence across the Pacific to California. In the meteorological logbook, Captain Grey made the following notes:

> From Flushing to San Diego sailed 21,983 miles in 130 days or 169.1 miles per day.
>
> From Equator (Atlantic) to Equator (Pacific) total distance sailed 14,303 miles in seventy-two days or 198.65 miles per day.
>
> The last average is probably the greatest ever made by a sailing ship for as many days. The route via Cape of Good Hope was chosen to prove how easy a ship could make the passage with the strong westerly winds about the latitude of 40º South without any loss of spars and sails, instead of beating against the westerly gales off the Horn in the winter times. Being winter in the southern hemisphere, the route through Bass Straits and north New Zealand and Kermadec Islands, etc. was taken. In the summer months I would recommend the route south of Tasmania and New Zealand and Pitcairn Island.[41]

Captain Grey's chosen route was unusual. As an experiment, it was motivated by a need for passages with favourable winds and a desire to preserve the ship's masts and spars and the safety of the ship and cargo. The environment was paramount in these considerations.

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[40] T. Harrington, *Remarkable Account of the loss of the ship Ganges* [. . .]. *Also the wreck of the Winterton, East Indiaman* (London: printed for Thomas Tegg, 1808), 14–15.

[41] NMA, 5574, Meteorological Logbook *MacMillan* 1881–82.

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ARTICLE

Not Just a Commercial Voyage: A Cultural-Historical Perspective of the East Indiaman *Compton*'s Voyage to Bombay (1723–26)

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Abstract

This essay aims to give an account of the untold and unexpected events faced by the crew of the *Compton,* one of the East India Company's vessels that set out on a routine trade voyage from Deptford to Bombay in April 1723. Under the command of Captain William Mawson, scrupulous compiler of the logbook, the ship proceeded along the known routes indicated by the East India Company (EIC) charts, and through the passages recommended by the navigation manuals. Finding consonance with recent research suggestions on "alternative histories" of the EIC, this article brings to light the narrative potentialities of the logbook, which is therefore considered not only a technical device, but also a tool for reconstructing the actual experience of navigation. This is the approach of the historical geodatabase of European global navigation Global Sea Routes (GSR), which bases its research method on ship's logs and other primary sources produced by the practitioners themselves. In order to provide a richer account of the known history of the EIC's shipping in the early modern age, this essay will analyse Mawson's logbook, highlighting its peculiarities as a container for a wealth of information useful for creating a narrative construction.

Keywords: Cultural History of EIC; History of Navigation; Global History; Travel Writings; Robinsonade

A Cultural-Historical Approach to the Global History of Navigation

"Thursday the 11th [December 1722]. Launched the Ship and called her the Compton. It being a low tide she broak on of her Bildgways [building ways][1] and was obliges to put her in the Dry Dock" [fol. 8r].[2]

This is the very beginning of the logbook written by William Mawson, captain of the English East Indiaman *Compton,*[3] a 480-ton vessel with thirty guns and a crew of

[1] These are the supporting structures that hold the ship under construction.

[2] Logbook of William Mawson, "*Compton*: Journal," India Office Records and Private Papers, British Library [hereafter IOR, BL]; reproduced on the Qatar Digital Library website [hereafter QDL], RIOR/L/MAR/B/666A, https://www.qdl.qa/en/archive/81055/vdc_100000000229.0x00035c [accessed 6 May 2022]. This is the source for all of Mawson's log quotations.

[3] She then passed under the command of Captain John Misenor for a second voyage to Bengal (1728–30) and a third to China (1731–34). Thereafter she passed to Captain Robert Holmes and made a fourth voyage to Bengal

eighty-eight men, just launched at Bronsdon's Yard in Deptford along the Thames. This is how the voyage of this English East India Company (EIC) ship began—with a hitch, which will not be the only one—as she prepared to reach the northwest coast of India, and from there engage in inter-Asian trade and transport, before resuming her homeward journey.

This article proposes the analysis of a specific source, the logbook, with attention both to the style and editorial intention of its compiler, and to the historical-cultural peculiarities suggested by events and happenings recorded during the voyage. In this respect, the method of analysis and use of the EIC logbooks developed within the context of the Global Sea Routes (GSR) project is fundamental for the reconstruction of transoceanic trade routes, particularly to the East, and their digital and interactive georeferencing.[4] Thanks to the detailed study of this source, the voyage loses the appearance of a more or less routine experience, comparable to many similar ones, and gains complexity, enriched with data and interpretative perspectives in dialogue with the broad field of studies on the strategies, modes, times, practices, and practitioners of EIC naval and commercial history.

Since the 2000s, historiography on the EIC has experimented with new approaches, taking into account relatively unexploited sources. Particularly significant has been the contribution of cultural and postcolonial history,[5] which suggests observing objects and subjects "other" than those traditionally approached by research, and shifting the focus of observation from the centre to its peripheries, employing transdisciplinary methodologies and interpretative tools and a scale of analysis that is more inward and closer to the experience of the actors on the ground.

Taking these suggestions on board, the work on the *Compton*'s logbook has brought to light aspects of the events "hidden" between its pages and which are neither expected nor obvious, with the intention of extracting useful elements from the mass of technical information on navigation in order to build an original and articulate narrative, capable of offering new perspectives on the history of the EIC and on the phenomena of global commercial and political-military expansion in which it was a protagonist.

In the following pages we will introduce the general chrono-geographical breakdown of the voyage and illustrate the polysemic potential of the logbook: an object and a form of writing that are at the same time an expression of a bureaucratic practice proper to the functioning of the EIC, and a specific and personal manifestation of another practice belonging to the protagonists of navigation, that of "keeping track" of a non-ordinary experience, "tracing" the human presence in the midst of the oceans of the globe, as shaped, in the present case, by Captain William Mawson's narrative drive.

The Cultural-Historical Potential of a Multifaceted Source

Historically, the logbook served three main purposes: to reconstruct the voyage in time and space, to process data and information on navigation resulting from the various

and Bengkulu (Sumatra), where she was destroyed by fire on 12 January 1737. Anthony Farrington, *Catalogue of East India Company Ships' Journals and Logs, 1600–1834* (London: British Library, 1999), 132; Rowan Hackman, *Ships of the East India Company* (Gravesend: World Ship Society, 2001), 84.

[4] For the case study see Erica Grossi, "Voyage of the East Indiaman Compton to Bombay and Madras, 01-04-1723 05-04-1726," in Guido Abbattista, principal investigator, Global Sea Routes [hereafter GSR], 2021, https://globalsearoutes.net/geodatabase/.

[5] Among others: Richard Dunn and Rebekah Higgitt, eds., *Navigational Enterprises in Europe and Its Empires, 1730–1850* (London: Palgrave MacMillan, 2015); Anna Winterbottom, *Hybrid Knowledge in the Early East India Company World* (London: Palgrave MacMillan, 2016); "Alternative Histories of the East India Company," special issue, *Journal for Early Modern Cultural Studies* 17:3 (2017); Aske L. Brock, Guido van Meersebergen, and Edmond Smith, eds., *Trading Companies and Travel Knowledge in the Early Modern World* (London: Routledge, 2022).

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nautical practices, and to portray the relational dynamics established in the ships' hierarchies, in the encounters at sea and between practitioners and locals.[6]

The huge number of documents kept in the EIC archives[7] confirms the administrative reasons for the daily recording of voyages through logbooks, and the great functional value of this information for the EIC, "a precious commodity [. . .] that would benefit future travellers."[8]

Nevertheless, in her study of logbooks in the modern age, Margaret Schotte notes:

> Reams of volumes sequestered in archives from the late seventeenth century on were scarcely used either by their original creators or by administrators. [. . .] Disappointingly few of the projects imagined by administrators came to fruition. [. . .] A printed edition of a single voyage was more portable, legible, and convenient for extracting pertinent details than a series of salt-stained manuscripts.[9]

This remark refers to the consultation of logbooks by EIC crews about to embark on a transoceanic voyage. If we look instead at their consultation by other employees of the EIC—in particular, cartographers and hydrographers—it becomes clear that the hundreds of accumulated volumes played an important role in improving techniques, knowledge, and methods of transoceanic navigation between England and the East Indies. In the eighteenth century, recordkeeping by officers on board became the cornerstone of the work of Alexander Dalrymple, a Scottish geographer and hydrographer of the EIC from 1779. His task was to examine the logbooks kept in the East India House, make new calculations on longitude, and draw more accurate nautical charts from the routes plotted on blank charts by the EIC captains.[10]

The logbooks of the East Indiamen partly followed the historical model described in the literature on the subject, but also developed their own peculiarities and formats over time, particularly with regard to the recording of nautical and commercial information and the "reporting" of the management of discipline and health on board. This unexploited wealth of material now gains a new epistemic key in digital analysis tools such as the geodatabases and data visualisation systems used by digital history projects like GSR.[11] These explore the travel records of European companies in a transdisciplinary way,[12] contributing to the valorisation of a source with an unrealised potential.

[6] Margaret Schotte, "Expert Records: Nautical Logbooks from Columbus to Cook," *Information & Culture* 48:3 (2013), 281–322.

[7] IOR, Marine Department Records [hereafter MDR], IOR/L/MAR—1600–c.1879. The EIC archive consists of more than 10,500 volumes, mostly logbooks and journals. See John McAleer, "The East India Company Records and the Voyage to Asia," in *Adam Matthew Digital: East India Company* [hereafter AMD] 2020. According to Martin Moir, ed., *General Guide to the India Office Records* (London: British Library, 1988), 178, this corpus includes *Ships' Journals, 1605–1705* [171 vols.] (L/MAR/A), and *Ships' Logs, 1702–1856* [9,500 vols.] (L/MAR/B), for a total of 9,671 volumes out of a total of 10,500. These numbers also seem to be verified by Farrington's census, see *Catalogue,* ii.

[8] McAleer, "The East India Company Records."

[9] Schotte, "Expert Records," 304–5.

[10] Andrew S. Cook, "Alexander Dalrymple and John Arnold: Chronometers and the Representation of Longitude on East India Company Charts," *Vistas in Astronomy* 28 (1985), 189–95; Andrew S. Cook, "Alexander Dalrymple (1737–1808), Hydrographer to the East India Company and to the Admiralty as Publisher: A Catalogue of Book and Charts" (PhD diss., University of St. Andrews, 1993).

[11] Clive Wilkinson, "The Non-Climatic Research Potential of Ships' Logbooks and Journals," *Climatic Change* 73 (2005), 155–67.

[12] Among others: Climatological Database for the World's Oceans, 1750–1850 (CLIWOC), ed. Clive Wilkinson, 2001–2003, https://www.historicalclimatology.com/cliwoc.html; and The Dutch East India Company's Shipping

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It is in this perspective that, among the many materials processed by GSR, we have identified William Mawson's logbook as a unique and at the same time paradigmatic model of this type of source, capable of providing information and insights for the cultural history of European transoceanic commercial navigation in the modern age.

Captain's Mawson Logbook: The Human Factor over Technical Practice

The *Compton*'s logbook consists of approximately one hundred recto-verso handwritten sheets bound in a brick-red hardcover volume.[13] On folio 7r, we find "A List of the Comptons Ships Company" with the names of the eighty-eight crewmen and their assigned roles. This information is not always present in the logbooks of the seventeenth and eighteenth centuries and therefore represents a significant interpretative element, underlining Mawson's desire to "keep track" of the presence of his crew. Thanks to this list, the forty-six seamen in particular are rescued from the invisibility and anonymity normally reserved for them by the traditional narrative of the EIC history.

Depending on the day and activities recorded, each page is marked by vertical and horizontal lines drawn by the captain, forming a main table with two columns and a number of rows equal to the days recorded. The left-hand column shows the current month and year in the header, while the right-hand column indicates the ship's direction, destination, or anchorage, extending over the two sheets of the open logbook. The tabular format becomes more articulated when the *Compton* is engaged in open sea navigation and the captain needs separate spaces to record nautical data, the results of observational practices and complex calculations regarding distances travelled and the direction and impact of currents and winds on the ship's body and course.[14] In these navigation phases, the right-hand column is divided by four vertical lines to form a six-column table. The four new columns record: Dis[tance] / Course / Lat.^{d} N or Lat.^{d} S / M[eridian] D[istance]: W[est] / or M[eridian] D[istance]: E[ast]. "Distance" is the length, in nautical miles, travelled on a nautical day—from noon on the previous day to noon on the current day. "Course" indicates the direction of sailing held by the ship during those twenty-four hours; also recorded are the latitude and the distance from the east/west reference meridian, namely longitude, the most complex factor in determining a ship's position, which for centuries was both a transdisciplinary scientific problem and a matter of life and death for crews at sea. Longitude is in fact a relative coordinate given by the difference between the local time on the ship and that of the port of departure or a known point on land, the "zero meridian." During the *Compton*'s voyage, five "departures" or zero meridians are indicated: Lizard Point, leading to Bombay; on the homeward voyage, St. Thomas Mount—today's Mylapore, south of Madras; Table Bay—today's Cape Town; St. Helena; and Ascension Island.

The general remarks column also contains other quantitative information, such as the magnetic variation or the recalculation of latitude from the revised distance data. From this point of view, Mawson seems closer to the generation of seventeenth-century compilers of the EIC's logbooks, when the influence of modern scientific thought had not yet included number surveying as a central practice of its epistemology.[15] Compared to other

between the Netherlands and Asia 1595–1795 (DAS), ed. Jaap R. Bruijn, Femme S. Gaastra, and Ivo Schöffer, http://resources.huygens.knaw.nl/das/index_html_en [accessed 6 May 2022].

[13] The sequence of sheets, reflected in this essay's references, begins with the inside front cover (1) and ends with the inside back cover (101). The numbers, written in pencil and circled, are in the top right-hand corner on the front of each page.

[14] For an exhaustive analysis of these calculations, see Philip Reid's essay in this special issue.

[15] Lorraine Daston and Elizabeth Lunbeck, eds., *Histories of Scientific Observation* (Chicago: University of Chicago Press, 2010).

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samples from the same decade and up to the middle of the eighteenth century, Mawson's logbook seems actually more oriented towards the narration of the daily experience of navigation than towards quantitative data.[16]

The description of the format and structure of Mawson's logbook collocates this material object within the complex history of the disciplines and practices involved in eighteenth-century navigation and reveals its specificities. While the history of the logbook—and of the EIC's logbooks—follows a path traced by recognisable and interdependent phases,[17] we cannot ignore the deviations of its "evolution" towards the standard preprinted model, established by the EIC and the Royal Navy in 1791 following the introduction of the marine chronometer for the calculation of longitude.[18] Among the crucial factors, the intervention of the compiler, with his technical and nautical as well as narrative and descriptive skills and competences, plays an important role. These specificities, determined by the writer's agency, are what render a technical and bureaucratic instrument—which over time shows clear patterns but also obvious discontinuities—so changeable.

In the case of the *Compton,* this agency is represented by Captain William Mawson, who assumed command of the ship on 11 December 1722, in his eighth year in the EIC. The inaugural voyage of the *Compton* was the only one he made as captain of this ship, and it was the last of his career.

The scarce biographical information available[19] is supplemented by Mawson in the form of clues in the *Compton*'s logbook, which are important for reconstructing his experience as a navigator on the eastern routes of the EIC. On 14 August 1723, while crossing the Arabian Sea towards Bombay, he wrote about the "White Water":

> At ten last night the Water was changed from its Usuall Colour to be as white as Milk which would very much surprise any Person who had not seen the like before. but in

[16] For a comparison, see these logbooks: William Wells, "*Bedford*: Journal," 1732–1735, IOR, BL: IOR/L/MAR/B/638A, in QDL: https://www.qdl.qa/en/archive/81055/vdc_100000000229.0x000194; John Foot, "*Salisbury* : Journal," 1752–1754, IOR, BL: IOR/L/MAR/B/478E, in QDL: https://www.qdl.qa/en/archive/81055/vdc_100000000148.0x00004a; James Birkdell, *A journell for this p[re]sent voyage being bound by gods assistance to Sirratt in the East India, in the good shippe London* [. . .] *Captaine Mathew Wills Comaunder by me James* [. . .] *Birkdell Maisters Mate,* 1639–1640, IOR, BL: IOR/L/MAR/A/LXIV, in QDL: https://www.qdl.qa/en/archive/81055/vdc_100000001273.0x000342 [accessed 6 May 2022].

[17] Among others, see Clive Wilkinson, *British Logbooks in UK Archives 17th–19th Centuries: A Survey of the Range, Selection and Suitability of British Logbooks and Related Documents for Climatic Research* (Technical Report, 2009), Climatic Research Unit, University of East Anglia, Norwich; W. E. May, "The Log-Books Used by Ships of the East India Company," *Forum* 1:27 (1974), 116–8; Schotte, "Expert Records."

[18] The preprinted logbook dates back to 1761, but it was only after 1791 that it featured a space for "Longitude by Chronometer," an instrument developed in the eighteenth century by the English and French craftsmen John Harrison, Pierre Le Roy, and Ferdinand Berthoud. The advent of the marine chronometer on the ships of the EIC as early as the 1770s–80s was due to individual captains buying them. On board, however, the maintenance and reading complexity of the "Timekeeper" was a limitation to its reliability and thus to the systematic recording of its results. Dava Sobel, *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time* (London: Walker & Company, 1995); Simon C. Davidson, "Marine Chronometers: The Rapid Adoption of New Technology by EIC Captains in the Period 1770–1792 on Over 580 Voyages," *Antiquarian Horology* 40:1 (2019), 76–91; May, "The Log-Books Used by Ships of the East India Company." A few samples of preprinted logbooks can be found in George Dundas, "*Winterton* : Journal," IOR, BL: IOR/L/MAR/B/451C, in QDL: [fol. 85r] (175/257) https://www.qdl.qa/en/archive/81055/vdc_100102249241.0x0000b0 (1788–1790), in which the chronometer is called "Time Piece"; Charles Elton Prescott, "*Princess Charlotte* : Journal," IOR, BL: IOR/L/MAR/B/245B, in QDL: https://www.qdl.qa/en/archive/81055/vdc_100000001478.0x0001fd (1798–1800), [accessed 6 May 2022].

[19] Anthony Farrington, *A Biographical Index of East India Company Maritime Service Officers: 1600–1834* (London: British Library, 1999), 530; Farrington, *Catalogue,* 134; Hackman, *Ships of the East India Company,* 84.

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> a former Voyage in this track have seen the same and another time in a Voyage to Fort S.^{t} George but never in any other part of the Seas. [fol. 24v]

A year later, "Sailing up the River of Bussorah [Basra]," he recorded his surprise at his first brush with the local winds: "the Hotest here I ever felt and Parch ones Skin and every thing thats Exposed to them" [fol. 46r], due to which "every part of the Ship is like a piece of Tinder" [fol. 47v].

It was, however, on his return from Madras to England—a voyage of over 200 days, 182 of which were spent on the open sea—that Mawson put his skills to the toughest test, given the unforeseen events that even the most seasoned of captains were called upon to face on such voyages. Crossing the Indian Ocean, the *Compton* encountered some unexpected "dirty Squallid" and "Unsettled Weather" [fol. 65v, 67r] that worried Mawson. He therefore decided to "Put our people to an allowance of Water of two Quarts a day the Weather promisseing us a very long Passage" [fol. 68r]. Weather conditions had not improved during the crossing of the Atlantic when, at the end of February 1725, the captain noted:

> I did not expect at this time of the Year to meet with any Repulse of Wind till we had got to the North of the Line and by meeting the Rains so soon I am afraid it will be a long time before we shall reach the NE Trade. [fol. 81v]

That "I am afraid" reveals William Mawson the person, a captain but also a human being, whose emotionality is mixed with the technical language of navigation that does not erase the human factor, central to the collective and individual experience of these practitioners.

Unlike other compilers, Mawson allowed himself to make personal remarks: he did not hide the fact that he was "in pain for every thing over head" [fol. 10v]; he admitted that the wind that had just picked up "puts me in hopes it will continue to advance us into a trade Winds way" [fol. 11r], or that difficult navigation "Obliges me to make the best of my way towards Home" [fol. 84v]. His logbook is full of verbs of emotion and denotative expressions which, more than the technical data, add a contemplative dimension to the surrounding weather conditions, as when on 5 February 1726, he recorded: "Calm Mollancholly Weather and a Clear Sky" [fol. 82r].

These details highlight how the linguistic dimension can be one of the most interesting keys to understanding logbooks, capable of bringing to light previously unseen cultural aspects of the history of navigation. By focusing on the language, we can also reconstruct the lexicon, shared by the extended community of practitioners, used to refer to the operations and practices of ship and crew management as well as commercial transactions in the different ports, but which also occasionally provides glimpses of unnamed or misspelled "others."[20] Their presence, with incorrect and inconsistent spellings in official "Company writings,"[21] is indicative of the fact that the writer's level of literacy may not always have been that high. At the same time, it provides "indirect evidence"[22] of a cultural subjugation of these "others" by the English compiler through translations,

[20] We owe this interpretative suggestion to Sander Molenaar, "Deconstructing the 'Imperial Gaze' in Chinese Travel Writing: A New Look at Ma Huan's *Ying ya sheng lan*," Hakluyt Society Symposium 2021, Decolonising Travel Studies: Sources and Approaches (10–12 November 2021).

[21] Guido van Meerbergen, "Writing East India Company History after the Cultural Turn: Interdisciplinary Perspectives on the Seventeenth-Century East India Company and Verenigde Oostindische Compagnie," in "Alternative Histories," *JEMCS* 17:3, 10–36, 13.

[22] Samuli Kaislaniemi, "The Linguistic World of the Early English East India Company: A Study of the English Factory in Japan, 1613–1623," in "Alternative Histories," *JEMCS* 17:3, 59–82, 59.

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transliterations, and "assonant" appropriations of words and names, by using language as a practical tool rather than as a formal device.

The Unexpected Course of the *Compton*: An Account That Complexifies the History of the EIC

The routine with which EIC ships tackled transoceanic routes often overshadows the study and understanding of the dynamics actually at play in these voyages, inducing a kind of "street light effect." The intense historiographical illumination of the political-economic aspects of the EIC's activities tends to obscure the visibility of the ships and sailors who developed them. What would the global map of these activities look like if we turned the spotlight on individual vessels and their crews along the ocean expanses? The GSR project brought to light both the specific importance of ships in the overall global transoceanic trade and the kaleidoscope of unique events that each voyage presents.

We begin with an overview of the *Compton*'s voyage from England to India and back between February 1723 and April 1726, before dwelling on those passages in the logbook from which specific features and themes of a broader cultural-historical approach emerge. Along the approximately 26,000 nautical miles from Deptford (14 February 1723) to Bombay (23 August 1723) and from Madras (25 August 1725) to Woolwich (9 April 1726), the *Compton*'s transoceanic routes georeferenced in GSR may resemble many others travelled by EIC ships. However, by taking a closer look at the course thanks to georeferenced recording, dynamic visualisation features, and textual and analytical apparatuses, this voyage becomes a much more complex navigational experience. From this perspective, the *Compton*'s voyage is no longer just "a Voyage intended by Gods Assistance from England towards the Island of Bombay on the coast of Malleba [Malabar] in the East Indies and in the service of the Hon:^{ble} United Company of Merchants of Great Brittain tradeing [*sic*] to the East Indies" [fol. 6r]. Let us see why.

