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Sophie Chiari and Janet Clare

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'We have … great cause to give great thanks'
(*Coriolanus*, 5. 4. 60)

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Editorial
Evolving Cosmographies

Sophie Chiari
Université Clermont Auvergne (<sophie.chiari_lasserre@uca.fr>)

Abstract

This editorial is intended to frame the special issue of the *Journal of Early Modern Studies* devoted to *The Circulation of Cosmographical Knowledge in Early Modern Europe*. Providing early modern definitions of cosmography and differentiating between cosmography and geography, it takes stock of the latest scholarly publications on the subject and sheds light on the various contributions in this issue. In the presentation of the various sections, it emphasizes fresh perspectives and methodologies likely to open up new interpretive paths in the field of cosmography.

Keywords: *Discipline, Earth, Geography, Knowledge, Science*

At the beginning of Act 3 of Marlowe's *Doctor Faustus*, the Chorus tells the audience that the protagonist has gone to 'prove cosmography' (1999, l. 7):[1] in other words, he intends to check the accuracy of the maps that Mephistopheles has provided him with before flying to Rome on the back of a dragon. Given the context of the play, this mention of cosmography goes hand in hand with Faustus' daring pursuit of knowledge – a total, global knowledge of the universe in a deeply changing world in which old systems of belief could not account for the new realities disclosed by astronomers and explorers. While Marlowe here points to the disillusionment awaiting all scholarly aspirations, he also highlights the need to delineate the shifting shape of the world in a period of political and moral uncertainty.

This special issue of the *Journal of Early Modern Studies* attends to matters such as these, which were unfolding at a time of great discoveries and religious dissentions, the era of Copernican theory and Galilean revolution. It seeks to explore the complexities of the concept of cosmography in the early modern period,

[1] I am quoting from the 1604 text, but the reference to cosmography is also present in the 1616 text.

proposing to enlarge and clarify our understanding of this ambitious project (which comprised a variety of different disciplines) by tracing its European networks.

1. *Defining Early Modern Cosmography*

As an attempt to study the world in its entirety, Ptolemy's *Cosmographia* (second century B.C.E.) is the only cartographical work to have survived from Antiquity, and it was a ground-breaking one until the seventeenth century at least. Lost for over a thousand years, it was rediscovered around 1300, when Byzantine scholars began introducing copies of its maps and writings into Italy. Translated from Greek into Latin by Jacopo Angeli in the early fifteenth century, it lost the concept of its original title in translation – as Janet Clare reminds us in her detailed Introduction – and it became widely known as Ptolemy's *Geography*.[2] The word 'cosmography' thus appeared quite late in the English language: it cropped up in the last decades of the fifteenth century to designate an emerging humanistic discipline which was conceived as a response to the discovery of the New World. While the limits of the *oikoumene* had long been regarded as fixed once and for all – a belief which had deterred many a voyage of exploration – the boundaries of the inhabited world were suddenly redefined: in other words, the previous tripartite division of the world (Europe, Asia, Africa) had to be radically altered with the discovery of the American landmass. Men of science variously tried to come to grips with this destabilizing process: along with cartography and chorography, cosmography, which incorporated cosmic and theological themes and which mixed facts and fiction, was one of them. Its rapid success undoubtedly owed much to the parallel development of the printing press, which helped spread knowledge of newly discovered geographical and celestial realities.