During the 110 days or so between the repair of the damaged hull in Deptford and the arrival at the Downs on the Kent coast, water and provisions for the voyage and the necessary equipment were loaded aboard the ship. Between 15 February and 15 March 1723, the following were also taken on board: "most part of the Company's Goods," "the Companys Treasure" and a small military detachment [fol. 8r]. These were "thirty Soldiers [. . .] Sign'd by Mr. Thomas Lewes" that the EIC was sending in response to a request dated 17 August 1722 from the President and Council of Bombay. The detachment would actually be "sent a Shore" on arrival in Bombay on 23 August 1723 [fol. 25v].

The presence of soldiers on board, which in the eighteenth century constituted a fundamental part of the crew,[23] was not always made explicit in the logbooks. Indeed, Mawson allows us to meet them on just a few occasions: on 5 April 1723, shortly after their departure, when he recorded the death of soldier John Jones from a "Violent Feaver" [fol. 9r]; on 25 April 1723, off the coast of Portugal, after encountering a fleet identified as Dutch and "loaded with salt from S:^{t} Ubes" [Sétubal], the captain recorded that they "are Stationing all our men to their quarters and exercising the Soldiers and for-mast men with small Arms" [fol. 11v]; and lastly, on 22 August 1723, before arriving in Bombay, when soldier Robert Smith "departed this life" [fol. 25v].[24]

[23] Jean Sutton, *Lords of the East: The East India Company and Its Ships* (London: Conway Maritime Press, 1981), 26. For an insight into the EIC's military force and commercial spirit, see Filippo Chiocchetti's essay in this special issue.

[24] Between the Cape and Bombay, sailor Humphrey Hughs fell and drowned at sea, bringing the death count during the first part of the voyage to three.

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Furthermore, also on board was the "Company's Packet" addressed to the President and Council of Bombay, a "set of writing"[25] consisting of the "Companys General Letter to Bombay dated the 22nd March 1722"[26] and fourteen other documents that were valuable as goods to be used in the Asian trade, "as belonging to the probing part of a larger instrumental entity that operates out of a metropolitan capital and ranges over the whole globe."[27]

On 1 April 1723, upon leaving the Downs, the *Compton* finally took the usual route "from the Lizard" towards Madeira. On 18 April, the captain saw another English vessel leaving the port of Lisbon, from where it had just been turned away because "the Ratts had eat his bill of health and [. . .] now bound for England for another" [fol. 11r]. The "bill of health" was a certificate provided by the port authority guaranteeing the health of the crew and the absence of contagion on board.[28] What Mawson seems to be suggesting is that the presence of rats nullified the validity of that vessel's certificate—although it cannot be ruled out that the rats actually ate it—forcing it to return to England to resolve this issue.

The voyage continued to the Canary Islands, whose proximity was confirmed by an exchange with "a small Vessell last from Teneriff" [fol. 12r]; then towards Cape Verde, which was not sighted due to the "Weather Hazey which is seldom otherwise when you approach near the Island of Cape-de-Verd" [fol. 12v]. The ship crossed the equator on 26 May and headed west towards the latitude of Trindade and Martim Vaz, off the coast of Brazil. Again, the islands were not sighted and, between 6 and 7 June, when she was at a latitude of about twenty degrees south, the *Compton* turned east towards the Cape of Good Hope, which was spotted from a distance on 4 July, after two months of nonstop sailing. Until 11 June, the *Compton* had been sailing in convoy with Captain Robert Hyde's East Indiaman *Duke of York,* but on that day the two ships lost sight of each other and followed different routes to Asia, thus breaking the clause instructing captains "to prevent their separating when in Company Outward or homew.[d]."[29]

Having rounded the Cape, the ship embarked on the so-called Inner Passage through the Mozambique Channel, known for its dangerous variable winds and contrary currents, but still a preferred route to the west coast of India. After a possible stop in the Comoros for water and provisions, the ships set a new starting point from here—to correct the accumulated frequent errors in the determination of longitude—and sailed up towards the Arabian Sea following the east coast of Africa.[30]

[25] Miles Ogborn, "Writing Travels: Power, Knowledge and Ritual on the English East India Company's Early Voyages," *Transactions of the Institute of British Geography* 2:27 (2002), 155–71, 155.

[26] IOR, BL, EIC, General Correspondence 1602–1859 / Letter Book 18, 1721–1723, "Company's General Letter dated the 22nd March 1722," IOR/E/3/101, in AMD, fols. 549–50.

[27] Richard Sorrenson, "The Ship as a Scientific Instrument in the Eighteenth Century," in "Science in the Field," special issue, *Osiris* 11 (1996), 221–36, 229.

[28] "Bill of health," William Henry Smith and Edward Belcher, *The Sailor's Word-Book* (London: Blackie and Son, 1867), 101.

[29] IOR, BL, EIC, General Correspondence 1602–1859 / Letter Book 18, 1721–1723, "Company's General Letter dated the 22nd March 1722," IOR/E/3/101, in AMD, fol. 512, par. 12. Here we also read that the *Duke of York* carried copies of the documents sent with the *Compton,* in case of any mishaps. The *Duke of York (1)* (the number after the name of the ship is used by Farrington in the *Catalogue* to distinguish ships of the same name operating successively or in some cases concurrently)—400-450 tons, 80-90 crew members, 30 cannons—reached Bombay on 19 September 1723 after a stop in Mozambique. When it arrived, Captain Hyde had been dead for twelve days, "taken with a Violent Feaver" [fol. 26r]. She was deployed in the Persian Gulf throughout 1724 and left Malabar in October 1725, returning directly to the Downs in May 1726; Farrington, *Catalogue,* 187–8.

[30] Ships bound for Bengal, Indonesia, or China, on the other hand, proceeded directly from the Cape to the southern Indian Ocean before heading north. David Philip Miller, "Longitude Networks on Land and Sea: The

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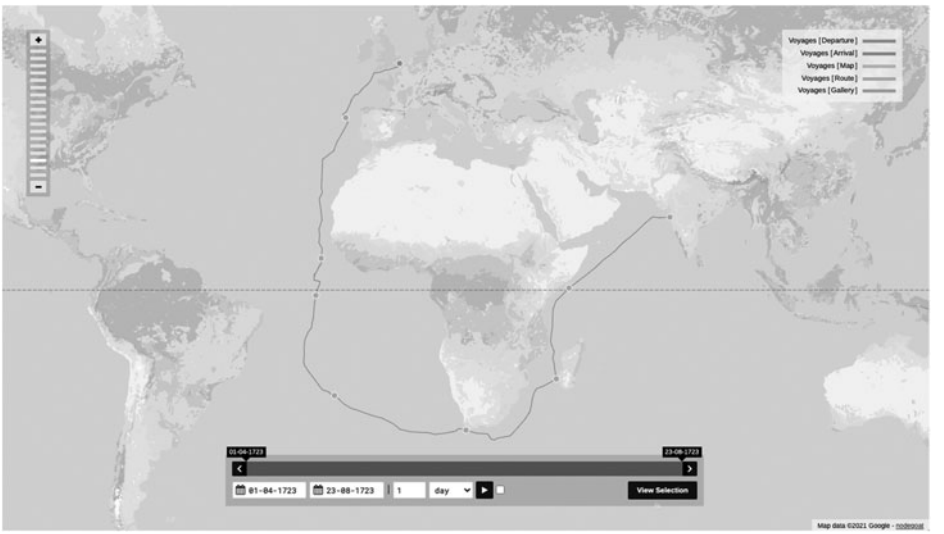

Figure 1. Georeferenced visualisation of the *Compton*'s outbound route through the Inner Passage from the Downs to Bombay (1 April 1723–23 August 1723), from Grossi, "Voyage of the East Indiaman *Compton* to Bombay and Madras," GSR, 2021, Map data ©2021 Google.

The rationale behind the choice of passages was established by the various *Directions for Sailing* compiled, cyclically corrected, and "largely augmented" by navigation experts from the information produced by the EIC's personnel and navigators engaged in the inter-Asian trade, made up of "manuscripts, journals, memoirs, & observations of the most experienced Officers in the Honourable East India Company's Service, or Commanders of ships in the country trade."[31] The identification of these passages tells of the intense and constant effort by the extended maritime community of the EIC to document and cartographically control the space of the oceans through which men and goods forged connections, as did knowledge and practices.[32]

Leaving the Mozambique Channel at the end of July 1723, the *Compton* began to steer northeast without making any stops because the Court of Directors had ordered her to "proceed as Wind and Weather will permit directly for Our Island of Bombay in the East Indies" (see Figure 1).[33]

Having arrived in Bombay on 23 August 1723, the ship remained at anchor for forty-five days and then, from the beginning of October, was engaged in commercial activities along the west coast of India, calling at six main locations—Goa, Carwar [Karwar], Tellicherry [Thalassery], Cochin [Kochi], Anjengo [Anchuthengu], and Calicut

EIC and Longitude Measurement 'in the Wild,'" in *Navigational Enterprises in Europe,* eds. Dunn and Higgitt, 223–247, 227; McAleer, "The East India Company Records."

[31] Joseph Huddart, *The Oriental Navigator; or, New Directions for Sailing to and from the East Indies, China, New Holland, &c. &c. &c. also for the Use of the Country Ships, Trading in the Indian and China Seas, Pacific Ocean, &c. &c. &c. Collected from the Manuscripts, Journals, Memoirs, & Observations, of the Most Experienced Officers in the Honourable East India Company's Service, or Commanders of Ships in the Country Trade; from Those of Foreign Navigators, Acquainted with the Indian and Eastern Seas; And from the last Edition of the French Neptune Oriental, by Mons. D'Apres de Manevillette, Being a Necessary Companion to the Complete East India Pilot, in two Large Volumes of Charts and Plans, lately Revised, and greatly Augmented.* Second Edition with Considerable Additions (London: Robert Laurie and James Whittle, 1801).

[32] McAleer, "The East India Company Records."

[33] IOR, BL, EIC, General Correspondence 1602–1859 / Letter Book 18, 1721–1723, IOR/E/3/101, in AMD, fol. 551.

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[Kozhikode]. At the end of this phase, on 16 January 1724, she arrived back in Bombay, where she awaited orders to leave for England. However Mawson wrote that the governor and the council had then "taken up [my] Ship to Freight for Bussorah [Basra] and give fourteen thousand Rupees for her hire and am not to be dispatched from the said place till the last of October" [fol. 33r]. Reaching this unforeseen "last minute" destination took the *Compton* from April to August 1724, with stopovers and detours between several Persian ports, in particular the strategic port of Gombroon [Bandar Abbas], at the mouth of the Gulf. In November, she resumed sailing towards Bombay, where she arrived as late as 10 February 1725. These almost twelve months of unplanned navigation were marked by nautical vicissitudes and unexpected encounters with foreign convoys and "very Civilised" Persian peoples [fol. 51r].

Hints at the presence of pirates along the Malabar Coast are worth highlighting. The first entry is dated 23 December 1723, when the logbook records the arrival in Tellicherry of "the Fancy from Bengall which is the Ship the Pirates had when they took Mackrey and afterwards they give it him to come to Bombay" [fol. 30v]. The *Fancy* was one of the two EIC ships attacked by the Irish pirate Edward England—Captain James MacRae's [Makrey] *Cassandra* and Captain Richard Kirby's *Greenwich*—off the Comoros Islands on 7 August 1720. After a bloody battle between the East Indiamen and the pirate flotilla, the English survivors abandoned their ships and took refuge on Mauritius until MacRae surrendered to Edward England. The pirate allowed him and his men to depart for Bombay with the *Fancy,* as mentioned by Mawson.[34]

The second and third references to pirates are, respectively, on 11 January 1724, when, sailing up the coast towards Bombay, the captain spotted some boats that he "took to be Angrys Grabs" [fol. 32r]; and on 22 March 1725, in the vicinity of Goa, when "two of Angry Grabs and seven Gallyvats" came dangerously close to the *Compton,* prompting the captain to effect a manoeuvre to escape. The EIC vessel was pursued by pirates "but it being dark they could not fire their Prow Guns" [fol. 57r]. Kanhoji Angre or Conajee Angria ["Angrys"] was an Indian admiral of the Maratha Navy, known in the chronicles for being the strongest opponent of the EIC colonial establishment in India at sea, undefeated until his death in 1729.[35]

The mention of the *Fancy* and "Angrys" reveals further cultural-historical observations emerging from the analysis of the logbook as a narrative text. Firstly, the inconsistent or sometimes incorrect transcription of terms heard by locals—for example, "grab" and "gallyvat,"[36] which were the typical boats used to sail along the Malabar Coast—reflects the oral use of these words and the individual discretion involved in their written rendering. Secondly, the concise references to characters and events suggests that it was enough to evoke their names—even misspelled or merely implied: Angry for Angre and the *Fancy* for England—for the writer as well as the reader to be able to identify the subject of the story, but also to assess the importance—and the risk—of such an unexpected encounter. Many of the EIC's logbooks verify this dynamic, particularly with Angre, even many years after

[34] John Biddulph, *The Pirates of Malabar and an Englishwoman in India Two Hundreds Years Ago* (London: Smith, Elder & Co., 1907); Arthur L. Hayward, ed., *A General History of the Robberies and Murders of the Most Notorious Pirates, from Their First Rise and Settlement in the Island of Providence to the Present Year by Captain Charles Johnson,* vol. 4 (London: Routledge, 1927); Thomas Seccombe, "James MacRae," in *Dictionary of National Biography, 1885–1900,* vol. 35, ed. Sidney Lee (London: Smith, Elder & Co.), 282–83.

[35] Angre rule on the west coast of India ended with the capture of Kanhoji's son, Tulaji, in February 1756 by the EIC forces and the Peshwa Maratha. Ruby Maloni, "The Angres and the English: Contenders for Power on the West Coast of India," *Proceedings of the Indian History Congress* 66 (2005–2006), 546–55.

[36] For the etymological history of these terms, see the entries in *Hobson-Jobson: A Glossary of Colloquial Anglo-Indian Words and Phrases, and Kindred Terms, Etymological, Historical, Geographical and Discursive,* in *Digital Dictionaries of South Asia*, https://dsal.uchicago.edu/dictionaries/hobsonjobson/ [accessed 6 May 2022].

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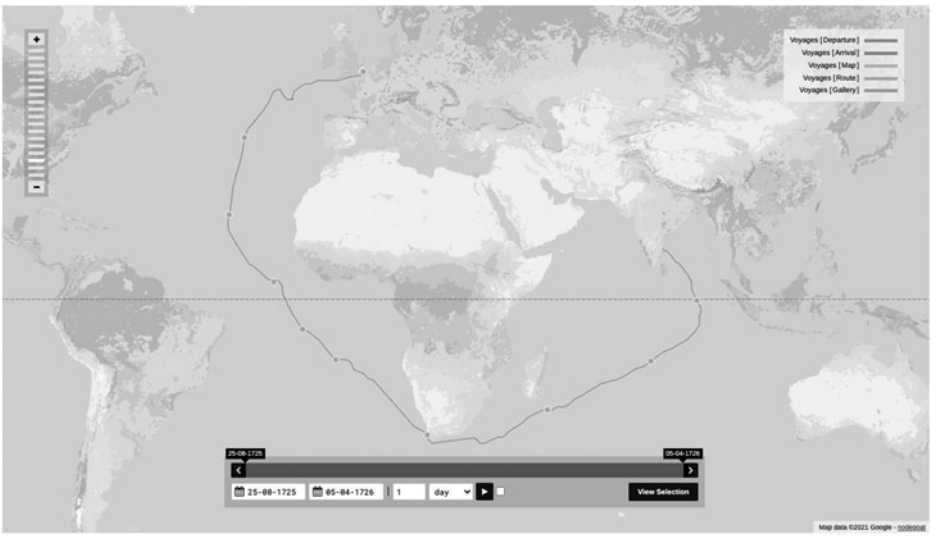

Figure 2. Georeferenced visualisation of the *Compton*'s inbound route from Madras to the Downs (25 August 1725–5 April 1726), from Grossi, "Voyage of the East Indiaman *Compton* to Bombay and Madras," GSR, 2021, Map data ©2021 Google.

Chart 1. Overview of the *Compton*'s routes and navigational days.

Routes	Stopover	Time Span	Days of Actual Navigation
Outbound: from the Downs to Bombay	1	01.04.1723–23.08.1723 (145 days)	145
Inter-Asian I / East coast of India: from Bombay to Cochin and back	11	06.10.1723–04.04.1724 (182 days)	67
Inter-Asian II / Persian region: from Bombay to Bussorah and back	10	14.04.1724–10.02.1725 (303 days)	139
Inter-Asian III / Towards the west coast of India: from Bombay to Madras	6	19.03.1725–10.05.1725 (53 days)	38
Inbound: from Madras to the Downs	5	25.08.1725–05.04.1726 (224 days)	182
TOTAL	**33**	01.04.1723–05.04.1726 (1,101 days)	**571**

his death, showing how the encounter between English commercial power and privateer-pirate activity constitutes an important chapter in the history of the EIC and was transmitted over time within this community of practitioners,[37] to the detriment of an exhaustive representation of the others.

[37] Maloni, "The Angres and the English"; N. K. Mishra, "Some Aspects of Piracy in Early Eighteenth-Century Western India," *Proceedings of the Indian History Congress* 32 (1970), 131–37; Patricia Risso, "Cross-Cultural Perceptions of Piracy: Maritime Violence in the Western Indian Ocean and Persian Gulf Region during a Long

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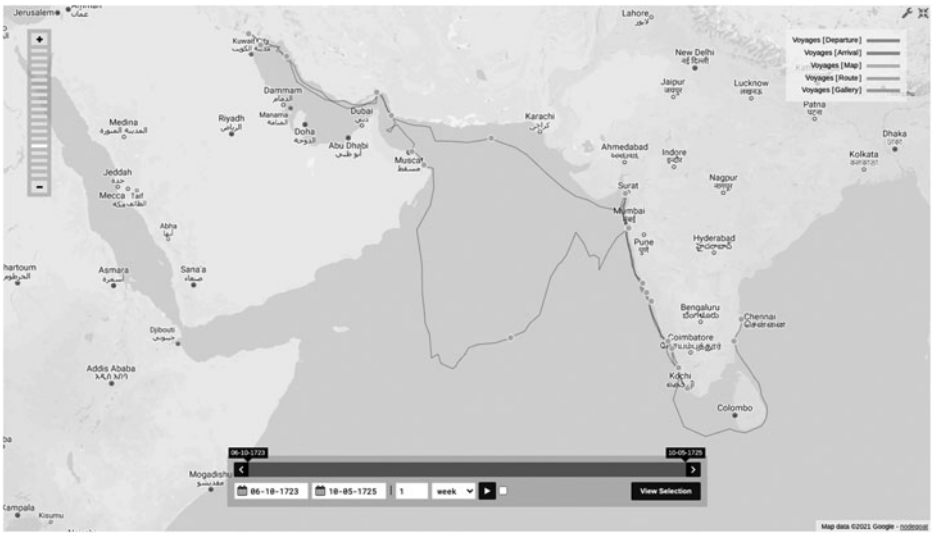

Figure 3. Georeferenced visualisation of the *Compton*'s inter-Asian route from Bombay to Bandar Abbas and Bussorah, and back to Madras (6 October 1723–10 May 1726), from Grossi, "Voyage of the East Indiaman *Compton* to Bombay and Madras," GSR, 2021, Map data ©2021 Google.

However, these were not the last adventures of the *Compton.* On 17 March 1725, while the ship was waiting in Bombay to leave again and was "Employed in Receiving and Stowing [our] Cargo for Europe" [fol. 55v], the captain received a new order: "Here being not Bale Goods nor Pepper sufficient to Compleat [my] Tonnage as P^{r} Charter Party [. . .] to get [my] Ship ready and to proceed for Tellicherry and to fill up their" [fol. 56v].

The *Compton* sailed down the Malabar Coast, acquiring "on the Acc.^{t} of the Hon.^{ble} Company [. . .] Robins of Pepper" and "Bales of Cardimums" [fol. 59r]. The cargo was fulfilled by the end of April 1725, but by then the captain was ordered to sail to Madras and wait there for the right season to return to Europe.

Eventually, on 25 August 1725, the *Compton* set sail with the *James and Mary* under the command of the former first mate John Balchen.[38]

The homeward journey was long and particularly "tedious" [fol. 84r]: according to the captain, the navigational difficulties of the *James and Mary* slowed the *Compton* down. Meanwhile on board, conditions deteriorated: on 30 October 1725, between Madagascar and the Cape, the captain recorded that very low temperatures "begins to Make our People who have been a longtime in a very Hott Clime to feell it very much and have several of them layd up some with Pains in their Bones" [fol. 73r]. On 10 November, there were twenty sick with scurvy and "some in Miserable Condition and others falling down every day" [fol. 75v]. A discussion between the officers resulted in the decision to stop at Table Bay: this was on 11 November 1725.[39]

Eighteenth Century," *Journal of Word History* 12 (2001), 293–319; Kaislaniemi, "The Linguistic World of the Early English East India Company."

[38] The *James and Mary* (*2*)—300 tons, 60 men, 24 guns—was bound for St. Helena and Bengkulu (Downs, 29 January 1724–Deptford, 23 April 1726). The two ships met in Madras harbour in June 1725. Balchen was also the author of the logbook for the voyage (IOR, BL, IOR/L/MAR/B/676B), Farrington, *Catalogue,* 348.

[39] There were two fatalities on the homeward voyage: seaman Alexander Elson, 30 October; and midshipman Thomas Burnett, who died in St. Helena on 30 December "after a long Illness" [fol. 79r].

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Chart 2. Main commodities transported on board the *Compton* between inter-Asian destinations.[40]

Commodities	Loaded (from)	Unloaded (to)
Cotton	Bombay	Tellicherry
Cowries	Anjango	Bombay
Indigo	Surat	Bussorah
Cotton	//	Gombroon
Pepper	//	//
Rice	//	//
Dates	Bussorah	Surat
//	//	Bombay

After about three weeks at the Cape, the ship resumed her voyage to England, with a planned stop at St. Helena (26 December 1725) to deliver "Thirty Bags of the Companys Rice [. . .] Brought from Bombay" [fol. 79r]. During the fifteen days on the island, repairs were ordered for the cracks in the hull that had caused water seepage.

Shortly after leaving St. Helena, Mawson headed towards Ascension Island, the last unplanned stop of the voyage, for further repairs. It was 19 January 1726. On the 22nd, the ship was ready to depart and reached the Downs on 5 April 1726, after seventy-four days at sea (see Figure 2).

In the total 1,101 days of sailing from the Downs to Bombay and back—571 actual sailing days—the ship made thirty-three different stops (see Chart 1).

Thus detailed, the *Compton*'s route highlights the density of transits in the inter-Asian phase and the dominant role of navigation along the coast or through gulfs and straits compared to the long transoceanic journeys. The GSR plotting also provides a visual appreciation of the importance of these stages of the East Indiamen's voyage over the transoceanic crossings, which were certainly more impressive from the perspective of the history of navigation (see Figure 3).

The twofold event of the fulfilment of the ship's cargo before leaving India confirms the need for each of the sixteen voyages that left London in that year to optimise not only time and distances but above all commercial transactions between India and Europe, and between the local destinations (see Chart 2).