Now broken up into its component parts and no longer studied as a distinct genre or discipline, the learning of cosmography was strongly advocated by sixteenth- and seventeenth-century humanists and teachers across Europe. In Rabelais' *Gargantua and Pantagruel*, Gargantua thus writes to his son that 'books of *Cosmographie* will be very conducible, and help [him] much' (1653, Book 2, Ch. 8, 56).[3] According to the OED, cosmography can first and foremost be defined as 'The science which describes and maps the general features of the universe (both the heavens and the earth), without encroaching on the special provinces of astronomy or geography' (OED, 1) even though, as Dario Tessicini suggests, 'at least up until 1600 different notions of cosmography coexisted, interacted and eventually collided' (2011, 51, Abstract). By contrast, the term 'geography', which appeared around the same period, was much more specific since it primarily designated 'A treatise on the physical features or characteristics of a region' (OED 1), and thus concerned, more restrictively, the knowledge of terrestrial space. Early works on cosmography notably include Peter Apian's *Cosmographicus liber* (1524), a book which expatiated on the division of the heavens into circles, explained how they mapped onto the earth, and provided a description of the earth (as well as of its inhabitants); it also contained a list of latitudes and longitudes of cities as well as various maps and diagrams. Implied in Apian's text was the idea that, 'as the boundaries of the known world expanded, so did the importance of knowing one's own place in it' (Gaida 2016, 280). Sebastian Münster's richly illustrated *Cosmographia* of 1544 was printed in Basel, in the Swiss Confederation. For Münster, 'the art of

[2] Manuel Chrysoloras, a Byzantine émigré, was the first to produce an incomplete translation of the text which he introduced in Italy in 1397. Leonardo Bruni, one of Chrysoloras' students, followed his master but soon abandoned his translation, which was then completed by Jacopo Angeli da Scarperia in 1409-1410.

[3] Ch. 8 is entitled 'How Pantagruel being at Paris received letters from his father Gargantua, and the Copy of them'.

cosmography concerns itself not only with the countries, habitations and lives of the various people of the earth, but also with … strange animals, trees … the habits, customs, laws, and governments of men' (quoted in McLean 2007, 124). While the *Cosmographia* can be defined as an attempt to embrace all forms of knowledge, the details provided by the author become less and less exact as one travels further away from Münster's German homeland. As the descriptions focus on the faraway lands of Asia and Africa, they grow more fanciful and allow for monstrous races to appear. In the fifteen years after Münster's ambitious enterprise, William Cuningham popularized cosmography in England and, in the dedicatory epistle of his *Cosmographical Glasse*, he explains that he 'deuised this mirrour, or Cosmographical Glasse' for his readers to 'behold not one or two personages, but the heauens with her planets and starres, the Earthe with her beautifull Regions, and the Seas with her merueilous increse' (1559, n.p., 'To the right honorable the Lorde Robert Duddeley'). One of Cuningham's competitors was Thomas Blundeville who, in his *Exercises* of 1594, explained in turn that 'Cosmography is the description of the whole world, that is to say, of heauen and earth, and all that is contained therein' (134).[4] The works by Cuningham and Blundeville, written in vernacular English, were the first on a subject which by and large ended with Peter Heylin's *Cosmographie*, first published in 1652 and followed by later editions. Not only did English cosmographers influence the understanding of space in the early modern period but they also profoundly transformed the perception of the world – notably through a typically geo-humoral perspective which associated location with bodily humours, and which posited that human beings were shaped by the climate they lived in. In an age of exploration, they blended empirical knowledge, eye-witness accounts and fictional narratives in books not just aimed at the elite, but made accessible for merchants and navigators alike. Heylin's *Cosmographie* in four books, which incorporated overtly political considerations, marked the heyday (and, as suggested above, the decline) of the genre in England, at a time when confessional struggles were crisscrossing the whole of Europe. Its dwindling success all over the continent at the dawn of the eighteenth century coincided with the early stages of modern cartography and geography and with a gradual divorce between theological concepts and scientific ideas.

2. *The State of the Art*

A juxtaposition of science and ideology, of competing models and conflicting information drawn from more or less reliable sources, cosmography was an all-encompassing discipline inevitably subject to change and correction. Yet, it was endowed with genuinely transformative functions. As such, it testified to important advances in the knowledge of the world, mainly outside the universities (which often held to old world visions), transmitted through texts popular at the time but often neglected today. As early as 1951, Louise Diehl Patterson emphasized the influence of books such as Robert Recorde's *Castle of Knowledge* (1556), a work in which the author, at a comparatively early date, paid attention to Copernicus' heliocentrism and deemed that this 'new hypothesis was worthy of respectful attention', even though he did not completely endorse it (1951, 218). In the wake of material studies, critics working in the late twentieth and the twenty-first century have more generally focused on cosmographical instruments designed during the early modern period: Adam Mosley, for instance, has examined the sundial in connection with the then current mathematical practices attached to cosmography (2019).

[4] By contrast, geography, the author explains, 'is a knowledge teaching to describe the whole earth, and all the places contained therein, whereby vniuersall Maps and Cardes of the earth and sea are made' (Blundeville 1594, 134).

However, while a respectable number of essays have brought cosmographic case studies to the fore, comparatively few books have studied in detail the impact of cosmography – perhaps because the discipline disappeared with the advent of the Enlightenment. Geography has been largely preferred to its more global and ambitious counterpart, generating excellent studies. Lesley B. Cormack's *Charting an Empire. Geography at the English Universities 1580-1620* (1997), for example, sheds fresh light on the way geography and imperialism reinforced each another at a time when controlling and exploiting the world were thought of as a means of empowerment and, moreover, as perfectly legitimate actions taken by a superior English people. Such observations are shared and analysed further by Surekha Davies who, in *Renaissance Ethnography and the Invention of the Human: New Worlds, Maps and Monsters* (2016), demonstrates how, alongside a variety of illustrated sources, maps visually synthesized a form of 'ethnographic knowledge' that justified the enslavement of indigenous peoples.

Yet, cosmography was also part of this questionable enterprise. Far from simply aiming at facilitating sea travel, it also intersected with culture and religion, and in many cases its use revealed the imperial politics of powerful kingdoms. Among the few books devoted to cosmography itself, Maria M. Portuondo's *Secret Science: Spanish Cosmography and the New World* (2009) demonstrates this point. While she examines the contours and identity of the discipline of cosmography, she also reveals the strategic and monetary value of cosmographic knowledge, that, in the 1550s, reoriented its use. Overall, Portuondo contends that the discovery of the New World led to the emergence of a kind of *humanismo cientifico* ('scientific humanism') which brought the humanities into contact with new, practice-oriented approaches, and that New World discoveries prompted the cosmographers of the period to expand their discipline and draw new intellectual boundaries. In so doing, she follows in the footsteps of Frank Lestringant, a pioneer in the field. In his highly influential *Mapping the Renaissance World: The Geographical Imagination in the Age of Discovery*, Lestringant had cogently argued that cosmography amounted to the pursuit of an 'eternal and ubiquitist knowledge' (1994, 130) of the earth, before delineating the decline of cosmography and the emergence of new disciplines or practices that challenged and discredited the former's synthetic purpose.

In the mid-sixteenth century, the study of cosmography was indeed in a state of upheaval in Western Europe. The European voyages of exploration had disrupted the old ideas of the nature and structure of the world. Cosmography thus found itself caught in the midst of clashing epistemologies: established authority vs. eye-witness experience; humanism vs. the new science; medieval heritage vs. early modern knowledge. In *Cosmographical Novelties in French Renaissance Prose (1550-1630). Dialectic and Discovery* (2016), Raphaële Garrod focuses on book learning and argues that dialectic – the art of argumentation and reasoning – played a crucial role in articulating and popularizing new learning about the cosmos. Indeed, cosmographical knowledge was constructed in part through theoretical ideas about the shape and structure of the world, and in part by empirical knowledge gained through travellers' reports.

Taking stock of this existing research on cosmography, *The Circulation of Cosmographical Knowledge in Early Modern Europe* aims to offer a nuanced and global approach to a multifaceted discipline which proved crucial to the understanding of the world and of man's place in it and, also, to explore how early modern cosmographical knowledge was disseminated at the time. More generally, as the centre of the universe shifted and in the light of new astronomical speculations, we ask how learning, thinking and conceptualizing the notion of *terra incognita* remained rooted in belief or subject to revision. Further, the present issue of the *Journal of Early Modern Studies* investigates how, when and in what forms cosmographical knowledge circulated.