Analysed in this way, the *Compton*'s experience shows that the stops and outcomes of each voyage depended as much on "Orders of [Our said] President & Council for [your] further Proceedings,"[41] issued from above by the EIC, as on contingent, locally managed constraints. For this reason, closely analysing the logbook of the *Compton* and those of other EIC voyages, as GSR does, allows us to understand the patterns and peculiarities of transoceanic and inter-Asian European commercial shipping through the complex developments and articulations of individual routes that are similar to each other, but which all together display the real dynamics of this global phenomenon.

[40] These data are based on the analysis of daily logbook entries conducted by the author of this article.
[41] IOR, BL, EIC, General Correspondence 1602–1859 / Letter Book 18, 1721–1723, IOR/E/3/101, in AMD, fol. 551.

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The Composite Culture of Navigation: Applying Science to the Unpredictability of Experience

If we consider the *Compton* as a maritime instrument, we understand that she needed to be managed and secured "against both natural and human forces"[42] that agitated the seas on a daily basis.

In this sense, the "know-how" on board the East Indiamen meant first and foremost the ability to "read" the surrounding space as quickly and accurately as possible, recognising the meteorological and natural, but also the artificial signs of the human presence.

Captain Mawson's entries are an interesting example of this ability to "read" the space and the maritime code "spoken" by ships encountered at sea, the knowledge of which was as fundamental as that of anchorages or magnetic variations.

Seen in this light, Mawson's logbook is a kind of record of the populousness of the oceans, which recasts the idea of a confrontation with an unknown vastness associated with transoceanic navigation in the modern age. In fact, we noted thirty-eight sightings of vessels and small fleets during the voyage: seven sightings on the outward voyage (six vessels and a small Dutch fleet); fifteen on the inter-Asian voyage (about forty-seven vessels, which included EIC vessels and country ships—Dutch, Portuguese, French, Bengali, Armenian, and "Moors" vessels, mainly small flotillas of "Grabs" and "Gallyvats"). On the homeward voyage, sixteen sightings were noted for a total of twenty-two vessels whose nationality was very often not identified due to the excessive distance or the absence of "Colours" displayed by the ships.

The *Compton* thus gives us an image of an anthropised oceanic landscape marked by the frequent presence of the ship-object, "an instrument that [. . .] leaves behind a real trace of its interaction with the medium it passes through."[43] The logbook also allows us to observe the onboard discipline and practices in action that determine the operational efficiency of the ship as she moves around the globe: geography for determining position, hydrography for choosing anchorages, natural history for finding water, food, and wood, and ethnography for identifying friendly populations.[44]

In the following pages, we will reconstruct this dynamic through the analysis of some expressions used by Mawson that paradigmatically describe the hybrid character of the theory and practice of the science of navigation, made up of nautical instruments and maps, the intuition and expertise of officers, and the information shared with other captains or local pilots. This hybridisation seems to develop a careful and conscious observation of the surrounding space, where there was a constant comparison between what Mawson perceived with his "wandering eyes"[45] and the projections and expectations shared by the composite cultural community of transoceanic navigators.

The Power of Observation: Sailing and Charting the Surrounding Space

Logbooks offer historians a valuable window into the distinct ways that experts of all levels conceptualised and documented the world around them. However, they are even more significant as a cautionary reminder of the difficulty of enforcing compliance—either behavioural or epistemic.[46]

[42] Ogborn, "Writing Travels," 161.
[43] Sorrenson, "The Ship as Scientific Instrument," 228.
[44] Ibid.
[45] Daniela Bleichmar, "The Geography of Observation: Distance and Visibility in Eighteenth-Century Botanical Travel," in Daston and Lunbeck, *Histories of Scientific Observation,* 373–95, 377.
[46] Schotte, "Expert Records," 307.

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Captain Mawson's logbook fits perfectly into this analysis. It provides much more than just cold nautical data: it also offers reflections, hypertextual references that prove useful not only for understanding the *Compton*'s voyage, but also for visualising the "geography of modern globalisation"[47] in which it took place.

This epistemological potential emerges significantly from one of the fundamental practices of navigation: observation, understood both as the application of theoretical assumptions to the understanding of reality and as the nautical skill of "keeping a good look out." This presupposes a visual relationship with the open sea as a material space aimed at producing transdisciplinary knowledge for the economic-political assertion of the EIC on a global scale.

During the *Compton*'s voyage, there were many occasions in which the crew was "employed" in observing the sky and astral phenomena in order to determine geographical coordinates. More often and for even more specific and suggestive reasons, however, the crew were told to "keep a good look out" for signals from the animal, mineral, and plant worlds through which to interpret space and better locate the ship in that space, as well as in its cartographic projection.[48]

Expressions such as "observ'd," "by Observation," "no observation" were frequent in this as in many of the EIC logbooks, defining and emphasising the epistemological perspective that permeated the scientific disciplines as they were formed in the modern age.[49] For the sciences involved in maritime practice, as with those of botany and medicine, recordkeeping was imperative in order to keep track of a specific case or a specific voyage in order to standardise methods and practices within a consolidated knowledge, here transoceanic navigation.[50] In this sense, the logbook is part of that set of recorded "observations" that acquire their own dignity as an "epistemic genre" in which specific empirical knowledge is condensed.[51]

It is, however, "keeping a good look out" that is the textual refrain describing observation at sea in Mawson's logbook. On a linguistic level, with its combination of the verb "to keep" and the adjective "good," this expression conveys the continuity, persistence, and habit of the action performed by the crew, and the intrinsic qualitative value of that action, thus distinguishing it from instrumental observation, a mere technical action. "Look-out," as defined by *The Sailor's Word-Book,* is:

> watchful attention; there is always a look-out kept from the forecastle, foretopsail-yard, or above, to watch for any dangerous object laying near a ship's track, for any strange sail having in sight, &c.; the officer of the watch accordingly calls frequently from the quarter-deck to the masthead-man appointed for this service, "Look out afore there."[52]

It was not enough to just look around: it was necessary to keep a watchful eye out for signs that verified a calculated position, avoided expected obstacles, or revealed new and different landmarks to be marked on maps.

On an anthropological level, this expression "frames," for a contemporary reader, the involvement required of the community on board to safeguard the voyage. While the

[47] Ogborn, "Writing Travels," 155.

[48] For a further perspective on this subject, see Clive Wilkinson's contribution in this special issue.

[49] Lorraine Daston, "The Empire of Observarion, 1600-1800," in Daston and Lunbeck, *Histories of Observation*, 81-113.

[50] McAleer, "The East India Company Records."

[51] Gianna Pomata, "Observation Rising: Birth of an Epistemic Genre, 1500–1650," in Daston and Lunbeck, *Histories of Scientific Observation,* 45–80, 47.

[52] "Look-out," Smith and Belcher, *The Sailor's Word-Book,* 455.

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calculation of astronomical distances directly involved the officers, who were required to be certified for these specific skills,[53] "ecological" observation was the prerogative of the entire crew and its recording in the logbooks reveals the dynamic relationship between the various figures on watch on the bow, on the spars, and on the quarterdeck. They shared and at the same time contributed to building that "maritime culture" described by Leitão as "a peculiar blend of practical skills coupled with rough theoretical notions; [. . .] a very close proximity to technological artefact; a predisposition to accept the novel in nature."[54] Nevertheless, this observational approach shared by the ship's community did not ignore the onboard hierarchical chain. The final word on the reliability of a sighting and, therefore, on the strategy to be followed, lay exclusively with the commanding officers, often the same ones who decided whether and how to record what was observed on the official charts and in the logbook.

The routine of careful observation, however, induced in the entire crew a perceptive and cognitive redefinition and a specific disposition to relate to the natural phenomena they were exposed to on a daily basis. This happened, for example, on 5 May 1723 when the *Compton* was "approaching near the Latitude of Cape-de-Verde Islands" and the crew "kept a good look out" to sight land and instead detected "a few flying fish about the Ship," "several Albecores [albacores] and Dolphins and a few birds" [fol. 12v] from which they deduced the island's proximity.

The lack of this type of naturalistic sign also helped to better locate the ship. Between 7 and 9 June 1723, while the *Compton* was plotting her usual southwesterly curve in the Atlantic Ocean before turning east and heading towards the Cape, the captain recorded: "I kept a very good look out for the Islands Trinidado and Martinvas being in their Latitude [. . .] but have no marks of them as Men of War birds and Booby's which those Islands are plentyfully inhabited with" [fol. 16v].

These two examples also show how the practice and habit of observation constructed a specific "ecological anthropology," a peculiar relationship between man and the surrounding space, of which the logbooks are the practical guides.

Mawson also gives us a glimpse of the tools, objects, and papers on the captain's desk engaged in recording what he observed. In the 26 May 1724 entry, the ship was off "Cape Coliatta" [Qalhat, Oman] at the entrance to the Persian Gulf, sailing towards Bandar Abbas, and the captain wrote, "I have not put down the bearings of the Land seeing nothing Remarkable the large Draught in the East India Pilot is very false but in his Direction you will find his Error" [fol. 40r].

The situation was the same in the 1 June 1724 entry: the ship was still sailing in the Gulf towards Bandar Abbas and was "to the Eastward of Cape Jasques [Bandar e-Jask, Iran] tho our Course Steer'd from Muscat twill not allow it were the Charts in the India Pilot true" [fol. 40v].

These entries refer to a collection of maps and sailing directions compiled by John Thornton (1641–1708), the first official cartographer of the EIC.[55] Between the eighteenth and nineteenth centuries, those charts, revised and supplemented "by experienced Officers of the East India Company," constituted the English collection used by the EIC and known as *The Country Trade East India Pilot.* The subsequent editions of this tool also included the charts of the French *Neptune Oriental,* first published in 1745 by

[53] Miller, "Longitude Networks," 232.

[54] Henrique Leitão, "All Aboard!: Science and Ship Culture in Sixteenth-Century Ocean Voyages," in "Revisiting Early Modern Iberian Science, from the Fifteenth to the Seventeenth Centuries," special issue, *Early Science and Medicine* 2/3:21 (2016), 113–82, 115.

[55] The original collection of charts drawn by Thornton was known as *The English Pilot: The Third Book Describing the Sea Coast* [. . .] *in the Oriental Navigation* (London, 1703). Monique de la Roncière, "Manuscript Charts by John Thornton, Hydrographer of the East India Company (1669–1701)," *Imago Mundi* 19 (1965), 46–50.

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Jean-Baptiste d'Après de Mannevillette, hydrographer and captain of the French East India Company (Compagnie française pour le commerce des Indes orientales).[56] The refinement of these navigational tools by the different European powers was not only for the purposes of economic and commercial success, but also for the cartographic and political appropriation of oceans and lands, through the tracing of the routes travelled by ships and the lands identified and named on maps in the language of the company involved.

EIC captains such as Mawson carried the charts published in these collections on board and consulted them as they proceeded on their voyages. At the same time, they were also required—as revealed in the logbook of the *Compton* and other East Indiamen[57]—to report any errors, so that the cartographers could correct and improve them for subsequent editions.

In the quoted passages, Mawson's opinion on the indications on the charts given to each *East India Pilot* emerges clearly. The data did not seem to entirely tally with the experience he and his crew were having during navigation.

If we also consider observation on board the EIC ships as simply an exploratory exercise and navigation as a science of the globe, the *Compton* becomes a paradigmatic example. On 18 October 1725 she was crossing the Indian Ocean in the direction of the Cape and was at a latitude of 25°26'S and a longitude of approximately 57°17'E. Mawson then wrote that he "Alter'd Course to WSW to get to the Southward of S^{t}: John Delisboa" [fol. 71v], and the following day he recorded the ship's new position as 26°56'S and 55°27'E, from which they "kept a good look out for the Island S^{t}: John Delisboa" [fol. 72v].

For almost four centuries, in the stretch of water between the southern extremity of Madagascar in the north, the islands of Saint Paul and Amsterdam in the south, and the island of Rodrigues in the east, charts, reports, and logbooks of European navigators indicated—at latitudes between 26° and 28°S, and longitudes between 52° and 56°E—two islands at a short distance from each other: John Delisboa and Dos Romeiros.[58] Currently recognised as objects of an extensive and populated "phantom atlas,"[59] for practitioners

[56] *The Country Trade East-India Pilot, for the navigation of the East-Indies and Oriental Seas, within the limits of the East-India Company* [. . .] *chiefly composed from actual surveys and draughts communicated by experienced Officers of the East-India Company, and from the Neptune Oriental by M. D'Apres de Mannevillette, etc.* (London: Robert Laurie and James Whittle, 1799).

[57] For example, the reference to "Platt" and "Chart of Thorntons" in Wells, "*Bedford* : Journal" [fol. 33r].

[58] There were many names for these islands depending on the language of the person writing about or drawing them, as well as the accuracy of the transcriptions. The island of João de Lisboa, named after a Portuguese navigator who lived between the fifteenth and sixteenth centuries, thus becomes: Y[nsula] de Iuan de Lisbona in Gerard de Jode, *Universi Orbis Seu Terreni Globi in Plano Effigies* (Antwerp, 1578), in *Barry Lawrence Ruderman Map Collection,* https://exhibits.stanford.edu/ruderman/catalog/vn270mf3052); Insula de Juan de Lixboa in Jan Huygen van Linschoten and Bernard Paludanus, *Delineario Orarum maritimarum etc.* (Amsterdam, 1595), in *David Rumsey Map Collection*, https://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~294915~90065748:Indian-Ocean—Delineatio-Orarum-mar?sort=Pub_List_No_InitialSort%2CPub_Date%2CPub_List_No%2CSeries_No&qvq=q:bernard%20paludanus;sort:Pub_List_No_InitialSort%2CPub_Date%2CPub_List_No%2CSeries_No;lc:RUMSEY~8~1&mi=14&trs=181; St. Iuan de Lisboa in John Thornton, *A Plat of the Indian Sea from Cabo Bonea Esperanca to Iapan* (London, 17??), in *Gallica*, https://gallica.bnf.fr/ark:/12148/btv1b53105191r/f1.item.zoom [accessed 6 May 2022]; and I[sola] S[an] Juãn de Lisboa in Enrico Hillyer Giglioli, *Viaggio intorno al globo della R. Piro-corvetta Italiana Magenta negli anni 1865-66-67-68. [...] Relazione descrittiva e scientifica* (Milano, 1874).

[59] Edward Brooke-Hitching, *The Phantom Atlas: The Greatest Myths, Lies and Blunders on Maps* (London: Simon and Schuster, 2016). Research on the island of Juan de Lisboa and its twin/projection Dos Romeiros has identified the map of the 1868 circumnavigation of the globe by the Italian steamship *Magenta* as the most extreme temporal limit of their cartographic presence. It seems that the date of the first representation of the island on an atlas can be placed between 1550 and 1560, on the maps of a posthumous edition of João de Lisboa's *Livro de Marinharia* (ca.1514), in *Arquivo Nacional da Torre do Tombo,* fol. 91, https://digitarq.arquivos.pt/viewer?id=4162625 [accessed 6 May 2022].

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and hydrographers of the Indian Ocean these islands no doubt represented what Conrad Malte-Brun calls "a true haunting-spirit" that feeds on theories and narratives.[60] A common factor is that these sightings occurred in unfavourable weather conditions or when visibility was reduced due to extensive clouds low on the horizon.[61] This was also the case with the *Compton* as she tried to approach the coordinates of St. John Delisboa Island on a windy afternoon, "with a Very Irregular Sea" [fol. 71v] and clouds that appeared increasingly laden with rain until they resulted in "very dark Weather" [fol. 72r]. We can imagine, then, that Mawson believed that those clouds prevented the wide-open eyes of his crew from seeing unveiled before them the real land that the thin line of ink promised them from the flat surface of the chart.

However, it was an island in the Atlantic that gave the *Compton* one last ghostly appearance on the homeward voyage: Ascension Island.

Discovering the Novel in Nature: Ascension, an Island for Turtles and Castaways

Having circumnavigated the eastern side of Ascension Island, a wild island scarcely visited by EIC ships,[62] on 19 January 1726 the *Compton* dropped anchor "in the Bay on the NW Side" [fol. 80v] for a three-day stopover. Those who chose this stopover usually did so to repair damage or to restock before the last two months or so needed to reach the first English port.

In the case of the *Compton,* both these needs occurred. Regarding the first:

> Sunday the 16th. [. . .] to give the Ship a heal to better secure the Seam under the Wale where the Carpenter riped off the Cant the Ship makeing much Water. [fol. 80r]
>
> Tuesday the 18th. [. . .] stay till I Lay my Ship on the Careen to stop a Leak. [fol. 80v]

Regarding the second:

Regarding the second:

> Wednesday the 19th. [. . .] put some hands a Shore in the Evening to turn Turtle. [fol. 80v]

On 20 January, they "turned ten Tortoises which were devided between the James and Mary and our selves" [fol. 80v]; while on the 22nd, when the ship was about to set sail, they "sent a Shore the Boat to fetch off the People that were a Shore to turn Tortoises but they brought none a bord" [fol. 81r].

The expression "to turn turtles/tortoises," used here as in other logbooks without any further details, presupposes the familiarity that a coeval reader must have had with this activity and its practice at Ascension. This expression, together with "to send hands ashore," would thus suffice to denote the operation that, in fact, justified this unscheduled stop to the EIC.

Contemporary readers, on the other hand, need to know that this "Useless Island"[63] has been known in literature and in the archival sources of European trading companies since the seventeenth century for its massive colony of tortoises, particularly between

[60] Conrad Malte-Brun, *A System of Universal Geography, or a Description of All the Parts of the World, on a New Plan, etc.*, 3 vols. (Boston: Samuel Walker, 1834), 2: 145–7, 146.

[61] Brooke-Hitching, *The Phantom Atlas.*

[62] If we look at the sample data of the EIC voyages processed in GSR (76), we find that of 42 conducted between 1624 and 1843, only four stopped at this island, and all exclusively on the homeward voyage.

[63] Duff Hart-Davis, *Ascension: The Story of a South Atlantic Island* (London: Constable, 1972), 6.

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December and June, between spawning and hatching. However, the method of capture reported by Mawson suggests more specific aspects of this practice.

> The turtles were easy targets whilst onshore; after they'd laid their eggs they were turned on their backs [. . .] which rendered them immobile until later collected. So turtles could be kept alive until required for longer.[64]

As with other fresh products in a crew's diet, sea turtle meat was recognised for its nutritional value[65] in the prevention and treatment of widespread and often fatal diseases such as scurvy, dysentery, worms, and the various and often unspecified contagious fevers.[66]

However, keeping meat fresh on board was almost impossible as the tissues, exposed to the elements, developed organisms that deteriorated them. The only way, therefore, was to take live animals on board and slaughter them as needed. The practice of turning the turtle upside down thus proved to be doubly functional, because in addition to preserving the meat, it "renders him quite helpless"[67] and more manageable on board.

The need to preserve the health of the crew after a long journey from the East Indies to England, and the economic interest in the booty represented by the possible surplus of surviving turtles on the return voyage—their meat was, in fact, very much in demand at the tables of the aristocracy and wealthy of London—explain the familiarity of the EIC ships with this "verry high Cliff Land."[68]

However, for the *Compton,* the island was not solely a herald of this. In the entry of 20 January 1726, Mawson added:

> We found a Tent a Shore in the Bay and Beding in it a Tea Kettle and Tea Pipes a Hatchet and Nails and several other things with some Writeings Papers by which we found the Dutch Fleet the fifth of May last their Stile had put a Shore one of their Men for some Crime he had Commited [*sic*] on board his Writeing continue to November but we have not Dutch enough amongst us to read them we made search in several places to find the Man or his Body but could not and we doe beleive he is not gon off the Island because his Paper and a great many Necessary[s] are left in the Tent. [fol. 80v]

The stopover on the island lasted one more day before the *Compton* and the *James and Mary* set sail again. Mawson did not make any further reference to the story of the Dutchman in

[64] Polly Rose Burns, "The Old Man and the Sea: Reconstructing the History of Ocean Life around Ascension Island" (PhD diss., University of York, 2018), 38.

[65] Richard Bradley, *A Course of Lectures, Upon the Materia Medica, Antient and Modern* (London: 1730), 161.

[66] On the policy of sanitary measures adopted on EIC vessels, see Cheryl Fury, "Early English East India Company Healthcare (c. 1600–1625)," AMD 2020; Christopher J. Duffin, "John Woodall (1570–1643) of the East India Company," *Topics in the History of Medicine* 1 (2021), 6–24; Mark Harrison, *Medicine in an Age of Commerce and Empire: Britain and Its Tropical Colonies 1660–1830* (New York: Oxford University Press, 2010); on medical theories about the treatment of scurvy and the breakthrough represented by the use of lemon juice, see Michael Bartholomew, "James Lind and Scurvy: A Revaluation," *Journal for Maritime Research* 4:1 (2002), 1–14; Stephen R. Bown, *Scurvy: How a Surgeon, a Mariner, and a Gentleman Solved the Greatest Medical Mystery of the Age of Sail* (London: Penguin, 2004); Gordon C. Cook, "Scurvy in the British Mercantile Marine in the 19th Century, and the Contribution of the Seamen's Hospital Society," *Postgrad Med J* 80 (2004), 224–29.

[67] "To turn turtle," Smith and Belcher, *The Sailor's Word-Book,* 702–3.

[68] Abraham Munott, *Journall in the Sampson to East Indies,* BL: IOR/L/MAR/B/419E, in QDL, 3 June 1687 [fol. 30r], https://www.qdl.qa/en/archive/81055/vdc_100104078151.0x000043 [accessed 6 May 2022].

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the logbook, but, according to the literature,[69] that single stopover proved to be the perfect incipit of a story within a story: both a vehicle for a successful literary *topos* and the triggering event for a publishing affair with a story of its own.

Within a few years, in fact, the story would turn into a pamphlet published in London in three different editions, with different titles and versions of the story of the castaway's diary and of his actual identity.[70]

Only a few years earlier, in 1719, Daniel Defoe had published *Robinson Crusoe,* a novel marking the birth of the genre of adventure fiction, built around the figure of a castaway on a deserted, wild Pacific island. While the events fictionalised by Defoe, based on the real experience of the Scottish sailor Alexander Selkirk, are a well-known subject, more about the Dutch sailor on Ascension has only come to light in the 2000s, freeing the story at least in part from the fictitious variants proposed in the different pamphlets.

He was Leendert Hasenbosch from The Hague, who until 17 April 1725 was bookkeeper on board the VOC *Prattenburg* before being sentenced to exile on Ascension in May 1725, two days after landing on the island.[71] The crime he was accused of was that of sodomy, as implied by the diary reported more or less in its entirety in the English versions and which referred to the "most heinous Crime of making use of my Fellow-Creature to satisfy my Lust, whom the Almighty Creator had ordain'd another Sex for."[72]

The similarities and differences between the original *Robinson Crusoe* and the different versions of the "Dutch Robinson Crusoe" already jump out at the reading of the titles on the front pages. There are also several inconsistencies between the pamphlets and some of the details of the discovery as recorded by Mawson. The captain never mentioned that he had decided to take the castaway's diary aboard the *Compton,* but he did claim that he had not traced either the living person or his corpse. Yet *The Just Vengeance of Heaven* declared that the diary was found by Captain Mawson next to the castaway's skeleton—a skeleton that appears leaning against a rock on the cover page of the 1730 edition. If we then compare the logbook with *Sodomy Punish'd* of 1726, we find that the entire episode was linked to the *James and Mary* crew. *An Authentic Relation* then incorrectly gave the

[69] Hart-Davis, *Ascension*; Michael Koolbergen, *Een Hollandse Robinson Crusoë: dagboek van de derbannen VOC-dienaar Leendert Hasenbosch op het onbewoonde eiland Ascension A. D. 1725* [A Dutch Robinson Crusoe. The diary of Leendert Hasenbosch, an employee of the VOC who was banished to the desert island of Ascension, AD 1725] (Leiden: Manken Kasander & Wigman, 2002); Evan Davis, "'A Full and Exact Relation': Sodomy, Authenticity, and Publication in the Narrative of the Marooned Dutchman," *The Eighteenth Century* 44:2–3 (2003), 257–78; Daniel Defoe, *Robinson Crusoe,* ed. Evan Davis (Peterborough: Broadview Editions, 2010); Alex Ritsema, *A Dutch Castaway on Ascension Island in 1725* (Deventer: 2010).

[70] *Sodomy Punish'd: Being A True and Exact Relation Of what Befel to one Leondert Hussenlosch, A Dutch Man, Who by Command on the Dutch Fleet, was put on Shore on the Desolate Island of Ascention. Faithfully Translated from a Journal wrote by himself, during his Abode there; which was found last January, 1725–6 among other of his Things, by Persons belonging to an English Ship, Nam'd the James and Mary. Published from the Original Copy* (London: John Loveday, 1726); *An Authentic Relation of the Many Hardship and Sufferings of a Dutch Sailor, Who was put on Shore on the uninhabited Isle of* Ascension, *by Order of the Commadore of a Squadron of Dutch Ships. With a Remarkable Account of his Converse with Apparitions and Evil Spirits, during his Residence on the Island. And a particular Diary of his Transactions from the Fifth of May to the Fourteenth of October, on which Day he perished in a miserable Condition. Taken from the Original Journal found in his Tent by some Sailors, who landed from on Board the* Compton, *Captain Morson* [*sic*] *Commander, in January, 1725–6* (London & Dublin: George Faulkner, 1728); *The Just Vengeance of Heaven Exemplify'd in a Journal Lately Found by Captain Mawson* (*Commander of the Ship* Compton) *on the Island of Ascension. As he was Homeward-bound from India. In which is a full and exact Relation of the Author's being set on Shore there* (*by Order of the Commodore and Captains of the Dutch Fleet*) *for a most Enormous Crime he had been guilty of, and the extreme and unparallel'd Hardship, Sufferings, and Misery he endur'd, from the Time of his being left there, to that of his Death. All Wrote with his own Hand, and found lying near the Skeleton* (London: J. Jenkins, 1730).

[71] This specific reconstruction of the event and the identification of the castaway, based on VOC and EIC sources, is thanks to Michael Koolbergen (Koolbergen, *Een Hollandse Robinson Crusoë*).

[72] *An Authentic Relation,* 20 June 1725, 11.

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name of the captain of the *Compton* as Morson, a detail that denotes at least a certain carelessness in verifying the information published in that edition.

Without attempting to reconstruct and analyse in detail coeval literary production or the subsequent historiographical debate—not least the one about the management of sexuality and "sodomy" on board ships by the different European companies—two cultural-historical aspects of this episode are nevertheless worth dwelling on.

Firstly, whether we consider the finding recorded by Mawson in the diary to be authentic or an invention, what emerges from these few lines is the familiarity of the seafaring community with the fictional aura that had developed around the theme of the shipwreck, nourished by facts and myths over centuries of navigational history and practice. For this it is sufficient to observe the scene of the discovery as described by Mawson, which seems to adhere "iconographically" to the typical imagery of the robinsonade. In the rugged landscape of the last wild Atlantic island, an isolated tent is found; the abandoned pieces of a tea service signal human presence and at the same time are emblematic of the (European) civilisation that endures despite the "primitive" context. Then there are an axe and a few nails, tools of the material culture of the *homo faber*; finally, "some Writeings Papers," withstand the inclemency of a hostile nature: the written word, the ultimate tool of modern man, without which that episode could not have become history. However, there is no "Dutch enough amongst us to read them [the papers]." These words by Mawson suggest a second cultural aspect related to the EIC community: the multilingualism practised at different levels of employment.

It is well established that competence in trade languages—both European and local—became a necessary qualification for agents and merchants of the EIC over time.[73] By contrast, it is more difficult to ascertain the language skills of the sailors, given the widespread illiteracy and their disadvantaged backgrounds. Another complication is the rarity and different status of any sources produced by them compared to the volume of official papers kept in the EIC archives.

Thanks to the ship's logs, however, we know that sailors also went ashore in the various ports to carry out their activities, more or less legally, in these European and especially Asian melting pots of multiculturalism.[74] It is possible to assume, therefore, that thanks to the experience accumulated over time, they learned the rudiments of the languages of the different companies and used the nautical and mercantile jargon shared by the practitioners, which was made up of terms from European languages distorted by usage and words from local dialects to name native objects or practices, which changed from region to region, also thanks to the intervention of the mediators.[75]

From Mawson's words, we can imagine that among the sailors and officers on board the *Compton*—who all seem English based on their names, although this does not guarantee their origins—there were some who could read the castaway's written language, but not enough to translate the entire diary. This linguistic uncertainty could also be one of the factors behind the subsequent different translations of the diary in the published pamphlets.

Conclusions: A Paradigmatic Account?

This essay grew out of the many unexpected findings arising from the analysis of the logbook of William Mawson, captain of the *Compton,* an EIC ship travelling between England

[73] Kaislaniemi, "The Linguistic World of the Early English East India Company," 62.

[74] It was not uncommon to see cases of crew members who, having gone ashore, "run away from the Ship" [fol. 35r], as happened with the *Compton* doctor, Robert Douglas, on 12 April 1724 in Bombay.

[75] Kaislaniemi, "The Linguistic World of the Early English East India Company," 62.

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and the East Indies between 1723 and 1726. Discussions conducted based on this source helped shape GSR's research methodology regarding the logbooks and the experiences of dozens of crews on the Atlantic and Indian oceans, and along the coasts of Europe, Africa, and Asia.

As the title of this section perhaps suggests, this article proposes a close reading of the *Compton*'s logbook with two main purposes: firstly, to reveal in detail the peculiarities and the unusual and unexpected events of this specific voyage; secondly, to interpret facts and data from the point of view of its formerly "mute" protagonists, identifying some paradigmatic episodes in the history of transoceanic British commercial navigation, particularly the responses to emergencies represented by unforeseen events, and above all the change of plans for the return to the motherland, with a prolonged stay of six months in regions that were not always hospitable and which even risked their lives.

Secondly, we highlight the seafaring culture's ability to manage the unexpected, analysing the practice of not only instrumental but also ecological observation of the environment.

Furthermore, we have mentioned aspects that were impossible to fully explore, but which nonetheless demonstrate the enormous informative potential of a source that could also be tapped for a history of maritime violence, sexuality policies on board, or cultural interconnections between Europeans and locals, or between western travellers and the ocean environment.

These aspects emerged and we were able to discuss them within the different theoretical and historiographical frames of reference thanks to the agency of the source at the centre of our analysis, Captain William Mawson, author and narrator of the account of the *Compton*'s voyage. The overall layout, the language choices, the hypertextual references, and the practical and personal, occasionally contemplative, remarks with which Mawson drafted this manuscript constitute the gateway through which we can board and witness the development and practices of eighteenth-century transoceanic commercial navigation.

We have tried to show how, through a method of cultural-historical investigation, the *Compton*'s becomes more than simply a journey of commercial routine by the EIC. Its logbook makes it possible to observe the actual experience of European transoceanic navigation through a source that proves, if properly interrogated, to have an enormous potential, as the articles in this special issue of *Itinerario* demonstrate from different angles.

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ARTICLE

Overseas Trade and War. Reconstructing a Late Eighteenth-Century East India Company Voyage to Asia Between Routine and Unpredictability

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Abstract

The role played by the East India Company in European expansion in early modern Asia is of such importance that it has generated a large body of scholarly literature. However, the logbooks of the East Indiamen, compiled by their captains, are largely overlooked as a primary source for the history of navigation, despite the wealth of information such firsthand, "from below" documents could provide about those voyages. As part of the Global Sea Routes (GSR) project, this essay analyses the voyage of the *Nassau* (1781–85) along four main themes: the peculiarities of navigation during the Age of Sail, when the duration of a voyage was difficult to predict and subject to a range of possible accidents; the concrete reality of life on board, oscillating between the various activities of the crew and the episodes of desertion and insubordination that broke its daily routine; her military deployment, as the *Nassau* was directly involved in operations related to the Second Anglo-Mysore War; and, finally, her commercial activities, from the port cities of India to the seas of China.

Keywords: Global history; history of navigation; East India Company; globalization; digital humanities

The *Nassau* and Her Voyage in Trade and War (1781–85)

This essay, which focuses on the voyage of the East Indiaman *Nassau* from England to India and China in the late eighteenth century, is informed by an innovative methodology developed within the Global Sea Routes (GSR) project. This method of analysis uses a source—the logbooks—that is relatively under-exploited given the potential it offers, and applies it in an original way to construct a geodatabase of European ships of various nationalities engaged in ocean trade routes between the sixteenth and nineteenth centuries. As explained in more detail in the introduction to this special issue of *Itinerario,* the logbooks are analysed in order to obtain—through the processing of nautical data, such as the coordinates calculated and transcribed on a daily basis by the captains—the georeferencing of the routes actually followed, and to display them interactively through data visualisation tools. At the same time, the GSR project aims to extract a variety of "qualitative" data from the logbooks that can be used to develop narrative reconstructions.

The first phase of development of the GSR project was largely dedicated to the expeditions of the East India Company (henceforth EIC) fleet between the seventeenth and early nineteenth century. Among these, the voyage of the East Indiaman *Nassau,* which took place in 1781–85, is marked by a series of events that make it worthy of particular attention.[1] The *Nassau,* launched on 7 November 1771, was a three-decker sailing ship with a capacity of 723 tons that made four voyages, the last of which is the subject of this essay.[2] She was built in the vast shipyards owned by the Perry family in Blackwall, one of the main centres of British shipbuilding from the early seventeenth century.[3] The first owner of the *Nassau* was Sir Charles Raymond (1713–88). Like some of his colleagues, he had risen to the position of managing owner after a short but highly successful career at sea as a captain for the EIC.[4] By the time our voyage took place, control had passed to another influential figure, Robert Williams (1735–1814), a shipbuilder, banker, and MP who owned no fewer than fourteen EIC ships, including the *Hindostan,* used for Lord Macartney's famous embassy to China in 1792–93.[5]

The voyage of the *Nassau* began on 7 February 1782, after an initial attempt to depart the previous year had been foiled by an accident. The outbound voyage ended with her arrival in Bombay on 6 September 1782. Over the next two and a half years, the *Nassau* performed various tasks on behalf of both the EIC and the Royal Army in a theatre of operations ranging from Africa to China. The *Nassau* departed from China on 14 February 1785, passed through the Sunda Strait and the Cape of Good Hope, and, after a stopover at Saint Helena, she arrived at the Downs on 20 August of the same year. The voyage lasted a total of 1,535 days (including the 243 that elapsed between the first attempt and effective departure), of which 702 days were spent actually sailing.

At first glance the *Nassau*'s voyage follows the tripartite pattern typical of every EIC voyage: outbound route to the main overseas destination; commercial navigation along the inter-Asian routes; inbound route to England. This pattern, as the *Nassau*'s voyage will show us, was frequently affected by variations and contingencies; but it nevertheless reflects the structure on which shipping practices were based. The *Nassau*'s voyage is distinguished by the variety of events that occurred at sea and in the ports of call, by the more extensive routes and longer overall duration,[6] and by the unusual problems faced and changes of schedule. As we shall see, the commercial nature of the voyage had to bow in part to military demands. The Second Anglo-Mysore War (1780–84) was underway, so several EIC ships participated in military operations either directly or by transporting troops, or, like the *Nassau,* by doing both. The commercial activity of this ship, however, was no less important. While most of the earlier expeditions had been limited to ports in India such as Bombay, Tellicherry (today Thalassery), Madras, or Kedgeree in Bengal, and

[1] Filippo Chiocchetti, "Nassau (3) 09-06-1781 21-08-1785," in *Global Sea Routes* (GSR), Guido Abbattista, principal investigator, 2021, https://globalsearoutes.net/geodatabase/ (CC BY-NC-ND 4.0).

[2] Anthony Farrington, *Catalogue of East India Company Ships' Journals and Logs: 1600–1834* (London: The British Library, 1999), 468; Rowan Hackman, *Ships of the East India Company* (Gravesend: World Ship Society, 2001), 161.

[3] See "Blackwall Yard: Development, to c.1819," in *Survey of London: Volumes 43 and 44, Poplar, Blackwall and Isle of Dogs,* ed. Hermione Hobhouse (London: London County Council, 1994), 553–65, British History Online, http://www.british-history.ac.uk/survey-london/vols43-4/pp553-565.

[4] See Georgina Green, *Sir Charles Raymond of Valentines and the East India Company* (Hainault: Hainault Press, 2015).

[5] See Lawrence Taylor, "WILLIAMS, Robert II (1735–1814), of Bridehead, nr. Dorchester, Dorset and Moor Park, Herts," in *History of Parliament Online,* https://www.historyofparliamentonline.org/volume/1790-1820/member/williams-robert-ii-1735-1814. About the *Hindostan,* see Giulia Iannuzzi, "Hindostan 01-10-1792 07-09-1794," in GSR, 2021, https://globalsearoutes.net/geodatabase/.

[6] The duration of outbound and homeward journeys of three East Indiamen from the same period in the GSR geodatabase—*Europa* (1782–85), *Lord Camden* (1784–86), and *Winterton* (1788–90)—was 218 and 170, 125 and 163, and 129 and 155 days respectively, compared to 212 and 189 days for the *Nassau.*

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sometimes in Persian Gulf ports such as Gombroon and Basra, or in Red Sea ports such as Mocha or Jeddah, the *Nassau* was one of a growing number of EIC ships that, once they reached India, extended their voyages as far as China (Whampoa). The first EIC voyage bound for China was in 1682; however, it was not until after the mid-eighteenth century that the number of annual voyages exceeded ten, reaching peaks of more than thirty in 1786, 1814, and 1826, due to the huge domestic demand for Chinese tea.[7]

As on the *Nassau*'s three previous voyages, the command had been assigned to Arthur Gore, one of the most seasoned captains in the service of the EIC, with over twenty years' experience at sea. Having embarked as fourth mate on the *Streatham* in 1757, Gore gained his first command on the *Neptune* in 1768. He made his next four voyages as captain of the *Nassau.* This was the last voyage for both the captain and the vessel, which was broken up on its return home.[8] The chief mate was 25-year-old John Pascall Larkins. A comparison of the logbooks compiled by each of the two officers shows how Larkins's text follows the commander's rather closely, both in the calculations and in the textual comments.[9] The overabundance of sources therefore does not reveal an additional voice, nor does it provide us with a means of gaining insight into the personality of an officer, like Larkins, who would end his career in the EIC brilliantly as captain and managing owner.[10]

Both logbooks are therefore representative of this type of source, whose authors generally tend to express what they record in an aseptic tone. At the same time, they are notable for the care taken in calculating sea position, especially longitude. As is well known, the determination of longitude represented an arduous challenge until the end of the eighteenth century and beyond, due to the ineffectiveness of available measuring tools.[11] The frequent and serious mistakes made in the calculation of longitude on the *Nassau* confirm that, even in the early 1780s, the use of marine chronometers—absent on board the *Nassau*—was by no means widespread. Likewise, the need to adapt the choice of routes to the actual sailing conditions posed a constant challenge to the entire crew. For this reason, it was particularly important to scrupulously collect and interpret data, using not only the available instruments but also the so-called wetware, a term recently taken up by cognitive science and IT to be applied to "the embodied skills, abilities, judgements and goals, of sailors, officers, hydrographers and their masters," in other

[7] These figures are based on data extracted from Farrington, *Catalogue.*

[8] Anthony Farrington, *A Biographical Index of East India Company Maritime Service Officers, 1600–1834* (London: The British Library, 1999), 313.

[9] Arthur Gore, *Nassau: Journal,* British Library, India Office Records, London, IOR/L/MAR/B/544-I, in Qatar Digital Library, https://www.qdl.qa/archive/81055/vdc_100000000179.0x00005d; John Pascall Larkins, *Nassau: Journal,* British Library, India Office Records, London, IOR/L/MAR/B/544K-L, in Qatar Digital Library, https://www.qdl.qa/archive/81055/vdc_100000000179.0x00005f. While the commander's logbook is complete, that of the chief mate covers only the concluding phase of the voyage, from 4 October 1784 to 17 June 1785. The notation system we adopt in this essay gives, instead of a footnoted reference, the number of the sheet in brackets that corresponds to the quoted text, followed by the abbreviated indication for recto or verso. References are to Captain Gore's logbook, unless otherwise stated.

[10] Farrington, *Biographical Index,* 459; Farrington, *Catalogue,* 772. John Pascall Larkins (1756–1818) had been the second mate of the *Nassau* on her previous voyage, 1777–80. In 1786 he became captain of the *Warren Hastings* (a ship that had been owned by his father, William Larkins, also a captain and managing owner, and commanded by his elder brother Thomas) and in the course of time came to manage seven ships for the EIC. The role of three generations of the Larkins family in the history of the EIC is recounted in Jean Sutton, *The East India Company's Maritime Service, 1746–1834: Masters of the Eastern Seas* (Suffolk: Boydell Press, 2010).

[11] See Dava Sobel, *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time* (London: Walker & Company, 1995). For a more in-depth look at these issues, see the articles by Erica Grossi, Phillip Reid, and Clive Wilkinson in this special issue.

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words, the sum total of personal experiences and the decision-making abilities of those engaged in interoceanic navigation.[12]

The Changing Habits of Navigation

The EIC voyages were strictly seasonal: in most cases they departed between February and May, but there were also numerous departures in the second half of the year, between August and December. The *Nassau*'s logbook opens on 25 January 1781 when the ship was still in the Blackwall shipyard. The first few days were spent loading water and coal, as well as "kentledge" (pig-iron scraps) to be used as ballast; then loading the EIC goods: lead and iron. Later there were further cargoes of "bales" of unspecified content, probably provisions and materials, as can be seen from Captain Gore's annotation dated 29 July 1782: "open'd a bale of the Hon.ble Company's canvas [. . .] for the ship's use" (f. 73v).

On 13 February 1781 the *Nassau* moved to Gravesend. Supplies of "stockfish" were taken on board on 5 March, bread on 25 March and "some live stock" on 20 April. Between 8 and 24 March the ship received "some private trade." Although the logbook lacks further details about this, it does inform us about a widespread practice: the presence on board of goods other than those owned by the EIC and belonging largely to the captain and officers.[13] On 6 April, still at Gravesend, part of the EIC cargo was unloaded to make room for troops and their provisions, to be taken on board later. In the meantime, eleven "recruits," that is soldiers hired by the EIC, had also been taken on board; of these, three were discharged when the paying officer, a certain Mr. King, came on board on 14 April.[14] After requesting and obtaining written permission from the EIC Shipping Committee, the captain unloaded part of the "cordage" on 25 April in order to load additional provisions for which there had been no room.

On 5 May the *Nassau* reached Deal, in the Downs, where the crew sighted some ships of the line. Here a convoy was formed, which left on 9 May and, after two days, reached the Spithead, a stretch of sea between the Isle of Wight and Portsmouth where the Grand Fleet—the Royal Navy's main fleet—was stationed. On 26 and 30 May, inspections by two members of the EIC Court of Directors, "Mr. Moffatt" and "Mr. Darrell," took place on board the *Nassau*. James Moffat belonged to a wealthy family of bankers, merchants, and ship insurers with strong ties to the EIC,[15] while Lionel Darell, a former official of the EIC who had made a fortune in India, became an MP in 1790. On 1 June, the *Nassau* arrived in Portsmouth, where the purser, the person responsible for keeping the books and paying the wages, came on board.[16] On the same day, a company of the British Army's 78th Regiment came on board: after the lengthy preparations recorded from the very first pages of the logbook, this fact was the first in a chain of events that

[12] David Miller, "Longitude Networks on Land and Sea: The East India Company and Longitude Measurement 'in the Wild,' 1770–1840," in *Navigational Enterprises in Europe and Its Empires, 1730–1850,* eds. Richard Dunn and Rebekah Higgitt (Basingstoke: Palgrave Macmillan, 2016), 223–47, 224.

[13] For the private trade regulations in existence at the end of the eighteenth century, see Charles Hardy, Appendix, in *Register of Ships Employed in the Service of the East India Company 1700–1819 and to the End of Commercial Charter (1835)* (London: Parbury, Allen, & Co., 1799), 58–72, 116–8.

[14] See Arthur Gilbert, "Recruitment and Reform in the East India Company Army, 1760–1800," *Journal of British Studies* 15:1 (1975), 89–111. See also "The Recruitment of Private Soldiers," British Library, India Office Records, London, IOR/L/MIL/9/1–106, https://discovery.nationalarchives.gov.uk/details/r/4f3b19a5-4dca-4e41-a965-3f951af74538.

[15] See B. R. Tomlinson, "From Campsie to Kedgeree: Scottish Enterprise, Asian Trade and the Company Raj," *Modern Asian Studies* 36:4 (2002), 769–91.

[16] The captain does not specify in this note who the purser was. His name, William Dalling, together with the names of the officers and the surgeon, can be inferred from Hardy, *Register of Ships,* 91.

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would characterise the *Nassau*'s voyage in its dual role as a commercial and at the same time military expedition.

On 9 June 1781 the *Nassau* finally departed. The convoy consisted of four East Indiamen under the escort of the ship of the line *Magnanime.* Although all the EIC ships were armed, the convoy was needed for protection from both pirates and privateers. The *Nassau* was anchored at Torbay from 14 to 19 June and at "Cawson Bay" (Cawsand Bay, near Plymouth) from 22 to 23 June, before passing Lizard Point on 28 June. By 2 July she was already sailing in the open sea. On 3 July, however, weather conditions, "with a great sea which made her labour extremely," rendered the ship unfit to sail. The captain, having heard the unanimous opinion of the officers, decided "that we had better get her head the other way." He therefore decided to separate from the fleet and return to Plymouth. On 6 July, while manoeuvring to enter Plymouth harbour, the *Nassau* struck a rock known as Winter Rock, west of Drake Island.[17] On 13 July, an initial inspection was carried out on behalf of the EIC and the owners by three people, one of whom was Captain William Larkins, father of the chief mate. However, it was only on 8 September, after a dock was finally granted thanks to a letter from "Commissioner Curry,"[18] that the commander realised how badly the ship had been damaged. Although the repairs only took a few days, the ship remained in Plymouth harbour until the beginning of the following year (ff. 19r–26v).