3. *A Survey of this Special Issue*

For the sake of clarity, we have divided this special issue into five different sections which all include cosmographical theories and practices from various parts of Europe. Presenting the structuring issues at stake, the opening section, which consists of Janet Clare's Introduction, dwells on the various facets of cosmography and discloses the diversity of materials (including maps and images) used by early modern cosmographers while emphasizing a major feature accounting for the success of this comprehensive and cross-disciplinary science, namely the 'circulation' of cosmographical texts, in connection with European presses and universities. Some of these texts, Clare reminds us, encountered 'incredulity, censure and censorship'. Clare concludes her article with a discussion of the reception of Copernican theory, opening up questions about the inhibitions placed on knowledge circulation.

In the second section, devoted to cosmography and geography and to the differences and possible congruences between these two disciplines, Margaret Small examines Giovanni Battista Ramusio's influence on Western European geography. In the 1550s, this Venetian writer compiled the *Navigazioni e viaggi*, a group of narratives in vernacular Italian initiating a new form of geography which endeavoured to present a cosmography of the entire world as seen through the eyes of the traveller. Small examines how the *Navigazioni e viaggi* became a bedrock of European geographical knowledge, examining its use by the English astrologer and geographer John Dee and the French royal cosmographer, André Thevet. Although no one else fully adopted Ramusio's form of cosmography through travelogue, Small argues that the travellers' tales, mediated through the compilation of a sedentary Venetian, crisscrossed Europe and became fundamental in creating a new geographical understanding dependent on the words of eye-witnesses. Next, Isabelle Fernandes places *The Cosmographical Glasse* (1559), William Cuningham's *magnum opus*, in its English and, more broadly, European context. Influenced by Ptolemy, Strabo and Aristotle, among others, *The Cosmographical Glasse* appeared during the early modern revolution in mathematics that turned this liberal art to practical use by applying it to geography for a better conceptualization of the globe. Fernandes explores how this first English book dealing with navigation and oceanic discoveries in relation to astronomy and cosmography stood at the crossroads between the old and new epistemologies. Anthony Payne's article, which concludes this section, examines in detail the sources from which Richard Hakluyt assembled his *Divers Voyages* (1582), later reprinted in *The Principal Navigations*, a far more extensive collection of voyages. In an incremental approach to the process of Hakluyt's collaborative compiling of the texts, Payne shows how in *Divers Voyages* Hakluyt assembled geographical and other useful background information (from English, Italian, French and other sources) for potential venturers. He argues that this complicated text was compiled with the intention of promoting English expeditions to the New World. Hakluyt highlighted both the productive potential of such voyages (including commodities, in particular) and the opportunity of identifying a Northwest Passage. Further, Payne's article places Hakluyt's work in the context of his religious cosmography and of his belief (shared by Ramusio) that histories of the discovery of the world should be those of eyewitnesses, contrary to the usual practice of mediating accounts drawn from the work of other cosmographers.

The third section compares and contrasts the theoretical and practical aspects of cosmography as co-existent trends at the time. Indeed, while theoretical cosmography was housed in the universities and was dependent on the book trade, practical cosmography depended upon the first-hand experience of mariners who, with pragmatic aims in mind, were willing to share their experience – albeit in limited ways. Antonio Sánchez Martínez explores practical or artisanal cosmography in the Iberian world from the first decades of the sixteenth century onwards.