On 15 January 1782, Captain Gore received orders to join a convoy led by Sir Richard Bickerton.[19] The *Nassau* eventually left Plymouth on 7 February 1782: almost a year had passed since the ship had left Blackwall. The first few days of navigation were again marred by adverse weather conditions, but this did not result in the same fate as the previous departure: the carpenters, who set to work making new crosstrees for the main top mast, avoided more serious trouble. In early March, after passing Santa Maria in the Canary Islands, five ships of the line—*Alexander, Agamennon, Magnificent, Assistance,* and *Renown*—left the convoy. The remaining fleet consisted of seventeen EIC ships, including the *Nassau,* and two ships of the line, the *Cumberland* and the *Gibraltar,* which was in command.

On 21 March, approaching the line of the Equator, the fleet entered an area of the Atlantic Ocean characterised by the absence of winds, which is typical of latitudes between approximately three degrees north and three degrees south, the so-called doldrums. On this as on another earlier occasion, the order "to set up the rigging" was carried out following the signal given by Commodore Bickerton, who was thus not merely providing military protection (f. 40r). On 2 April, the logbook records the minimum daily distance travelled during the entire voyage: only 6 miles. Under favourable conditions, a ship like the *Nassau* could easily exceed 100 miles, even reaching 170 miles in one day. Within a week the *Nassau* was travelling at high speeds again. On 9 April she covered 110 miles, but over the next three weeks she kept a far from constant pace, between 30 and 142 miles a day, as she steered a southwesterly course towards the coast of Brazil. Rio de Janeiro—a location frequented only sporadically by EIC vessels—was to be the convoy's first port of call on its voyage to India, a destination that is not apparent in advance

[17] See *The Seaman's Guide and New Coaster's Companion. To which is Added, an Improved and Corrected Tide-table. By John Chandler, John Diston, John Adams, and Many Other Experienced Masters and Pilots* (London: D. Steel, 1795, 10th ed.), 81.

[18] He may have been Sir William Currie (1721–81), a London banker of Scottish origin. Two of his descendants, Mark John Currie (1795–1874) and Frederick Currie (1799–1875), served with considerable success in the Royal Navy and EIC respectively.

[19] Sir Richard Bickerton (1727–92)—the Royal Navy officer who in 1782 was in command, with the rank of commodore, of a convoy of East Indiamen bound for India—was destined to have a brilliant career, which ended with his promotion to commander-in-chief.

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from the logbook, whose headings in the top margin of each page usually contained information about subsequent destinations. Nevertheless, this stop must have been planned in advance, as any changes to the itinerary would certainly have been reported by Captain Gore in his notes. The convoy arrived in Rio on 29 April and stayed there for just over a month. The sick were disembarked and remained ashore until 27 May. The crew took care of the maintenance and repairs needed after the long crossing. The sails were dried, and the ship was replenished with water and other provisions in the meantime.

On 2 June, the commodore gave the signal to depart; after a few days of smooth sailing, a storm split the fleet on 21 June. The *Nassau* remained in sight of only eight ships plus the store ship *Minerva.* By the following day, the group had been whittled down to six ships; Captain Gore, due to his seniority, found himself leading the small fleet as senior commander and presiding over the periodic captains' meetings. For unexplained reasons, the *Minerva* "parted the Company and made sail" on 16 July; thus four ships remained with the *Nassau*: *Dutton, Royal Bishop, Hawke,* and *Talbot* (f. 70r). On the same day, this fleet rounded the Cape of Good Hope and then tackled the Inner Passage, that is, the route towards India via the Mozambique Channel, keeping westwards of the island of Madagascar (as opposed to the Outer Passage, eastwards of the great African island, which had to be sailed at a different time of the year, when the winds were more favourable). On 25 July it reached Cape Corrientes, a promontory located in Mozambique that, as its name given by the Portuguese suggests, was much feared by sailors. After a few days of sailing near the shore to avoid currents and reefs that made crossing the channel treacherous, on 8 August 1782 the *Nassau* arrived with the remainder of the fleet at Mozambique Island—a fortified port city belonging to Portugal, which was the capital of the Portuguese colony of East Africa until 1898. A delegate boarded the *Nassau* to get information on where the fleet had come from, then the captains followed Gore ashore to meet the governor.

Once they had departed for India, a further meeting of the captains determined the route, which followed that established through the long-standing practice of the East Indiamen. The subsequent entries in the logbook do not provide any particularly interesting information. Only once they reached Bombay did they meet the rest of the convoy led by Sir Richard Bickerton, who had evidently preceded them.

Life (and Death) Aboard the *Nassau*

Although the *Nassau*'s voyage features several unusual aspects, her logbook illustrates in an exemplary manner a series of routine activities that allow us to better understand certain aspects of the life of the crews embarked on the EIC ships. It provides us with data such as the composition of the crew, recruitments and discharges, daily occupations, but also illnesses and deaths, disciplinary incidents, and actual episodes of insubordination. Life on board was usually described in the logbooks using standardised terminology, characterised by minimal variations. The continuation of ongoing activities from one day to the next was summarised by formulas such as the following: "People and tradesmen usefully employ'd as yesterday." In the eyes of a commander, the "people" of his ship were only the sailors. The others, such as the tradesmen, were craftsmen who were entrusted with the maintenance tasks constantly carried out on board. Among the most important of these skilled craftsmen were the carpenters, who were responsible for repairing whatever was damaged or suffering from wear and tear.

There were many routine tasks that were performed on an almost daily basis: caulking; cleaning the decks, sometimes washed with vinegar and occasionally "smoaked with tarr"; and painting. The latter was a task curiously reserved for the gunners, who would otherwise have been among the least employed. Other activities were carried out by

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"sailmakers repairing sails, coopers setting up butts and casks," and by the "armourer at his forge." "Picking up oakham" (oakum) was one of the most menial and undesirable activities due to its mind-numbing repetitiveness (often reserved for prisoners and convicts, and later employed for a long time in Victorian workhouses). However, sailors were exempt from it and in general tradesmen too: it was a task entrusted to soldiers recruited by the EIC, and sometimes to "lascars," that is, sailors of non-European origin (ff. 87r, 160r).

The relative flexibility of the crew's hierarchy reflected the needs of the ship. Sometimes promotion took place within the fleet: for instance, in Rio de Janeiro the "Boatswain's Mate" Robert Deveraux left the *Nassau* to embark on another vessel of the fleet as boatswain. When they arrived in Bombay, the captain recorded the recruitment of a new crew member, a certain Samuel Lammie, enrolled in the lowest maritime rank, that is, "landsman." This term was used sarcastically to refer to seamen with little or no sailing experience. After the *Nassau*'s arrival in India, lascars were named in the logbook for the first time. In Bombay on 17 September 1781, twenty-two lascars joined the crew under the command of their "Serang," a native officer with functions comparable to those of a boatswain. Twenty more embarked on 21 November: among them was the "Tindall," that is the Serang's mate. Others joined in Bengal: fourteen on 7 December 1783 and as many again on 20 February 1784. The following 12 June, when the *Nassau* returned to Bombay from Bengal, those men were discharged and replaced with twenty more lascars.[20]

Infringements of the rules can frequently be found in the logbook's entries. On 3 April 1781, the first case of theft was documented while the ship was still in Gravesend: it concerned a certain Richard Donnegan "to be confined in irons" (f. 7v). On 15 April he drowned in an attempt to escape. For the same crime, three other sailors were punished with three different penalties in the following months, probably according to the extent of their misconduct. Captain Gore "punished J[oh]n Christmas with 1 doz.n lashes for theft," then later noted that "W[illia]m Capick was confin'd in irons for theft" and that William Cassidy was punished for the same crime "by running the guantlet [*sic*]" (ff. 66v, 86r, 87r). Quartermaster William Needham, on the other hand, "was found guilty of theft and turn'd before the mast," meaning that he was punished simply with demotion (f. 100r).[21]

At times, unruly behaviour resulted in acts of violence committed outside the confined space of the vessel. On 27 January 1783, during a brief stopover at Tellicherry on the Malabar Coast, three sailors were placed under arrest "in the Guard house on shore" for assaulting some locals. Before departing, the captain sent an officer "to endeavour to get the three men released [. . .] but the inhabitants, insisting on prosecuting them; they were discharged, and a certificate given them for their wages" (ff. 97r–97v). Consequently, the fates of the three sailors and that of their ship were permanently severed.

It may be less obvious that acts of insubordination and violence also involved the officers. In the case of the *Nassau* this happened with unusual frequency. On 12 August 1781, in Plymouth, "Mess'rs Hunter, Hicks, and James, run—3rd, 4th, and 5th, Mates," but on 28 August the commander, "in consequence of a letter from Mr. Williams [the managing

[20] See Aaron Jaffer, "'Lord of the Forecastle': Serangs, Tindals, and Lascar Mutiny, c.1780–1860," *International Review of Social History* 58: 21 (2013), 153–75.

[21] See the logbook of the coeval voyage of the *Lord Camden* (1784–86) for an even more detailed account of disciplinary infractions and their punishments: Filippo Chiocchetti, "Lord Camden (2) 18-03-1784 21-05-1786," in GSR, 2021, https://globalsearoutes.net/geodatabase/, ff. 13r, 16r, 16v, 17v, 24r, 28r, 35v.

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owner] restored M'r Hunter to his station" (ff. 23r, 24v).[22] On 28 February 1782, a few days after leaving Plymouth, Captain Gore wrote: "Order'd Mr Hunter 3rd Mate from his duty for striking a soldier of the 78 regm.t." The following day there was a full-scale rebellion by Hunter. Two days later the commander threatened to replace him with another officer on loan from another ship of the convoy, the *Africa.* The third mate yielded and the "borrowed" ("spared," in the original) officer was returned (ff. 41r–44r). Hunter later died of fever in Bengal.

After Hunter, an even higher-ranking officer was reported on disciplinary grounds: the commander "suspended Mr Bye the 2.d mate from his duty for disobedience of orders" on 19 September 1783, during the voyage to Bengal. George Bye, who embarked as a simple seaman at the age of twelve in 1767, became an officer on board the *Nassau* in 1781. The episode was settled with his readmission after disciplinary proceedings in Calcutta and the officer's public apology to his captain, delivered on the ship's quarterdeck before the entire crew. However, the quarrel had by no means been resolved: on 15 April 1784, after reaching Tellicherry, Bye was again suspended "for disobedience of orders and insolent behaviour." But even this time he was put back on duty on 24 July in Bombay, "having been reprimanded by the Governor and the council" (ff. 135v, 149r, 165r, 180r). These numerous and serious disciplinary infractions did not, however, result in the end of his career; indeed, he was promoted to chief mate on his next voyage aboard the *Rockingham* in 1785.[23] It must be said, however, that the relationship between Gore and his officers, despite strong tensions, proved to be solid when it came to key decisions, with the commander always emphasising collegiality and unanimity.

If the officers rebelled, the sailors deserted. The first attempt, on 15 April 1782, ended with the drowning of the seaman Richard Donnegan, the same one who had been arrested a few days earlier for theft. Others followed, with greater success, shortly afterwards: one before arriving at the Downs, another at Portsmouth, and three on 20 June at Torbay. In Rio, four deserters were captured by the Portuguese and returned. Due to the risk of being caught and punished, or lack of opportunity, or lack of valid reasons, once they left Brazil no one else attempted to leave the ship for a long time. The first was Rocus de Cogs, the carpenter's mate who had joined during the previous stopover in Bombay, who escaped ("run") on 11 January 1784 in Bengal.

The greatest tensions occurred when the *Nassau,* returning from Bengal, stopped at Tellicherry on 15 April 1784, where she took on board 271 men belonging to two companies of the 42nd Army Regiment to transport them to Bombay. Water had already been rationed for the crew before arriving in Tellicherry, reduced to "5 pints a man." Despite the replenishment, the much greater number of men on board prompted the captain to ration it again more severely on 26 April, only two days after departure, bringing the daily ration down to 4 pints. On 30 May, the ration was further reduced to 3 pints. Two days later, being in the vicinity of Goa, Captain Gore discussed with army officers whether to stop for supplies as the soldiers were complaining about the lack of water. Due to the dangerous sea conditions, Gore considered it more prudent to avoid approaching the harbour. The voyage continued until the arrival in Bombay on 3 June 1784, but only "with the greatest difficulty" did the officers persuade their men to accept the commander's decision. Evidently, it was easier to get the sailors to comply with the stricter regulations than it was the army soldiers (ff. 175v–176r).

Conditions on the voyage led on several occasions to severe health risks for the people on board, resulting in a significant number of losses. The first recorded case, involving a

[22] According to Sutton, Robert Hunter, along with the fourth mate Francis Hicks, was punished with the lash when he returned on board: Sutton, *The East India Company's Maritime Service,* 139. It should be noted that the logbook does not provide any evidence of this punishment, and Sutton's book does not indicate the source of this assertion.

[23] Farrington, *Biographical Index,* 66.

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sailor named Jacob Nickelson, dates back to 25 February 1782. He was followed by five others in Bombay, including "Henry Brookes [who] died at sick quarters on shore." In Bengal, fevers claimed further lives, including that of third mate Robert Hunter, on 23 November 1783. Two other sailors, John Michels and a Frenchman named Le Courtance, died within the next few days, while the *Nassau* received water and "several refreshments for the people, who are very sickly." On 6 December 1783, the commander noted that there were twenty-four people on the "sick list," more than twenty of whom would remain there for at least a week. On the same day, as new fatalities were added to the tally, Captain Gore wrote: "buried the Corps upon Kedgeree green" (ff. 88v, 148r). Being buried on land was relatively rare: during navigation, the bodies of the deceased were committed to the sea after a ceremony. However, there were exceptions, as witnessed in our logbook with the case of a Scottish soldier, Peter Couts, who died on 24 April 1784 on the return voyage from Bengal to Bombay: "at 7 he was buried by the soldiers, Highland fashion, no Ceremony, but thrown over board" (f. 173v).

The Military Role of the EIC and the British Expansion in Asia

The most insightful historiography "locates the EIC as a political governing body (as opposed to a merely economic organisation) from its very inception."[24] The presence of soldiers on board trading ships was therefore far from unusual in that age and geographical scope. The EIC had its own army stationed in India, composed partly of natives and partly of Europeans. In a particularly difficult scenario such as that of the 1780s, in which the British were confronted with other powers like the French and the Indian rulers, the interdependence between the EIC—to be interpreted as a company-state, according to Philip Stern's view[25]—and the state proper could only increase.

In the case of the *Nassau,* during her outbound voyage she was used to transport army units—a company of the 78th Regiment—that were to be engaged in the second war against Mysore, France's main Indian ally, then ruled by Hyder Ali. Once the troops arrived in Bombay on 6 September 1782, they were transferred, with provisions for six weeks, aboard another EIC ship, the *Latham.* The deployment of the *Nassau* in support of the British army was, however, just beginning (see Figure 1). On 16 November Captain Gore noted: "received on b[oar]d 4500 round shots & 300 shells for Tellicherry." In the following days the loading of military supplies continued, namely "Gun Powder," "Ammunition," and "Artilary [*sic*] stores" (ff. 88–89).

On 9 December, more soldiers came on board; this time they were EIC recruits. On 12 December, the *Nassau* left Bombay together with other vessels, under the command of General Richard Matthews, who was in charge of the military operations against Tipu Sultan, the eldest son of Hyder Ali who had succeeded his father a few days earlier. On 18 December, they reached Rajah Mondroog, a locality south of Goa at the mouth of the Merjee River (today, Aghanashini, in Karnataka). Once landed, the troops occupied a fortified position on the coast. According to our interpretation, which is based on the coordinates and the description of events, Rajah Mondroog corresponds to the place that is referred to as the Kagal Fort on today's maps. It served as an outpost for the Mirjan Fort, a more important stronghold located on the upper reaches of the Merjee River. As for the toponym, "droogs" are the steep rocks typical of the landscapes of Mysore and Tamil Nadu, which historically provided ideal sites on which to build forts.[26]

[24] Julia Schleck and Amrita Sen, "Introduction: Alternatives Histories of the East India Company," *Journal for Early Modern Cultural Studies* 17:3 (2017), 1–9, 1.

[25] Philip Stern, *The Company-State: Corporate Sovereignty and the Early Modern Foundations of the British Empire in India* (Oxford: Oxford University Press, 2012).

[26] See Tim Willasey-Wilsey, "In Search of Gopal Drooge and the Murder of Captain William Richardson," *The Victorian Web* (2014), https://victorianweb.org/history/empire/india/70.html.

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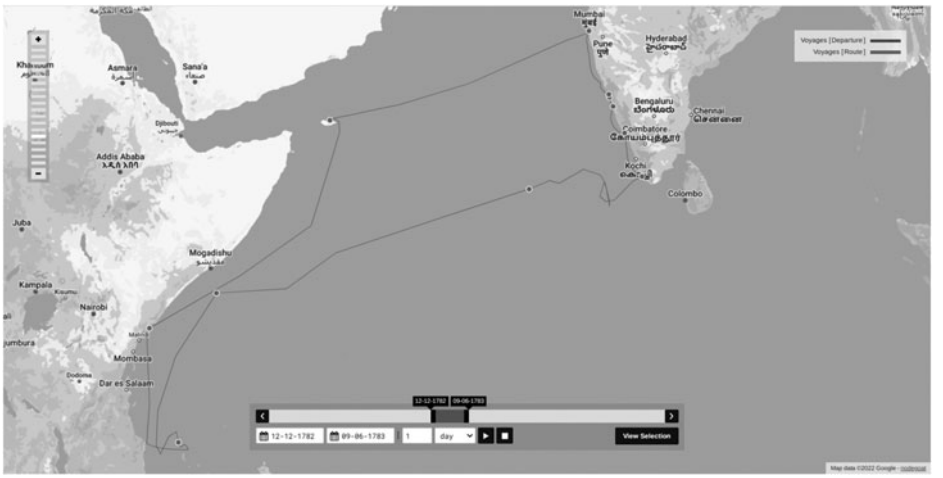

Figure 1. Georeferenced visualisation of the *Nassau*'s military deployment from Bombay to the Malabar Coast and then to the Comoro Islands, before returning to Bombay (12 December 1782 to 9 June 1783). Source: Filippo Chiocchetti, "Nassau (3) 09-06-1781 21-08-1785," in GSR, Guido Abbattista, principal investigator, 2021. Map data ©2021 Google.

On 25 December 1782, Captain Gore was ordered to sail to Onore (today Honavar). This was a strategic location, protected by an important fortress. During the brief siege, the guns of the *Nassau* were landed to add to the army's batteries. The logbook reports that a "very good firing" of "Great Guns, small arms, and rockets" was maintained on both sides for a week, until 5 January 1783 when the British troops "mounted the breach and had possession of Onore" (f. 93v). On 10 January, the convoy left for Cundapore (today Kundapur, on the Karnataka coast), where between 13 and 16 January it took part in further military operations, which ended with the capture of some coastal forts. Under these circumstances, the *Nassau* also served as a place of detention for Indian prisoners: Captain Gore wrote that he "received the Killadar [garrison's commander] of Onore, with 18 inferior officers and attendants" (f. 95v). They joined fifteen French prisoners, taken on board in Bombay, who were to remain on the *Nassau* until June of the following year.

On 17 January the EIC vessels were authorised to depart by General Matthews. Shortly afterwards Captain Gore crossed paths once more with some of the men he had fought with. On 28 January, while stopping at Tellicherry, he noted the arrival of the *Royal Bishop,* with which he had shared the outbound voyage. On board that vessel were two officers, "Coll. Jackson and M[ajo]r Disney in their way upon an Embassy to the King of Travancore" (f. 97v). The first of these two EIC army officers was Lieutenant Colonel Robert Jackson (1738–86), at that time in command of the Bombay European Regiment.[27] The second was Lieutenant Arthur Disney, who served in the EIC from 1780 to 1813. Disney had led the assault on Onore's fort as commander of the Grenadier company of the Bombay European Regiment; a few days later he was sent as an envoy to the king of Travancore, with whom a military alliance had been forged.[28]

However, the British ships were not the only ones whose presence was noted in Tellicherry. Captain Gore wrote: "The Success Galley came in from Bombay—a ship

[27] See Arthur Edward Mainwaring, *Crown and Company: The Historical Records of the 2nd Batt. Royal Dublin Fusiliers, Formerly the 1st Bombay European Regiment, 1662–1911* (London: A. L. Humphreys, 1911).

[28] John Philippart, *The East India Military Calendar: Containing the Services of General and Field Officers of the Indian Army* (London: Kingsbury, Parbury and Allen, 1823), 240–4.

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belonging to the Nabob of Arcott" (f. 97r). The nawab he referred to was Muhammad Ali Khan Wallajah (1717–95), sultan of the Carnatic whose capital was Arcot, and a close ally of the EIC. The *Success* was a very fast and robust ship, well known to the British. According to an account published in the *Philadelphia Weekly Magazine* in 1798, the *Success*—which in 1781 had contributed to the defeat of French Admiral Suffren's fleet at Porto Novo (today Parangipettai, on the southeast coast of India, south of Madras)—was built of teak wood.[29] A few years later, British politicians such as Henry Dundas (1742–1811) would advocate planting teak forests in India to allow the EIC ships to be built directly on site.[30]

The *Nassau* left Tellicherry on 2 February 1783 for Calicut and then Anjango, where she arrived on 7 February. On 11 February she sailed for Johanna (today Anjouan), the largest of the Comoro Islands. Commercial activity had not yet begun, so why did she head for Africa? The captain gave no explanation for this in the logbook, at least at first. Navigation was very difficult: the chart of the route, which we have reconstructed from the records of the daily coordinates, highlights these troubles. After sighting the island of Comoro on 28 March, the *Nassau* was only able to cover very short distances over the next few days, first due to the absence of wind and then to rough seas. With water supplies dangerously low, on 19 April Captain Gore recognised "that it was utterly impossible to beat up for Joanna w[ith]out recruiting our water" (f. 116v). He therefore headed for the coast of Africa but, being unable to find a "watering place" there, decided to go back to Bombay: along the way, rum and rainwater compensated for the lack of water supplies. However, the meagre provisions on board prompted a stopover on the island of Socotra, where the *Nassau* anchored from 23 to 28 May. As soon as they arrived, Gore "sent Mr Hunter on shore for intelligence." The third mate reported "that the Hanoverian troops with the Officers and People of the Brilliant had been here, and sail'd the 11th of May in a moor vessel for Bombay." It was not until 30 May that the captain, reporting in the logbook a discussion with the officers, provided the information that was still missing: that "[his] orders from Bombay were to sail to Joanna for the Hanoverian troops and carry them to Bengal" (ff. 125r–126v).

The employment of troops from continental Europe, mainly Swiss and Germans, is an integral part of the history of the EIC. In the eighteenth century, dynastic ties between the United Kingdom and Hanover facilitated the recruitment of soldiers from that German region. In 1782, around two thousand men were sent to India to support British troops, mainly with garrison duties. Some of them had set out on board the *Brilliant,* an East Indiaman that sailed from Portsmouth on 5 May 1782 under the command of Captain Charles Mears. The *Brilliant* actually sank off the island of Johanna—which was a crucial port of call on the East India route[31]—on 28 August 1782, as other sources confirm.[32] Since they were able to depart for India again, as we learn from the *Nassau*'s logbook, those soldiers perhaps joined their comrades in the Battle of Cuddalore on 13 June 1783.

From a strictly military point of view, the shipwreck of a few companies of auxiliary troops and the vicissitudes of the ship sent to rescue them is certainly a marginal occurrence. It nevertheless sheds light on the diverse perspectives held by men who shared

[29] Anthony F. M. Willich, *The Domestic Encyclopaedia: Or, A Dictionary of Facts and Useful Knowledge, Comprehending a Concise View of the Latest Discoveries, Inventions, and Improvements, Chiefly Applicable to Rural and Domestic Economy.* American edition, 5 vols. (Philadelphia: W. Y. Birch and A. Small, 1804), 5: 135.

[30] See Lucas Sérougne, "Teak Conquest: Wars, Forest Imperialism and Shipbuilding in India (1793–1815)," *Annales historiques de la Révolution française* 399:1 (2020), 123–52.

[31] See Huw V. Bowen, "The East India Company and the Island of Johanna (Anjouan) during the Long Eighteenth Century," *International Journal of Maritime History* 30 (2018), 218–33.

[32] Hardy, *Register of Ships,* 95; Farrington, *Catalogue,* 77–8. The use of the *Nassau*'s logbook allows us to correct Sutton's partially inaccurate account of this episode: Sutton, *The East India Company's Maritime Service,* 144–5.

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common experiences. The publication of letters and memoirs by some officers of the Hanoverian regiments, which appeared between 1782 and 1807, triggered a debate in Germany that was part of the broader European reflection of the time on colonialism, civilisation, and the relationship with the "other."[33]

The Asian Trade Routes between India and China

More than nine months after her arrival in Bombay from England, the *Nassau* reached Bombay for the second time on 9 June 1783, this time from Socotra, and, having completed her military deployment, began to prepare for the commercial part of the expedition. This stage is divided into two chronologically distinct phases: the voyage to Bengal and return to Bombay, and the voyage from Bombay to China. The departure for Bengal was delayed due to problems with the hull, which required the keel to be sheathed where the ship had suffered a blow during the fighting at Cundapore the previous January. In addition, in the first half of July 1783, a number of vessels that had set off for Bengal had had to return to Bombay due to prohibitive weather conditions, thus frustrating Captain Gore's plans. Having finally set sail on 18 September, the voyage did not feature any particularly significant events. Upon their arrival in Kedgeree on 31 October, Gore reported the presence of thirteen East Indiamen and a Danish ship in the port.[34] After receiving an onboard inspection by EIC officials on 9 November, the loading of "500 bags of Salt petre" was carried out on 23 December 1783, proceeding over the following days to a total of 3,786 "bags" of saltpetre.[35]

The *Nassau* returned to Bombay from Bengal on 3 June 1784. She remained there for two months, preparing for the voyage that would complete her trade mission. On 25 June, the delivery of saltpetre began and was completed by 5 July. The delivery of one commodity was followed by the loading of another: on 9 July, the first batch of cotton, of an unspecified amount, was loaded. From 14 to 26 July, she received cargoes of cotton on an almost daily basis. The *Nassau* finally left Bombay on 4 August, bound for China, together with another East Indiaman, the *Chesterfield.* Travelling in convoy, even without military escort, was a strict requirement of the EIC. Having lost contact almost immediately after their departure from Bombay, the two ships only resumed travelling together on 5 September, near the Strait of Malacca.

After sighting Ceylon on 12 August 1784, the *Nassau* continued to sail the open sea for a week, until 19 August when she came within sight of Pulo Zunda, a little island today known as Pulau Breueh, just over a kilometre north of Sumatra. Captain Gore's ship then continued over the next few days, steering an average of about 9 leagues off the east coast of Sumatra, before heading farther east towards the Malaysian shores. On 14 September the *Nassau* entered the Dutch port of Malacca. The commander went ashore "to wait on the Governor and ask for supply's [*sic*]": an unavoidable formality, despite

[33] See Chen Tzoref-Ashkenazi, "The Outsider's Perspective on Colonial Conflict: A Hanoverian Officer's Narrative of the Second Anglo-Mysore War, 1783–1784," in *A Great War in South India: German Accounts of the Anglo-Mysore Wars, 1766–1799,* eds. Ravi Ahuja and Martin Christof-Füchsle (Berlin: de Gruyter, 2019), 319–44.

[34] The Danish East India Company had a settlement in Serampore, on the banks of the Hooghly north of Calcutta, and a factory in Canton. The Danish presence in India, which was relatively insignificant from a commercial or political-diplomatic point of view, was linked to the more relevant affair of the so-called "Danish-Halle Mission": see Joseph Gnanaseelam Muthuraj, *We Began at Tranquebar,* Vol. 1: *SPCK, the Danish-Halle Mission and Anglican Episcopacy in India 1708–1843* (Delhi: ISPCK, 2010).

[35] For a brief overview of the saltpetre trade, see K. N. Chaudhuri, *The Trading World of Asia and the English East India Company 1660–1760* (Cambridge: Cambridge University Press, 1978), 336–41. The hazardous nature of this kind of transport is proven by the case of the *Montagu,* which sank on 6 December 1785 due to an explosion, see Hackman, *Ships of the East India Company,* 160.

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the disrespect shown by the garrison who had not responded to the nine blank gun shots with which the British ship had saluted the Dutch flag (f. 191r). Having completed the restocking, she resumed her voyage to China on 19 September. On 28 September, in the stretch of sea that we now call the Singapore Strait, the *Nassau* encountered a small vessel from Bengal: the jolly boat carried an EIC supercargo, a certain Mr. Parkin, "who stay'd on board to take his passage to China" (f. 194r). As we shall see, it was he who was to manage the *Nassau*'s commercial activities in China, although his presence on board seemed at first to be the result of chance.

On 29 September, the *Nassau* sighted the granite islet of Pedra Branca, belonging to the Johor Sultanate and later to the British colony of Singapore, which at the time was clearly marked on all nautical charts and signalled the exit from the strait.[36] Sailing northwards, on 30 September the *Nassau* sighted two much larger islands, Pulo Auro and Pulo Tioman: the latter became the new reference for calculating longitude. Resuming navigation on the open sea—and thus abandoning the coastal navigation that had characterised the previous four weeks, during which longitude had not been taken into account—this reference became necessary.

The following days of navigation in the South China Sea were rendered difficult by the weather conditions, indicated in the logbook with expressions like "a confused sea" and "sea increasing" (ff. 200r–200v), until the sighting of the Chinese coast on 24 October. Due to the bad weather, the *Nassau* stayed away from the port of Macao for a few weeks, moving between the islands south of the bay. The main concern at this stage was the maintenance of the ship and the supply of provisions. In his notes, the commander reported in detail about the provisions procured for the ship. For example, on 26 October he wrote: "sent Mr Brooker on shore, who landed at a small Town and purchased 2 large hogs." The compradores—Chinese merchants in charge of supplying foreign ships—frequently appear in these pages. The first note is dated 31 October: "A boat came from Macoa with a person recommended as Compradore—dispatch'd him back for provisions" (ff. 201r, 202v).

On 1 November 1784, due to the still adverse weather conditions, the ship had to move farther away from the bay: "Finding the sea to increase [. . .] we were unable to reach where we came from" (f. 10r, Larkins's logbook). They found safe harbour at St. John Island (today Shangchuan), southwest of Macao. From the first sighting of the Chinese coast, navigation in these unfamiliar waters, dotted with islets and reefs, had been conducted with the help of local pilots. Even the latter, however, proved to be only partially useful. On 2 November, the commander had to take note of this and act accordingly: "The pilots confessing that they were utterly unfit to pilot the ship discharged them and took two others from St. John's" (f. 203r). In all, five pilots took turns in those first few days. Once a stable base had been established, the supercargo, Mr. Parkin, finally travelled to Macao.

St. John was also known for holding a large and well-stocked market, so it represented an ideal base for the anchoring of the *Nassau.* For instance, the supply on 3 November consisted of "six hogs and some vegetables, having found a very large Town and a very plentiful market" (f. 10v, Larkins's logbook). The account of the commander, who personally went ashore to handle the purchases, is even more detailed and specifies the price paid for the provisions, "50 Spanish dollars," but it also remarks on the spectacle of

[36] See, for example, "A New and Accurate Chart of the Straits of Malacca and Sincapore, by Senhor Pedro de Nova, an Experienced Portuguese Pilot who carried the Camden through these Straits in June 1770," in *The Country Trade East India Pilot, for the Navigation of the East-Indies and Oriental Seas, within the Limits of the East-India Company, etc.* (London: Robert Laurie and James Whittle, 1799), https://nla.gov.au/nla.obj-368781110/view?partId=nla.obj-373089725#page/n51/mode/1up.

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St. John's Bay with "an innumerable sight of boats some very large," including many "Sampans" (f. 203r).

After about a month of arduous navigation between the islands of the bay—during which the jolly boat shuttled to St. John's market and the compradores continued to bring provisions, including rice and firewood—the *Nassau* finally entered Macao on 30 November 1784. Although nothing is known about the tasks performed there by Mr. Parkin, it should be remembered that the arrival in Macao was not the start of negotiations but only a stage towards the actual destination: Whampoa. On that same date the captain wrote: "went on shore to get a Pilot for the river, and to procure a Chop [the pass issued by the Chinese authorities] to pass the Boca Tigris" (f. 207r). The following day the *Nassau* set sail again without delay, and on 3 December arrived at the Pearl River estuary, which the Portuguese had named Boca Tigris. On 6 December she arrived at Whampoa. This island, which is now called Pazhou and whose name is derived from the Chinese Huangpu, was the docking point for Western ships sailing up the Pearl River. Once there, ships had to stop and transfer their cargoes to smaller boats at the Thirteen Factories in Canton.[37]

Captain Gore listed the more than twenty ships present at Whampoa on his arrival: "7 English ships [East Indiamen], 5 English country ships, 3 Dutch, 2 Danes, 3 French and one Americain [*sic*]" (f. 208r). The latter is the *Empress of China,* the first American ship to reach a Chinese port, staying in Whampoa from August to December 1784.[38] In addition to saluting those ships by firing nine blank gun shots, the captain of the *Nassau* "hoisted a broad pendant as Eldest Commander" (f. 14r, Larkins's logbook).

On 16 December, the Hoppo, who was the imperial official that supervised customs, came on board, and only once this ceremony was completed, which included measuring the ship, could trade begin. He too received the usual welcome, but the gun shots were only five, a smaller number than the salvoes fired to greet the Europeans. These were well-established ceremonial procedures, which we certainly cannot attribute to the tensions over the *Lady Hughes*'s episode, tragically resolved a few days earlier,[39] and yet these tensions must have been tangible, even if nothing about it appears in the logbook's account.

The cargo consisted of Indian cotton, to be exchanged in Canton not for silver but for other goods destined for England. The loading of these goods began in the early days of 1785. First on board was the porcelain, "The Hon.ble Company's China ware," loaded on 4 January, while on the 10th "a chop of Tea came alongside on Account of the Hon.ble Company." Meanwhile, ballast was offloaded and supplies stocked for the homeward voyage: on 13 January they "began salting our Provisions" (ff. 209v–210r). The last cargo of tea, together with a cargo consisting of "private trade," of which the logbook gives no details, was loaded on 5 February. In this case, the lack of data is remedied by the papers of the EIC Council in Canton (see Figures 2 and 3). The first is a table summarising the type and quantity of goods belonging to each of the officers, the purser, and the surgeon of the *Nassau,* with their initials used as cyphers to mark the chests. The second is a note, referring to the "usual letters upon the arrival of a ship" sent by the Council to Captain Gore, also containing some instructions regarding private trade. The members of the EIC

[37] See *The European Canton Trade 1723: Competition and Cooperation,* eds. Marlene Kessler, Kristin Lee, and Daniel Menning (Oldenbourg: De Gruyter, 2016).

[38] See Philip Chadwick Foster Smith, *The Empress of China* (Philadelphia: Philadelphia Maritime Museum, 1984). For further details on the *Empress of China*'s itinerary, see Erica Grossi, "Empress of China 22-02-1784 11-05-1785," in GSR, 2021, https://globalsearoutes.net/geodatabase/.

[39] See Li Chen, *Chinese Law in Imperial Eyes: Sovereignty, Justice, and Transcultural Politics* (New York: Columbia University Press, 2015); Jessica Hanser, *Mr. Smith Goes to China: Three Scots in the Making of Britain's Global Empire* (New Haven, Conn.: Yale University Press, 2019), 103–19.

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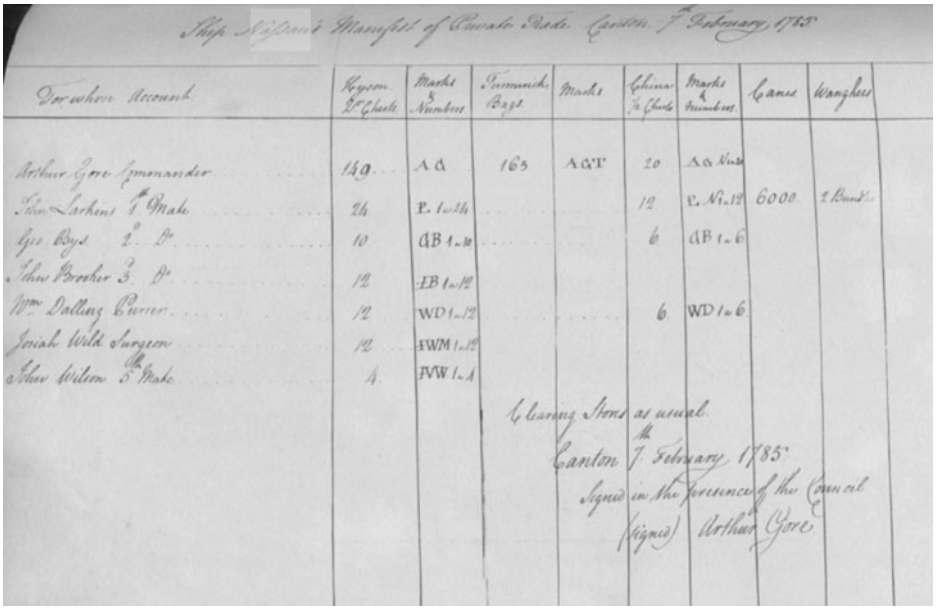


Ship Nassau's Manifest of Private Trade Canton 7th February 1785

For whom Account	Hyson 2/3 Chests	Marks & Numbers	Gunnies Bags	Marks	China 2/3 Chests	Marks & Numbers	Canes	Wangkies
Arthur Gore Commander	149	A G	163	AGT	20	A G Nos		
John Larkins 1st Mate	24	L. 1 to 24			12	L. Nos 1 to 12	6000	2 Bundles
2d Boys 2d Do	10	AB 1 to 10			6	AB 1 to 6		
John Brooker 3d Do	12	EB 1 to 12						
Wm Dalling Purser	12	WD 1 to 12			6	WD 1 to 6		
Josiah Wild Surgeon	12	WM 1 to 12						
John Wilson 5th Mate	4	JW 1 to 4						

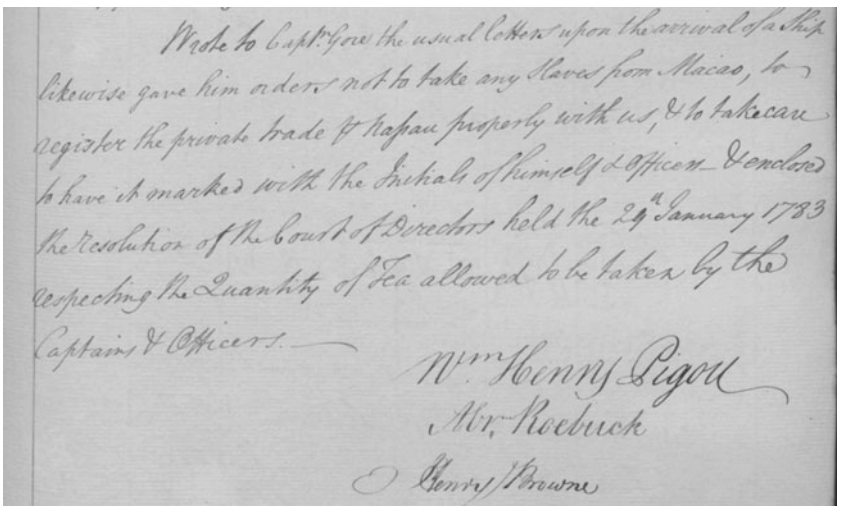
6 Chests Stores as usual

Canton 7th February 1785

Signed in the presence of the Council

(Signed) Arthur Gore

Figure 2. "Ship Nassau's Manifest of Private Trade Canton 7th February 1785." Source: British Library, India Office Records, London, IOR/G/12/80, in *Adam Matthew Digital: East India Company* (2020), folio 112.



Wrote to Capt. Gore the usual Letters upon the arrival of a Ship likewise gave him orders not to take any Slaves from Macao, to register the private trade & Lapau properly with us, & to take care to have it marked with the Initials of himself & Officers Enclosed the Resolution of the Court of Directors held the 29th January 1783 respecting the Quantity of Tea allowed to be taken by the Captains & Officers.

Wm Henry Pigou

Abr. Roebuck

Henry Browne

Figure 3. Note concerning the letter sent to the captain of the *Nassau* on his arrival in Whampoa, signed by three members of the EIC Council in Canton: Henry Pigou, Abraham Roebuck, and Henry Browne. Source: British Library, India Office Records, London, IOR/G/12/80, in *Adam Matthew Digital: East India Company* (2020), folio 107.

Council in Canton also used this arrangement. For instance, David Lance, William Henry Pigou, and Charles Edward Pigou all used the *Nassau,* as well as other ships, to load some chests of tea to send home.[40]

[40] "China and Japan: Canton Diary, 21 Feb 1784–8 Feb 1785," British Library, India Office Records, London, IOR/G/12/80.

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Having completed the ship's repairs, which had continued uninterruptedly throughout her time at Whampoa, and loaded the last supplies of salt and livestock, the *Nassau* departed on 11 February 1785. The following day she sailed past Boca Tigris, and on the 13th she supplemented her crew with local sailors. As we read in the logbook, "22 Chinese enter'd to go to Europe" (f. 212v).

During the *Nassau*'s stopover in Whampoa, some of the ships that had been present on her arrival had set sail for home. Among these was one that we shall meet again in a moment, the *Pallas,* leaving on 15 January 1785, which earned this annotation from Captain Gore: "A ship sail'd under Americain Colours; she came in under English" (f. 210v).

Encounters at Sea: Two "American" Ships Encounter the *Nassau*

Although she had left almost a month earlier, the *Pallas* arrived at Cape Agulhas in South Africa only a few days before the *Nassau.* On 30 April 1785, the two vessels made contact and the two commanders were able to communicate with each other.[41] Captain Gore—who had not yet sighted land—received valuable information that enabled him to establish his position more accurately. The occasional encounter between the *Nassau* and the *Pallas* off the coast of South Africa provides food for thought on other aspects of late eighteenth-century commercial shipping. The *Pallas* had also come from Whampoa, and was thus one of the first American ships to open the trade route between the Middle Kingdom and the young nation of the New World. In fact, she was the second American ship: first place was held by a much more famous vessel, the *Empress of China.* When Samuel Shaw—the expedition manager who had led the American trade mission to Canton—returned to New York with the *Empress of China,* his right-hand man Thomas Randall decided to remain a few months longer in Asia: he chartered the *Pallas* —a ship owned by John O'Donnell, an Irish commander previously in the service of the EIC, who intended to abandon the country trade and retire—and raised the American flag, as Captain Gore had noted. The *Pallas* arrived in Baltimore in August 1785, some three months after the return of the *Empress of China.* She too carried valuable Chinese goods to America, particularly tea and porcelain, and she too had among the buyers of her cargo the future president of the United States, George Washington. Unlike the *Empress of China,* however, the *Pallas* can boast a unique distinction: she was the first ship to bring Chinese people to American soil, specifically some sailors hired to complete the crew.[42]

The *Nassau*'s second chance encounter took place on 6 August 1785 in the North Atlantic, when the return voyage was well underway. The ship in question was the *Congress,* a vessel of some 600 tons that had set sail from the Irish port of Londonderry and was destined for Philadelphia. It was therefore a ship sailing "to the Land of Liberty," as stated in the advertisement published in the *Londonderry Journal* of 11 May 1784 in reference to the previous year's voyage:

> THE remarkable fine SHIP CONGRESS [. . .] Will be clear to sail from this Port the 1st of June next.—Passengers, Redemptioners, and Servants, who wish to embrace this favourable Opportunity of sailing in the finest ship that ever carried Passengers to the Land of

[41] For an account of the good relations established between the British and the Americans very soon after the end of the Revolutionary War, see *The Journals of Major Samuel Shaw, the First American Consul at Canton, with a Life of the Author,* ed. Josiah Quincy (Boston: Crosby and Nichols, 1847), 181.

[42] See Robert L. Brunhouse, "Lascars in Pennsylvania, a Sidelight on the China Trade," *Pennsylvania History* 7:1 (1940), 20–30. For a broader context, see Marco Sioli, "Opening American Commerce with Canton: From the *Empress of China* to the *Columbia Rediviva* (1784–1793)," *XVII-XVIII* 77 (2020), http://journals.openedition.org/1718/5747.

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> Liberty, will meet with proper Encouragement by applying to Wm. Moore, Merchant, who will be particular in laying in plenty of the best provisions and Water, so as to make the Passage comfortable and pleasant. Capt. Knox, is a Derry man, and served his Apprenticeship in the City in the Passenger Trade. He will be found on board the Ship, and will treat with Passengers on the most moderate terms.[43]

It is well known that, after the Peace of Paris had diplomatically sanctioned the independence of the United States, a ship sailed almost weekly for several years from Irish ports to America with large numbers of passengers on board. The *Congress* first made the crossing in 1783, under the command of Captain William Chevers, and again in 1784, with Captain Francis Knox.[44] The *Congress*'s third voyage in 1785, one not otherwise known about, was recorded in the *Nassau*'s logbook. Was the *Congress* flying the American flag? Captain Gore did not specify, but noted that there were "330 People on board" (f. 253r).

Thanks to the abovementioned source, the *Londonderry Journal,* we also know that the owner of the ship, one Blair McLenaghan, "native of Ireland, twenty-five years a citizen of America, invited the people of Derry to breakfast and a dance on his ship, the Congress."[45] This treat took place in early June 1784, two months before the departure for her second voyage. It is possible that the ship-owner was the same person who actively supported the cause of the revolutionaries and was in contact with the political writer Thomas Paine (1737–1809). In one of his volumes of writings on economics and politics, Paine recalled that McLenaghan, himself a citizen of Philadelphia, worked to raise funds for the army led by George Washington, at Paine's own initiative.[46]

The *Congress,* like the *Pallas* a few months earlier, provided the *Nassau* with a reliable report of her position, thanks to which it was possible to correct a calculation that, after the last stopover at Saint Helena, had resulted in an error of approximately 1,000 km and 10° 26' longitude eastwards (f. 253r). From that moment until entering the English Channel, the captain and his chief mate compiled their logbooks with a double indication of longitude, one calculated with reference to their own assessments and the other with the data provided by the *Congress.*

Conclusions

The *Nassau*'s voyage was a commercial venture. Iron and lead, cotton and saltpetre, tea and porcelain were the goods transported on behalf of the EIC but also for the benefit of the ship's officers. This obvious mercantile component should not, however, eclipse its parallel status as a military voyage. Events such as the sieges of the fortresses of Mysore and the search for the shipwrecked Hanoverian troops add a dimension to the tale of the voyage that sheds light on the complex nature of the operations of the EIC, the "company-state" that drove British expansion in India.