To illustrate this 'new' cosmography, he examines the lesser-known figure of Alonso de Chaves, who, in 1557, was appointed Pilot Major, the most prestigious scientific position in the Sevillian institution. This cosmographer wrote a nautical encyclopaedia, *Quatri Partitu in cosmographia practica* (c. 1530), largely ignored by critics until the end of the nineteenth century. Yet Richard Hakluyt acknowledged his debt to Chaves, whose compendium was probably the most complete nautical encyclopaedia of his time. The subject, structuring, style and language of Chaves' treatise, as well as its targeted audience, all indicate that there were substantial differences between the cosmography practised in Seville and that of Central European countries. Next, Tom Conley brings out tensions between cosmography and topography in maps and writings of the French mathematician and cartographer Oronce Fine. Fine was the editor and illustrator of two editions of Johannes Sacrobosco's *De Sphaera* (1517 and 1527), and he later published a vernacular edition titled *L'Esphère du monde.* Headed by a poem celebrating the virtue of mathematics, the work is a point of reference in both the history of treatises on cosmography and the history of the illustrated book. Conley's article reveals a link between the manuscript culture of cosmography and the printed book: the printed version of *L'Esphère du monde* (1551) transcribes an ornate manuscript of the same title that Fine had presented to Henri II in 1549. Close reading of the two documents reveals that, in their progression, they tilt away from cosmography to geography, and that the French nation and its provinces become increasingly manifest. More generally, Conley takes stock of the status of cosmography in French circles in the middle of the sixteenth century, the moment that Münster's *Cosmographia* became a major and longstanding project across Europe. Concluding section 3, Edgar Omar Rodríguez Camarena's article takes us beyond Europe as cosmographical knowledge was transmitted to the 'new' world. It examines the ideas of Alonso de la Vera Cruz, an Augustinian friar who sailed to the New World in 1536 and who, seventeen years later, became professor of sacred scripture at the new University of Mexico. In this position he devoted much of his time to cosmography, including both celestial and geographical conceptions, illustrating his approach to the discipline in 'De coelo' (On the heavens), excerpted from his *Physica speculatio* (1557). Here, Alonso de la Vera Cruz, remarkably for his time, defends American nature. As he draws on his own experience when discussing the qualities of the Americas, he is clearly sympathetic to the native people of Mexico. As a result, he does not hesitate to challenge the traditional Eurocentric concept of the New World as peripheral and of its inhabitants as inferior beings. More generally, Rodríguez Camarena explains how, in exalting the virtues of the American climate, inhabitants and resources, de la Vera Cruz developed a local perspective that transferred the idea of centrality from Europe to the New World.

The fourth section is devoted to what could be called 'theological cosmography'. The articles in this section stress the biblical and Christian context and frames of sixteenth- and seventeenth-century works of cosmography and cartography. In a synthetic article, Étienne Bourdon reminds us that sociologists, philosophers and historians have identified a so-called 'disenchantment of the world' which began to be perceptible during the Renaissance. Bourdon draws a useful distinction between geography and cosmography in arguing that the process of 'disenchantment' was an uneven and complex one. On the one hand, cartography and geography moved away from biblical and Christian readings of the world. On the other, cosmography was seen as enabling a form of knowledge of the Divine describing the entire Creation. Following Bourdon's article, Stephanie Inverso sheds fresh light on Abraham Ortelius' cartographic work. In 1564, the celebrated Flemish cartographer published a world map in the shape of a heart. This map, Inverso argues, manifests a spiritual call towards world unity influenced by the heterodox sect known as the Family of Love. Six years later, Ortelius published the first edition of his ground-breaking atlas entitled *Theatrum Orbis Terrarum.* With this later work, the unorthodox message of his cordiform map

was not erased but transmitted into his widely circulating atlas. Through this case study, Inverso demonstrates how cosmographical knowledge circulating within humanist networks retained spiritual concerns which continued to influence European cartography.