The interesting elements that emerge from the analysis of the logbook as a qualitative source do not reside solely in these isolated episodes, but rather in the unexpected perspectives that open up unexplored dimensions and allow new narratives to be pursued. These results demonstrate the ability this source, hitherto scarcely used for this purpose,

[43] Irish Emigration Database, Ship Congress, Londonderry to Philadelphia; *Londonderry Journal,* Tuesday, 11 May, 1784, Vol XII No. 1087, CMSIED 9910036, http://www.dippam.ac.uk/ied/records/42604.transcript.

[44] Donald M. Schlegel, *Irish Genealogical Abstracts from the "Londonderry Journal," 1772–1784* (Baltimore: Genealogical Publishing Company, 2001), 119, 129.

[45] Ibid., 127.

[46] Thomas Paine, *Dissertations on Government, the Affairs of the Bank, and Paper Money* (London: W. T. Sherwin, 1817), 21.

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has to trigger research paths in multiple directions. The relevance of such results adds further depth to the study of navigational practices, which indeed remain the cornerstone on which the GSR project—of which this essay is a component—is building its research into the voyages of European ships on oceanic routes in the early and late modern periods.

The various encounters reported in the *Nassau*'s logbook—either actually planned, sought but missed, or happened by chance—testify to the great variability involved in the unfolding of this as well as many other EIC voyages. This unpredictability was balanced by the crew's strict adherence to the codified norms of a routine that provided the necessary support to ensure the success of the expedition. Awareness of the existence of "unknown unknowns" and the practical ability to deal with them were the prerequisites that underpinned every voyage throughout the entire history of the EIC, which overlaps with much of that of the Age of Sail. In this context, the logbook should (also) be seen as the tool through which experiences gained and solutions found became the common heritage of figures as diverse as directors, hydrographers, commanders, officers, sailors, tradesmen, and soldiers—in short, of the entire EIC world.

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ARTICLE

Navigating the British Atlantic in the Eighteenth Century: What the Logbooks Tell Us

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Abstract

Crossing the North Atlantic was one of the world's most important oceanic voyages by the eighteenth century. By then, ships built and owned in the British North American colonies and, late in the period, the United States were crossing this dangerous and often-fickle ocean in large numbers. The surviving logbooks of such vessels can serve as unique source material for understanding the Atlantic experience for scholars prepared to interpret and exploit them. Recording the Atlantic passages of the small schooner *Sultana,* the snow *George,* and the brig *Reward* in the Global Sea Routes (GSR) database creates a record for future researchers with a broad array of interests, but only after the obstacles to interpretation are overcome, to the extent possible. I will discuss what those obstacles are, laying out the information to be found in these logs, how it is entered and why, and what it has to tell us about the Atlantic and those who used it at the time. I will make the case that what is contained in these sources justifies the acquisition of the technical and historical expertise necessary to use them.

Note: the snow rig was popular among mid-size ocean-going Atlantic merchant ships by the mid-eighteenth century. It is similar to the two-masted brig, as opposed to the three-masted ship, but it has a small "try-mast" just behind the main mast (the after mast), on which the mizzen sail was hoisted.

Keywords: North Atlantic history; history of navigation; logbooks; shipping

Introduction

The two somewhat disparate impressions a novice researcher is likely to get when first opening an eighteenth-century logbook are of both tidiness and inscrutability.[1] The pages are lined off carefully with a straightedge. Grids compartmentalise bits of shorthand, a code with some (though we could wish for far more) consistency, known both to the author and, ostensibly, anyone else who may later consult the log. Grids of shorthand code, written in ink now purplish with age, represent one of the principal

[1] The originals of the logbooks we will examine in this article are located in the National Archives of the United Kingdom [hereafter TNA]: ADM 51/43, The Log Book of Lieut. John Inglis, Commander, SULTANA, 18 Jul. 1768 to 7 Dec. 1772 (copy, located in the private collection of the Sultana Education Foundation, Chestertown, Maryland); TNA ADM 52/1455, Logbook of David Bruce, Master of SULTANA, 19 Jul. 1768 to 7 Dec. 1772 (copy, located in the private collection of the Sultana Education Foundation, Chestertown, Maryland); Historical Society of Pennsylvania, Am. 6823, George (ship) logbook, 1805–1806 [also contains return passage of the brig *Reward* from Jamaica to New York].

components of the overall enterprise of navigating a sailing ship on the ocean: the imposition of order on chaos.[2]

Both numbers and letters are key to this shorthand code. Numbers generally give us an impression of objective precision that letters do not; but, in these logs, that impression is misleading. The reader must understand how those numbers were derived, and by doing so, gains an understanding of the acting and thinking that put them there. The letters, usually found in the "Remarks" column of the log, are more numerous than the numbers, as numbers generally do a better job of conveying more information in fewer characters. The Remarks column, then, takes up more space than any other part of the log's entry for a given day. While most consistently devoted to weather observations, Remarks can contain anything and everything from sail changes or damage incurred to personal grievances and poetic musings. The only consistency is brevity; a man's death was usually recorded in just a few words. An inference of callousness would be unwarranted; there was limited space in the Remarks column, and limited time to write in it.

In general, a logbook tells us much, but not all, of what we could wish to know about the navigation and operation of the vessel. It provides glimpses into life on board, and life on and around the sea. The observations it contains, whether astronomical or cultural, were recorded for an audience who, the author assumed, already possessed the contextual knowledge necessary to correctly interpret the grid of shorthand code and the only slightly more expansive Remarks inscribed for each day afloat. We do not possess such knowledge; we must acquire it if we are to exploit these rich primary sources.

Navigating on Paper at Sea

The information recorded in the logbook is, first, a record of the crew's attempt to find their way from their departure to their destination while preserving life and property. While the specific methods for doing so varied somewhat over time, all logbooks contain some common information, laid out in similar fashion, toward this end. They all divide the ship's day into one- or two-hour increments, from noon to noon, as the keeping of time on board, like most other aspects of life, differed from the way it was done ashore. Ships operated twenty-four hours a day; the measuring of work time and passage time reflected that. Noon was the moment when the ship was directly underneath the sun; by establishing that moment with a sighting instrument, the master could easily work out the ship's latitude—how far the ship was north or south of the equator. Expressed in degrees between zero and ninety, that latitude would be recorded in the log. If the sun was obscured at noon, the master might record a sighting of the sun at another time during the day, or of one or more stars at dawn or dusk, when the horizon was visible. Those sightings required more calculations, but a fully-qualified navigator would know how to perform them.

The rest of the day-to-day navigation of the vessel was conducted by a set of techniques collectively known as "dead reckoning," from "ded." or "deduced" reckoning. Deduced reckoning may sound like an educated guess; it was. The basic principle was that keeping up with the vessel's speed, compass course, and elapsed time since departing a known position would provide an updated position. In theory that is true, but in practice, the wind, the sea, the earth's magnetic field, and human fallibility introduced too much error into this "reckoning" for it to be any more than an estimate of position, and this error was compounded the longer the vessel sailed away from that initial known position. So, the "DR," as it was usually noted, would be corrected by

[2] Phillip Reid, *The Merchant Ship in the British Atlantic, 1600–1800: Continuity and Innovation in a Key Technology* (Leiden: Brill, 2020), 175–82.

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"observation"—whether that meant the noon sun sight, a sighting of another celestial body, or the distance and bearing of a known landmark. Navigators also applied corrections based on their apprehension of current, leeway (the side-setting of the vessel by the wind and sea), known or suspected errors in the reported compass courses steered by the helmsmen, and variation—the difference between magnetic north and true north, measured as an angle, which itself varied by location on the earth's surface.

With no widely available means of determining longitude with any accuracy, the DR would provide an estimated longitude to go along with the observed latitude; one requires both a vertical and a horizontal point to establish a fixed position on the earth's surface—otherwise, one has only a line of position.[3] Needless to say, the estimated longitude was not nearly as trustworthy as the observed latitude—and every navigator knew that.

The caution engendered by the lack of faith in estimated longitude is evident in the logbooks. When the master believed he was approaching any land, including his intended destination, he grew cautious. He slowed the vessel down by taking off sail. Sometimes he tacked or wore ship—put the vessel through the wind, zig-zagging back and forth—or he "lay to"—put a little bit of sail against a hard-over helm, so the vessel did nothing but scallop slowly along, like a duck with her head under her wing.[4] He might do this, even in good weather, if it would help him avoid closing with the coast at night, when he could not see ahead. This gave him the time to take soundings—cast a lead line to determine if they were coming into shallower water, and if so, what the bottom composition was, which could help tell him where they were, especially how close to shore. The cautions masters took when approaching their destinations, largely out of awareness of the likely error of longitude in their logs, set a trap for historians trying to determine trends in vessel passage speeds over time; how fast the vessel completed a passage, from departure to entering the destination port, was not the same as how fast she could travel through the water.[5]

A vessel could be carried along, or set off her intended course, by a current, but her ability to reach her destination in a timely manner was entirely dependent on the wind, so it is natural enough that the direction and speed of the wind, in the context of general weather conditions, take up so much space in a logbook. We find, in the narrow columns on the left-hand side, wind directions next to courses steered. In the Remarks column, on the right-hand side, only an event of most unusual import could usurp the otherwise-universal place of weather conditions as the first, and most frequent, notations. If we are lucky, we also find frequent records of sail changes associated with changes in wind direction and strength.

One cannot overstate the violence of heavy weather at sea on a sailing vessel of modest size. In the North Atlantic, a vessel making a transoceanic passage could expect to encounter such conditions. From late autumn to spring, there might well have been as much violent weather as moderate. The labour required to work the vessel in such conditions is something we moderns can only dimly imagine. Yet, such labour was all in a day's work for an average North Atlantic sailor, who did it over and over again, carrying out the master's orders to put this up or take that down, tie a reef in that sail or let one out of another. The Remarks column routinely records broken spars, split sails, parted control lines, and worse damage. Occasionally, a man would fall or slip overboard. The

[3] On the quest for longitude, see Derek Howse, *Greenwich Time and the Longitude* (Oxford: Oxford University Press, 2003).

[4] Modern yachtsmen call this "heaving to."

[5] An additional important source of error in historians' estimates of passage times and speeds is introduced by the use of certificates of clearance and entry. Masters would obtain official permission to leave or enter a port sometimes days before or after they actually did so. See David Riggs, "Transportation Efficiency in Eighteenth-Century Merchant Vessels," *International Journal of Maritime History* 33:2 (May 2021), 425–34.

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crew might see him go under, or lose sight of him first. The event would be recorded in Remarks.

"NOTD": Reading More into the Logbooks

The acronym "NOTD," occurring twice in the log kept aboard the snow *George,* means, I believe, "nothing occurred this day." That, of course, is not literally true; it reminds us that, like any written document, the log contains what its author deemed important enough to include. Excluded by that filter will almost surely be twenty-four hours' worth of interaction and communication between crew members, routine minor adjustments of sail trim (and some major ones), and the interior monologues and free-associative ruminations rightfully beloved of novelists. I added the qualifier "almost" before "surely" because no two logs are alike, and the idiosyncrasies of individual authors vary enough that predicting with certainty what will and will not be found in a given log is impossible. That is one of the compelling aspects of these sources. Fortunately, much that is routine and mundane does find its way into the logbooks. Anything the master or another supervisor has assigned to a group of sailors will likely appear, in a form such as: "People employed making matts" or "People employed scraping the sides." Because log authors typically include large work tasks, as well as incidents of damage, an intact logbook provides a useful maintenance and repair record for the period of time it covers.

It also tells us some things about the crew, although what it does not say is as important as what it does. Historians are accustomed to finding rich source material in legal case records, keeping in mind that legal case records exist only when something is amiss; if everything goes smoothly and everyone is happy, there are no lawsuits. On board ship, if everything is going smoothly and everyone is reasonably happy, the best indication of that is either blank space or something to the effect of "People employed variously." On the other hand, if there is personnel trouble, it will be recorded, unless it is a private matter between crew members that does not reach the attention of the log's author. Discipline and desertions are routinely recorded, along with, in most cases, some indication of the circumstances surrounding them—though a desertion may well be succinctly recorded with no further elaboration: "Robert Jenkins ran."

As a log's author was a person at the top of the ship's hierarchy—a master, commander, or supercargo—his Remarks on interactions with other people will also include those with business and official contacts, such as agents and merchants in both home and destination ports, other ship's officers and crew with whom he might have contact, customs officials, and lawyers.[6] Much of this content provides only clues that prompt the researcher to investigate further: "Dined with Mr. Carroll at his home." Who is Mr. Carroll? What was the relationship between the two?

Again, it is worth keeping in mind that what we think is important and what the author thought was important may or may not coincide. In neither the master's nor commander's logs for July 1770 is there any mention of both men from *Sultana* having dined ashore with a gentleman in Virginia. The only way we know it happened is from the gentleman's—George Washington's—day diary.[7]

[6] If the logbook is part of a collection that also includes the ship's correspondence, those letters can provide great detail about the running of the ship's business, especially letters between masters and owners, highlighting the nature of that relationship, in which masters acted as the business managers for owners in destination ports. Their correspondence includes instructions from owners to masters, setting out the parameters within which the masters were free to act on their own judgement; and, from masters, justifying their decisions to their employers.

[7] Jim Tildesley, *"I Am Determined to Live or Die on Board My Ship": The Life of Admiral John Inglis: An American in the Georgian Navy* (Kibworth Beauchamp: Matador Press, 2019), 138.

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Aside from the human world and the immediate concerns of the weather, logs do occasionally include information about the nonhuman marine world. The log kept aboard *George* mentions a red tide off the coast of Ireland, and that same log contains several mentions of encounters with sea creatures, most of which were fatal—for the sea creatures. Mentions of marine animals provide just as stark a reminder of cultural difference between then and now as records of floggings and enslavement. Dolphins, other porpoises, and sea turtles were, to them, sources of fresh food, and pursued as such. The author of the *George*'s log lists the specific internal organs of a harpooned porpoise that he found particularly tasty.

Cultural differences across time also play out in descriptions of ports of call or passing scenery. As the *George* arrived in the Leeward Islands in late May 1806, the log's author recorded the following observation:

> At 11 Passed the Island of Nevis, which exhibited a beautiful display of West India scenery, viz. Plantations, Rich, elegant and variously colourd agreeable to the Produce & Situation, Sugar Wind Mills & scatterd buildings at the Bottom of Lofty Mountains which projected above the Clouds, afforded a handsome View.

The author lived in a world where the brutal and dehumanising regime of plantation slave labour was a normal part of the colonial landscape. It is not surprising, then, that he did not feel the need to express any opprobrium about that; indeed, in a few weeks, he would agree to take thirty enslaved persons from St. Thomas to Campeche as human freight.

Cracking the Code: Deciphering the Eighteenth-Century Atlantic Logbook

A key to the shorthand found in a logbook is accessible, though the historian's ability to comprehend the navigation recorded there will depend to a large extent on that person's technical expertise. The importance of such technical expertise to the history of navigation has been noted in scholarly journals; without it, one cannot, for example, reconstruct the voyages of a vessel adequately enough to plot them, or make informed judgements about adjusting such plots for obvious errors in the original source.[8]

Logs vary somewhat in content and format, but not dramatically. I have worked with both merchant and Royal Navy logbooks; significant differences were limited to content in Remarks specific to their respective activities. As noted, the most basic division of each day's entry may be considered "left-hand" and "right-hand"—the left-hand side being the information necessary to construct the DR for the day, given in one- or two-hour increments, and the right-hand side being the Remarks column. Below both is a horizontal row for recording the summary navigational data for the whole day. Without further ado, here is a transcription of one page of the *George* logbook, formatted exactly like the original (see Figure 1).[9]

Taking the left-hand side first, we have abbreviated column headings standing for Hour, Knots, Half-Knots. Since the nautical day begins at noon, the first "2" here is 1400, or 2:00 p.m. ("p.m." stands for "post-meridian," or "after noon"). The middle "12" is midnight, and the final one is noon, which ends the day and begins the following. "Knots" is nautical miles per hour. While we would express "three-and-a-half knots" as

[8] See for example Willem F. J. Mörzer Bruyns, "Research in the History of Navigation: Its Role in Maritime History," *International Journal of Maritime History* 21:2 (Dec. 2009), 261–87.

[9] Text in brackets in these transcription excerpts are my own notations, inserted for clarity or to note an obvious error in the original. The excerpt is from page 66 in the original logbook.

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H	K	HK	Courses	Winds	Remarks on Sunday 25th May 1806
2	3	1	West	East	Begins with Moderate Breeses & clear
4	3	1	--	--	Weather --
6	3	1	--	--	At Midnight Squally with a
8	4	"	--	--	heavy shower of Rain --
10	2	1	--	--	took in Main Sail & Stearing Sails
12	4	"	W by S	--	At 4 AM made all Sail, Moderate
2	4	"	--	--	Cloudy Weather --
4	3	1	--	--	At 9 Made the Island of Deserada [La Désirade]
6	3	"	--	--	bearing S by W. Dist 8 or 9 Leagues
8	3	"	West	--	At Meredian Made Antigua Bearg
10	3	"	--	--	W by N Dist 7 Leagues. --
12	3	1	--	--	Pleasant Breeses & clear --

Course	Dist	Dif lat	Depar	Lat by DR	Lat by Ob	Mer Dist	Lon made	Lon in	B & Dist
					16.57				

H	K	HK	Courses	Winds	Remarks on Monday 26th May 1806
2				E by S	Begins with Moderate Breeses & clear Weather
4					At 1 PM Made the NW End of Guadaloupe--
6					At 4 AM passed Dunder Rock [Redonda] remarkable for its
8					small circumference & lofty apperance –
					At 11 Passed the Island of Nevis, which exhi
10					bited a beautiful display of West India
					scenery,.viz. Plantations, Rich, elegant and
12					variously colourd agreeable to the Produce
2				ESE	& Situation, Sugar Wind Mills & scatterd
					buildings at the Bottom of Lofty Mountains
4					which projected above the Clouds, affor
6					ded a handsome View – At Meredian
8					St Kitts bore NW – Caught a Baracute [barracuda]
10					about 3 feet in length – Saw several
					small Craft standing in Various direc
12				East	tions – light Airs & clear --

Course	Dist	Dif lat	Depar	Lat by DR	Lat by Ob	Mer Dist	Lon made	Lon in	B & Dist

Figure 1. Transcription of a page from the *George* (ship) logbook 1805–1806, Am .6823, Historical Society of Pennsylvania, p. 66.

"3.5," they were less inclined to use decimals in general; this can in fact be misleading, because what looks like a decimal, as in the "16.57" Lat by Ob entry in the top section of this excerpt, is actually just one of an assortment of punctuation marks, used seemingly at random, to separate the first pair of numbers from the last. Indeed, it is common to see no such punctuation at all; a space serves the same purpose.

This is a good place to point out the rampant inconsistency of eighteenth-century writing. Sometimes it seems as if the author is being inconsistent on purpose; would it not be easier to get in the habit of using the same mark for the same purpose? They did not. Nor can the researcher assume that the same mark in one place means the same thing as it does in another. A good example is the use, in the above excerpt, of quotation marks or ditto marks in the "HK" column. Ditto marks were already in use by this time, so it was reasonable for me to assume that the author was using these as such. It was only

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by adding up the distances for the day both ways—one, assuming these were ditto marks; and two, assuming they meant "0"—that I could determine that, actually, they meant "0." I performed those computations on several examples to make sure the author was, indeed, being consistent.

The double-dashes, which I transcribed as written, may be inferred to be ditto marks; in the Courses and Winds columns, that is the only interpretation that makes any sense. I would never assume that another log author would employ the same marks the same way. It would be necessary to test any and all inferences as best I could.

Courses and Winds are expressed using the 128-point compass, and that is one consistency of eighteenth-century logs. Courses here are courses by the compass, uncorrected. They are expressed as a direction toward which the vessel is steered. Winds are expressed as the direction from which the wind is blowing. A vessel with a compass course of NW (northwest) is being steered toward the northwest, or roughly three hundred fifteen degrees on the 360-degree compass. A NW wind is one coming from that direction.

In our own time, we use the 360-degree compass. They used a compass divided into "points." A point, for reference, is 11.25 degrees. In the excerpt above, "ESE" means East Southeast, and "W by S" means West by South. Trained on the 360-degree compass from an early age, I find it helpful to convert these directions to the system with which I am familiar. It is likely that some experts find this unnecessary; that would save time and effort. However, an advantage of degrees (expressed in decimal format, rather than degrees-minutes-seconds) has the advantage of allowing for calculations, especially automatic ones, such as those Microsoft Excel can perform. For conversion, I use a table in Wikipedia.[10] Occasionally, I have found an error in the original log when it records a direction in this system that is not to be found anywhere in the table. Context is helpful for correcting those.

Once I have both course direction and wind direction for a given time increment, I can make a close estimation of the point of sail—the angle the vessel is sailing to the wind. Even for those not interested in analysing sailing performance, a general understanding of this concept is necessary for grasping the limitations and imperatives of sail power, and thus the structure of the voyage itself. As a general rule, it was difficult for any eighteenth-century commercial or naval vessel to sail any closer to the wind direction than forty-five degrees, and sailing that close tended to be an uncomfortable business, with wind-driven seas hitting the bow of the vessel and the wind creating maximum heeling—leaning—force in the sails, and maximum leeway—side-slippage—through the water. Sailing close to the wind also reduced the vessel's speed from what it would be with a greater angle, and increased the danger of being taken aback in a sudden wind shift; with the sails trimmed as close to the wind direction as they could be and still fill, a small wind shift could put that wind on the other side of those sails, back-filling them and stopping forward progress. Without momentum to move water past the hull and rudder, a sailing vessel will not respond to her helm; she is temporarily out of control. Being taken aback was also likely to cause shock-induced rig damage.

Sailing vessels preferred, then, to sail downwind if at all possible, sailing upwind only when necessary. The ability to sail into the wind was, indeed, necessary for manoeuvring in tight quarters and avoiding dangers such as a lee (downwind) shore or reefs, but it was an exhausting and slow way to make passage. Thus, all the favoured ocean sailing routes offered consistent downwind sailing. In the Atlantic, that meant the prevailing westerlies, curving eastward from the northeast coast of North America toward northern Europe; and

[10] The table may be accessed at https://en.wikipedia.org/wiki/Points_of_the_compass. Scroll down the page to "Naming of points on 128-point compass," and click "[show]" to expand the table. Note that the table presents multiple alternatives for each row; these are explained above the table.

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the Trade Winds, offering steady and sufficient propulsion from the west coast of Africa to the Caribbean. The Atlantic is naturally traversed in a clockwise direction by wind-powered vessels. Sailing from northern Europe to New England, then, as *Sultana* did in the late summer and early autumn of 1768, was a "wrong-way" passage, requiring sustained upwind sailing against the prevailing weather in the North Atlantic. That is why her westward passage took twice as long as her later eastward return.

Masters thus had to make sailing decisions that took into account the impossibility of sailing too close to the wind, and the desirability of sailing at an angle to it of at least 90 degrees but preferably short of 180, at which point the vessel's speed would drop somewhat, as some sails were shadowed by those behind, and the vessel took on some amount of a corkscrewing motion notorious for inducing nausea, a word that shares its root with "nautical." Running dead downwind, like sailing close upwind, also exposed the vessel to the chance of having the wind suddenly shift to the other side of the sails, transmitting a shock to the rig. In a severe storm, however, this point of sail was a common survival tactic, when no other options remained. In such cases, however, the vessel would likely have no sail up, and be running "under bare poles."

The Remarks Column: Details and Valuable Incidentals

With some understanding of the physical imperatives dictating the course of the voyage, the researcher is better equipped to understand what is recorded in the Remarks column to the right—a feature universal in eighteenth-century logs, both commercial and naval. The first important ingredient here is the weather; the terminology they used is not what we use now.

The Weather

As the wind was the vessel's power source; and, at the same time, a potential lethal threat to all on board, it is no surprise that logbook remarks give pride of place to it. The Remarks columns of logbooks contain wind and weather information valuable enough to be mined by today's climatologists; but, just as with directions in the 128-point compass system, researchers need to have a good idea of how to interpret the terminology before taking advantage of what we find here.

The Beaufort scale of wind strength, named for the Royal Navy admiral of that name, was first devised by him in 1805, at the same time the voyages of the *George* were recorded in the logbook discussed here, but not adopted until the 1830s. Until then, descriptions of wind and weather were somewhat idiosyncratic, like other elements we have already discussed. I found it helpful, in analysing the logbooks of *Sultana,* to compare wind descriptions with sail changes, and then to discuss those with the captain of the replica *Sultana* for cross-reference. Even then, I refrained from assigning fixed values, in knots of wind speed, to the descriptive terms found in the logs. Inference always increases the chance of error. Instead, I kept those terms intact, and ranked them, as best I could, in increasing order of intensity, acknowledging that some of them were likely partially or completely interchangeable and that there was certain to be some overlap. The resulting list is as follows:

a-Calm
b-Light airs and calms
c-Light airs
d-Light breezes and calms
e-Light breezes mixed with calms

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f-Light winds mixed with calms
g-Light breezes
h-Light breezes with lightning and rain
i-Light breezes, squall
j-Moderate breezes
_____light air
k-Moderate
1-More moderate
m-Fresh breezes and calms
n-Fresh breezes
o-Strong breezes
p-Fresh gales
q-Fresh gales with lightning
r-Fresh gales and squally (considered bad weather)
s-Strong gales
_____moderate air
t-Strong gales and squally
u-Hard squalls
v-Hard gales
w-Hard gales with thunder and lightning
x-Hard gales and squally
y-Very hard gales
z-Very hard gales and squally
_____ bad weather

Based on the sail changes recorded for these weather conditions, and in order to derive meaningful interpretations from an analysis of the relationship between the two, I divided the above descriptors into light air, moderate air, and bad weather. The list of terms presented this way may give the misleading impression that this is more precise than it is. "More moderate," for example, is a term relative to the conditions directly preceding its use. It was clear to me from context, however, that the conditions it consistently described were, indeed, best characterised as moderate.

It is worth specifically noting that the word "gale" did not mean to them what it does on the Beaufort scale, and thus to us. It had a wider range of meaning, from what we might consider "windy" to storm conditions. The other important specific term here is "squall," which mariners still use in the same way; it means a thunderstorm—localised, bringing gusty winds, lightning, and, usually, brief heavy rain. Squalls quickly and significantly increased the risk of rig damage, both from strength and unpredictability of direction, and they reduced or eliminated visibility for their duration. The logbooks make clear that the crew tended to work the hardest in squally conditions, as they had to make frequent and frequently drastic sail changes.

Log authors also noted sea state in the Remarks column. A "heavy sea running" means that high waves, generated by high winds either nearby or farther away, were moving through. These may well have dictated what courses the vessel could take, as they could make some headings severely uncomfortable, cause the ship to work so much that she began to leak, or even come aboard, over the deck, perhaps causing a knockdown—a partial capsize onto her side, from which she might recover or not. In severe storm conditions, the vessel might have been forced to run downwind, with the waves, but then, she risked being "pooped"—having a wave from astern come aboard, slewing her sideways so that she was broadside to wind and waves, and highly likely to be knocked down. In the worst of seas, she could even be "pitchpoled"—the wave astern could tip her

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up so that her bow buried itself in the trough ahead, and the wave behind could then flip her end-over-end. That was a fatal occurrence; it would be highly unlikely that anyone would live to report that their vessel had been pitchpoled.

Another common storm tactic recorded in the log—and also used for slowing or stopping progress near shore—was lying-to. How exactly the master chose to do that depended to some extent on the sea state and direction of wind and waves. These considerations are consistently recorded in Remarks.

Finally, gear breakage, damage, and repairs were consistently recorded. I was able to compile a table of *Sultana*'s repairs and maintenance over the four-and-a-half years of her service from her logs. Even the casual reader can get a clear sense of the frequency of such occurrences, and their relationship to weather conditions. Mishaps involving minor collisions with other vessels in crowded anchorages are also commonly noted.

Interesting Incidentals

Any information in Remarks that is not directly related to the progress of the voyage and the conditions directly influencing that progress was incidental to the original author, though it may be of principal interest to some researchers, and contributes much to making these logs such rich resources. In the excerpt above, for example, the first day's entry contains nothing but weather and navigational information; on the second day, the author pens his description of the scenery he observed while passing close to Nevis in the Leeward Islands. A writer familiar with what the author describes could recreate the scenes here faithfully, in descriptive language.

In a merchantman's log, much of the extra-navigational material in the Remarks column will be directly concerned with the ship's business. In a naval log, there will be considerable information about operations, the specifics depending on what the vessel is employed doing—fighting, intercepting merchantmen for customs enforcement or the taking of prizes, surveying, and so on.

The Bottom Lines: Understanding the Day's Navigational Data

In the later section on plotting a voyage, I will explain how the daily navigational data entries are derived, and how to estimate them if they are missing. Here, I will explain what they mean.

The "Course" entered at the bottom left of the *George*'s log excerpt is based on all the courses steered that were recorded for the day, but corrected for variation, leeway, and any other factors of deviation the master may have deemed relevant. The "Dist" (Distance) here is the total distance run in the twenty-four hour period, in nautical miles. "Depar" (also sometimes abbreviated "Dep") is Departure, which is one leg of the basic navigational right triangle. "Dif lat" means difference in latitude, and records the difference between the navigator's best estimate of yesterday's latitude and today's. "Lat by DR" means latitude by dead reckoning, which is calculated using the data recorded in the upper left-hand side of the day's entry. "Lat by Ob," on the other hand, is latitude calculated from either a celestial sight or a bearing and distance from a known fixed object. It is thus more reliable than Lat by DR. Any difference between the two is a good indication to the navigator of the error in his DR.

The next three entries have to do with estimating longitude which, as discussed, was far less reliable than estimating latitude. "Mer dist" means meridian distance, and it is a running total of the nautical miles of longitude run. That means that when the longitudinal direction reverses, such as from west to east, the number moves in the other direction too. "Lon made" is the difference, in degrees and minutes, between the estimated

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longitude for the day before and that of the current day. "Lon in," or longitude in, is the estimated longitude, again in degrees and minutes (a degree contains sixty minutes; a minute contains sixty seconds). As noted, there is no consistency in the use of punctuation to differentiate degrees from minutes. It may be a period: 2.59; a dash: 2–59; a comma: 2,59; double comma: 2,,59; or a space: 2 59. The entry right next to it may employ a different mark. In the *George/Reward* logbook, this is all seemingly random. Finally, we have "B & Dist," bearing and distance, for use when such a desirable line of position was obtainable.

The reader will notice, however, that on the first day of the excerpt above, only one of these items—Lat by Ob—is recorded; and on the second day, none are. This is why I had to reconstruct all that data from the information in the other parts of the log. More on that in the section on plotting a voyage.

Commercial Versus Naval Logbooks

I have not worked with naval logbooks from vessels in active combat; that is outside my purview of interest. I will speak to those I have worked with: those of His Majesty's Schooner *Sultana,* working in dispatch and customs enforcement on the North American Station 1768—1772. As was standard on naval vessels, *Sultana* had a commander—the commissioned officer in charge of carrying out her orders—and a master and pilot, a warrant officer in charge of her sailing operation and day-to-day navigation. Both of their logs survive in their entirety. They are similar, though the master's log contains somewhat more sailing details than the commander's. I should note that the logs do not always agree; it is obvious that one was not copied from the other, and their points of divergence, though minor, offer the researcher the opportunity (and obligation) to think about why such differences might exist, and where errors or differences of judgement may lie.

The Royal Navy was easily one of the largest and most complex bureaucracies on earth, and its policies and procedures were unusually standardised for the time. Muster books, in which commanders recorded who was on board, and in what capacity, as well as who had deserted and who owed what for items purchased from the ship's stores, were preprinted with the lines and column headings. These records, invaluable in themselves, were sent ashore to be checked by those responsible for the Navy's accounts. On the other hand, the logbooks of *Sultana*'s master and of her commander were, like those of *George/Reward,* drawn by hand. The navigational data for the day was all combined on one row on the left-hand side, with Remarks taking up the right-hand side, as with the mercantile log.

The Perennial Challenge of Transcription

The primary challenge in interpreting the log of *Sultana*'s master and pilot, David Bruce, was transcription. Reflecting the social-class differences of commissioned versus warrant officers in the Navy, Lieutenant Inglis, the commander, was obviously literate; his biographer tells us that he attended the Philadelphia school that eventually became the University of Pennsylvania.[11] Bruce, on the other hand, was barely literate, relying largely on phonetic spelling, as was so typical of non-elites in the eighteenth century; in all probability a Scot, he struggled with the place names of North America, largely corruptions of indigenous words, and ships named for Greek gods and Biblical Hebrews. His handwriting was terrible, probably exacerbated by the hurriedness with which he had to make his

[11] Tildesley, *Life of Admiral John Inglis*, 14.

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entries, and perhaps too by the motion of the little vessel. Merely reading and understanding the log required a much greater investment of time and effort than would be required for reading something of the same length and scope of content written in clear modern English. However, experience has convinced me that the process of careful transcription yields benefits beyond the extraction of concrete information from the source. In attempting to interpret place names, the names of other ships, and even standard nautical terms that were difficult to make out, I learned, much more thoroughly, the world in which Bruce was writing his log. I had help with this; a native English mariner helped me with landmarks along the south coast of England, used by Bruce and Inglis—and countless other mariners—to pilot the English Channel.[12] That, in turn, allowed me to follow their route on a chart, and check my plot against the bearings and distances recorded to those places in the logs. My need for expert help there brings up another important point about transcription: it is a difficult task to do well in the absence of some prior expertise in the subject matter. Someone not already familiar with nautical terminology, with the basic concepts of piloting, navigation, and operation, would be hard-pressed to read one of these logs; whereas someone equipped with such understanding is in a good position to solve puzzling bits of handwriting using context. As with transcription in general, a familiarity with the grammatical conventions and punctuation habits (such as they were) typical of the time and place also helps.

I am firmly convinced that to extract full value from one of these logbooks requires commitment to transcription. The researcher who has to type out what the log says, word for word, cannot avoid all the judgement calls required in any transcription; and thus cannot avoid finding out what is not immediately apparent. That is true whether or not the researcher has any interest in using the navigational data in the log to reconstruct a voyage.

Plotting Atlantic Voyages from Eighteenth-Century Logbooks

An important component of the GSR database project, as other articles in this issue make clear, is the plotting of the voyages recorded in the logbooks. Any sort of step-by-step guide to that process would be a full-length article in itself; here, I will note some important considerations, and what this process contributes to understanding the eighteenth-century human Atlantic.

First, the obstacles: even with the benefit of a logbook containing full navigational data, the researcher's judgement will be called upon constantly, as with transcription. With *Sultana,* not only did I have one logbook with complete data; I had two. Still, plotting the schooner's passage out of the English Channel and into the Atlantic to begin her westward crossing, adhering faithfully to the positions recorded, put her on land in northwest France. That, obviously, was impossible. Where is the error? Is that even possible to determine after the fact? In this instance, it was not. This forces us to think about how masters and commanders used these logs; what faith did they routinely place in their own reckonings and observations, and how did they guard against falling victim to potentially fatal error? In this case, there is no mention in the logs of straying dangerously close to the French coast; it is safe to assume that the schooner tacked her way out of the channel with no close calls. My judgement call was to move the plotted track north and westward; and to think about why that was necessary. We know that, unfortunately, navigational errors did indeed lead to disaster. I found many instances in *Sultana*'s logs where Bruce's and Inglis's recorded positions did not agree; both could not be correct. Sometimes, the Remarks column provided clues, such as mention of an off-setting current and the correction made to the DR accordingly.

[12] Thanks to Nick Burningham.

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With the log of the *George/Reward,* as is obvious in the excerpt included above, most of the summary navigational data was left out much of the time. The author of this log was a supercargo, not the master, and therefore this was not the primary navigational log of either vessel.[13] It is, however, what we have; to plot the voyages contained therein, I had to determine a way to reconstruct them, using the information at hand.

I was trained in modern piloting and navigation, not eighteenth-century piloting and navigation. Basic concepts convey, but basic techniques differ. I had to consult secondary sources to interpret the summary data column headings, and to learn indispensable facts, such as that the courses recorded throughout the day were compass courses, whereas the course-made-good—the course recorded at the bottom, for the entire day—was corrected for variation.[14] Variation—the difference between the direction of the magnetic north pole and the geographic North Pole—can be over twenty degrees in the North Atlantic; failing to account for it could put the vessel's estimated position so far off as to be useless. It also changes as the vessel's position changes, so the correct estimated value must be looked up using an estimated position. Fortunately, the U. S. National Oceanic and Atmospheric Administration maintains an online calculator using a model dating back to 1590.[15]

Through trial and error to determine what yielded plausible answers, and comparison with examples mentioned in secondary sources, I was able to determine that the method used in this logbook was "plane sailing"—computing position each day using the plane right triangle. This is simple to visualise: for every shift in position from one place to another, regardless of the direction of travel, there is a vertical and horizontal component; the vessel moves up and over, or down and over. Those two components form the two straight legs of a right triangle—a triangle in which those two legs form a ninety-degree angle. The hypotenuse—the diagonal line connecting the two straight legs—is the distance travelled on the course-made-good (expressed as an angle). While it is true that the surface of the Earth is curved, not flat, the error introduced by assuming a plane rather than a spherical triangle is too small to be significant as long as distances are limited to a few hundred miles. Since an eighteenth-century sailing vessel was doing well to make more than a hundred miles a day, that was not a problem. The basic trigonometric functions, then, could solve the triangle, allowing for the combining of the various courses steered throughout the day into one average course-made-good, and the adding-up of the distances for each leg by multiplying the knots (nautical miles per hour) by the number of hours (two, in this log). This provided the values needed to use those trigonometric functions. In the eighteenth century, tables of those solutions—called traverse tables—were carried aboard. With a modern computer at hand, though, I set up auto-calculations in an Excel spreadsheet, after consulting my own set of traverse tables as an orienting reference.[16]

Generating the data I needed to reconstruct the *George/Reward* voyages took three weeks of full-time, mentally exhausting work, and I may never repeat the exercise; it

[13] Authorship cannot be determined from the log itself; it is unsigned, and the provenance of the logbook was not clear when it was acquired. However, vice-admiralty court records of the case resulting from the *George*'s seizure and condemnation survive in the National Archives (TNA HCA 42/419/477, Manuscript prize appeal No 477; HCA 44/56 Assignation book, recording process and decrees in prize appeal sessions, 1807 Apr 7–June 13). These reveal that the supercargo was Samuel Guirey, nephew of the *George*'s owner, John Towers of Philadelphia.

[14] Peter Reaveley, "Navigation and Logbooks in the Age of Sail," https://web.archive.org/web/20150217124507/http://www.usna.edu/Users/oceano/pguth/website/shipwrecks/logbooks_lesson/logbooks_lesson.htm, accessed 8 March 2024.

[15] https://www.ngdc.noaa.gov/geomag/calculators/magcalc.shtml#declination, accessed 11 April 2022.

[16] Among other sources, these may be found in the *American Practical Navigator,* originally written by Nathaniel Bowditch (1773–1838), and updated and reissued ever since by the U.S. Government (Pub. No. 9, Volume II, Defense Mapping Agency Hydrographic/Topographic Center, 1981).

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reminds me of carefully crafting a set of moulds for a fibreglass boat, and then only using them to make one hull. That analogy fails, however, when I consider what I learned about how the daily navigation of these ordinary trading vessels worked. I had to make the calculations myself, and evaluate their reliability. I had to compare them with those from the sections of the log where the original author provided them. When I finally got to the point where I could plot the voyages, the obvious errors revealed a situation more complex than simply my work being wrong: the voyage for which the author provided full data put the vessel at least one hundred miles too far west toward the end of the voyage, and I had to think about why that was. My own plot, from Jamaica to New York, looked good until the *Reward* turned northeast after coming out of the Yucatan Passage around the west end of Cuba; it then turned north too early, sending the vessel across the Florida peninsula, and, while moving over open water again, turned west too early, with the final position in the mountains of West Virginia. Only with these plots laid out on the chart could I begin to compare them with what the currents were likely doing to create growing divergence between estimated and actual position. Only then could I see for myself how dangerous the inability to accurately fix longitude could be to these vessels and their crews. Yet the *Reward* did not crash into Florida or Maryland's Eastern Shore, just as *Sultana* did not crash into Brittany. The masters knew what they were doing; they knew how much to trust what they wrote down in the log, and how much to trust what they did not. Unfortunately for us, what they did not record in the log is what we as researchers have to learn about their navigation. As Willem Mörzer Bruyns argued, advancing the history of navigation requires the acquisition of technical expertise on the part of historians of navigation.[17]

Analysing Sailing Performance and Operation

Mining a logbook for insight into eighteenth-century navigational practice requires the acquisition of some technical expertise. Mining one for insight into operating an ordinary period sailing vessel requires the same thing. In my experience, such an effort proceeds in three stages. First, the researcher goes into the logbook with a working knowledge of how these vessels worked. This is not the knowledge of a professional: the knowledge of, say, the master of a period replica vessel. It is adequate, though, to understand the terms used, and to be able to make sense of the correlations between recorded conditions, navigational objectives, and operational decisions: sail changes, changes in course, the shifting of ballast and cargo for weight redistribution, storm tactics. The second stage is processing the log: first transcribing, and then attempting to make the correlations above. The log will not provide all the information one could want for doing this; it will not, for example, make completely clear how shifts in the wind correlate with sail changes. It will not provide exact correlations between course steered and wind direction at the same time; exact point of sail at that time will thus remain elusive. My experience with *Sultana*'s logs, however, taught me that these correlations may be guessed at with enough certainty so as to be useful. That in itself was instructive. I was able to construct tables of such correlations for *Sultana,* and those in turn led to questions about why some decisions were taken in some specific circumstances. The third stage of the process was, then, to discuss these questions with those whose expertise far exceeds my own, and always will: professional mariners, some of whom have spent decades at sea on traditional sailing vessels. These discussions were mentally challenging, but they resulted in a level of understanding of how *Sultana* behaved at sea, and why her crew worked her as they did, that surpassed anything I could have arrived at on my own. They contributed to

[17] Mörzer Bruyns, "Research."

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interpretations I could present in the book I wrote on *Sultana* that are more sophisticated than what is usually found in the historical literature, yet written in language accessible to the layperson. We cannot work on these subjects without technical expertise, but our own technical expertise will rarely if ever prove adequate to fully exploit all of what these logbooks can teach us. Collaboration with those who possess the expertise we do not is the only way to do that. Our own expertise does, however, equip us to understand and use what those consulting experts are telling us.

Summary: What Can We Find in an Eighteenth-Century Atlantic Logbook?

As with other eighteenth-century primary source documents, these logbooks have much to tell, and much more to suggest; they were not written for posterity, but for a more immediate purpose. Their most obvious contributions are to the history of navigation, vessel operation, and climatology; but they should not be overlooked by scholars interested in other aspects of the eighteenth-century Atlantic. They contain observations about marine wildlife, geography, harbours and towns, social and cultural attitudes and assumptions, warfare, maritime predation, and commerce. Real life is full of the unexpected, of random happenings, and logbooks are too. *Sultana*'s logs tell of the murder of a Cherokee in Virginia by a white man, as the schooner was charged with transporting the accused for trial. They tell of four wretched "lunatics," whom they also transported, as there was no place to house them in Williamsburg, Virginia, but the jail. The *George/Reward* logbook describes the scenery of the West Indies plantations, and offers a basic account of the acquisition and attempted disposition of thirty enslaved people. It recounts the attendance of the author at a musical performance in Kingston, describing the venue as charming and the performance as disappointing. He records a poignant note about the poverty in Cork, Ireland, struck by the throngs of beggars waiting outside the door of every church as services let out. Often, these details offer enough information that the researcher can pursue supplementary sources to fill in what is left out.

Supplementary and Complementary Sources

Nontraditional sources can also prove useful. I have had more success than I expected entering terms from the logbooks into a Google search box and exploring results. For example, I found a description of the entertainment venue in Kingston mentioned in the *George/Reward* log on the website of a local amateur historian there. Should I choose to, I can now, armed with the name of the place and its brief history, make an archival inquiry much more likely to yield results in a timely manner than I could have without such information.

For commercial voyages, historians interested in maritime commerce can search for the port records recording the entry and clearance of the vessel at its points of origin and destination. These will provide details about the vessel itself, its cargo, and its crew that will likely be missing from the logbook. Not all of these port records survive; archivists in the port or at national repositories should know which ones have, and where they are. I have found that it may require several steps, starting locally, to ascertain that.

For naval logbooks, muster books are invaluable records of personnel matters, even recording the ages and birthplaces of the crew members, as well as their conduct while in service, wages, and expenses. I made an extensive analysis of these for *Sultana*.[18] I would also point out that the United Kingdom Hydrographic Office retains a large

[18] TNA ADM 36/7269, Royal Navy Ships' Musters (Series I) Ship SULTANA Type Schooner, 1768 Jul–1770 Dec; TNA ADM 36/7270, Royal Navy Ships' Musters (Series I) Ship SULTANA Type Schooner, 1771 Jan–1772 Dec.

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collection of the sailing and piloting directions required to be kept by Royal Navy commanders on foreign service, describing the ports of call visited, including what provisions and services were available, what defensive installations were to be found, and what maritime commerce went on there. I used digital images of those kept by Lieutenant Inglis.[19]

Depending on the researcher's specific interests, references in the logbooks might lead to newspapers, legal records (in the case of the *George,* vice-admiralty court proceedings), merchants' correspondence, or other logbooks. For me, *Sultana*'s logbooks, which spanned four-and-a-half years, provided the bulk of the source material I needed for a monograph. The *George/Reward* logbook, spanning only ten months, will yield a full-length article with a rich narrative, providing enough contextual clues for the location of helpful primary and secondary sources to flesh out the detailed story of an ordinary vessel and her crew navigating the hazards of the British Atlantic.

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[19] United Kingdom Hydrographic Office, Miscellaneous Papers Volume 26 Item 29, Individual pages for: HMS Sultana, 1768–1770; Miscellaneous Papers Volume 26 Item 30, Individual pages for: HMS Sultana, 1769–1772.

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