The final section, which relates to the politics of cosmography, addresses a number of methodological issues in the handling of primary sources. Looking at less celebrated sources of cosmographical knowledge, the articles in this section reveal cosmography's generic hybridity. Jane Grogan examines the circulation of cosmographical knowledge through the activities of the less prominent, lower-class trading company travellers, often through romance or romance tropes. She attends therefore to the neglected group of those who travelled as mariners on the ships of the joint-stock trading companies, and whose contribution to English cosmographical as well as literary culture has not yet been fully accounted for. In her article, she focuses on two representative examples: the cosmographical quasi-romance writings of William Warner (especially of the 1596 edition of *Albion's England*), whose father was one of the sailors on the first English ships sent to investigate a north-east passage, and the travel writings of John Cartwright (*The Preacher's Travels*, 1611), sometime chaplain on East India Company voyages. Grogan concludes that scholars must search more carefully for lower-class voices not only in the archives but also amongst the records of more popular or less élite groups. Next, in her examination of a map created by Baptista Boazio and entitled 'The Famouse Weste Indian Voyadge' (a visual account of the voyage undertaken by Francis Drake in 1585 and endorsed by Elizabeth I to make a case for English primacy in the Americas), Sandra Young calls our attention to the fact that the maps tasked with charting English discoveries on the high seas in the latter half of the sixteenth century generally constitute an ambivalent archive. These maps participated in the imaginative work of conceptualizing the world as a singular whole held within a unified cosmos. Yet, at the same time, they were distinctly partisan, helping to advance English adventurism and to construct an elevated vantage point where the would-be English colonialist might imagine traversing oceans to subdue far-flung lands and their peoples. By rereading Boazio's beautiful hand-painted map, Young's article reflects on the interpretative tool kit that might be helpful in laying bare the racial violence that infused the early period of English expansionism. Finally, Willy Maley focuses on two Dutch doctors, the Boate [de Boot] brothers, Arnold (1606-1653) and Gerard (1604-1650), who were both medical graduates of Leiden University. They moved together to London in 1630 to work as practicing physicians, and they subsequently and separately emigrated to Dublin in the 1630s and 1640s, where they each landed, years apart at a time of transformation. Each brother contributed in key ways to the philosophical, religious and scientific debates of the time through connections with diverse learned communities. Maley demonstrates that, in their fusion of cosmography, philosophy, natural philosophy, agriculture and biography, the Boate brothers offer new ways of thinking about the lattice work of synergies that hummed and sparked throughout the seventeenth century. In particular, Gerard's ground-breaking book, *Irelands Naturall History* (1652), published posthumously, shaped the interest of many an intellectual in Ireland and proved to be a milestone in economic geography.

The volume's Afterword, by François Laroque, puts all these articles into perspective and provides a useful literary counterpoint to the historical issues tackled by the various contributors. Indeed, Laroque pays special attention to cosmographical representations and to the fruitful relationships between texts and images, map-making, and map imagining. The very fact that the playhouse of Shakespeare's company was called the Globe corroborates the impact of cosmographical material upon early modern stages and pages. Examining cosmography from a Shakespearean perspective, Laroque shows that this discipline also fashioned the early modern imagination, allowing writers to develop their own poetic visions of an ever-shifting universe.

In conclusion, in this special issue we hope to show that the earlier cosmographical representations constructed by Shakespeare's European contemporaries were at least as fertile as the late seventeenth-century astronomical imagination that seems to have fascinated so many historians and literary scholars.[5] The following articles testify to an enlarged (albeit biased) and complex understanding of a rapidly shifting world – an understanding blending facts and fiction and, for that very reason, still too frequently dismissed or oversimplified in our apprehension of the early modern era.

This volume is dedicated to the memory of Margaret Small, 1975-2023.

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[5] See, for instance, Cetera-Włodarczyk, Hope and Włodarczyk 2021.

Part One

Introduction

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Cosmography, Knowledge in Transit
A Conspectus

Janet Clare
University of Bristol (<janet.clare@bristol.ac.uk>)

Abstract

From a modern perspective, it could be argued that cosmography was a protoscience, or ancestral to geography. To systemize it according to its modern legacy, however, dilutes its early modern diversity. Cosmography has a place in both the history of science and in historical geography, without being confined to either discipline. The article explores how cosmography circulated across disciplines, national borders, and social classes. It materialized not only in books, but in a variety of forms, including maps, instruments, letters, and lectures. Knowledge evolved as new discoveries were made about the earth and the heavens, but ideas gain traction only with difficulty when they breach conceptual boundaries. The first parts of the article will address sites, modes, and materials of knowledge exchange. In the final part, I will focus on caution, resistance, and censorship in the transmission and subsequent transformation of knowledge, with particular reference to the Copernican revolution.

Keywords: *Astronomy, Cosmography, Geography, Knowledge, Maps*

1. *Introduction: Origins and Producers of Cosmographical Knowledge*

For modern scholars, the significations of cosmography present difficulties. It has been long out of fashion, indeed, obsolete, in some places. Penguin's *Dictionary of Science*, first published in 1942 with the subtitle *Definitions and Explanations of Terms used in Chemistry, Physics and Elementary Mathematics*, for example, contains no entry for cosmography. Its closest approximation is the unfamiliar 'cosmogony' with its definition of theories as to the origins of the heavenly bodies. Notably, the French translation of the same dictionary, published by Presses Universitaires de France in 1956, voluntarily introduces cosmography into its subtitle: *Mathématique, Mécanique, Cosmographie, Physique, Chimie*, and has an entry on 'cosmographie':

Le sens initial de cette expression: description de l'univers, n'est pas guère utilisé; la cosmographie désigne aujourd'hui l'ensemble des

éléments d'astronomie et de géodésie enseigné dans les classes terminales du Second Degré. (Uvarov and Chapman, 1956, 63)[1]

The deliberate revision of the title in the French translation suggests the *longue durée* of cosmography. In France cosmography was taught in classes of rhetoric and philosophy, as is evidenced by the late nineteenth-century publication of Amédée Guillemin's *Eléments de cosmographie* (1867) and Pichot's *Cosmographie élémentaire* (1881). The several editions of these late French cosmographical works exemplify the fact that universal knowledge is not universal in its application. 'Cosmography' represented a pan-European body of knowledge that was widely transmitted, but it took root in different places at different times, and with variations of depth and influence.

The widespread use of 'cosmography' and 'cosmographical' as terms to denote studies that encompassed the earth and the heavens was probably due to the vagaries of translation. When Jacopo Angeli da Scarperia – completing the work of his teacher of Greek, Manuel Chrysoloras – translated Ptolemy's *Geography* into Latin, he did so under the title *Cosmographia* (1406-1409). The term 'cosmography' was adopted in all Latin manuscripts of Ptolemy's work and in the early editions printed in Vicenza, Bologna, Rome, and Ulm (Burnett and Shalev 2011, 5-6). In his preface, Angeli makes far-reaching claims for cosmography and justifies his use of the term:

> In addition, our author calls the whole work, in Greek the *Geography* – that, is the description of the earth … we, however, have altered it to *Cosmographia* … since something more is denoted in the term 'cosmography' than the earth itself, which gives its name to geography. For 'cosmos' in Greek is 'mundus' in Latin, which clearly signifies the earth and the heavens themselves, which throughout this work are adduced as a kind of foundation of the subject matter. (In Burnett and Shalev 2011 228)[2]

Since Ptolemy's treatise describes the world (on a map) by means of astronomical data, preference had to be given to a name referring to both earth and heavens. In subsequent editions, however, the title reverted to *Geography*. Nevertheless, its circulation under the title of *Cosmography* inaugurated a European refashioning of a field of study from classical and medieval roots.

Evidently, there was a buoyant market for books advertising cosmography and directed at both the scholar and interested general reader. In the early- to mid-fifteenth century it became a recognizable genre as digests of Ptolemy were published in both Latin and the vernacular. Peter Apian, for example, who combined the work of a mathematician and astronomer with the art of the printer, also lecturing at Ingolstadt, published *Cosmographicus liber* in 1524. It was followed in 1529 by an abridgement *Cosmographiae introductio* with the running title *Rudimenta cosmographiae'*. A second edition of *Cosmographicus liber* was published in Antwerp in 1529, edited by Gemma Frisius, mathematician, physician, instrument maker, and cartographer, who was later to translate the work into French.[3] The 1529 edition formed the basis of an almost continuous publishing history up to 1609. In a bibliography of Apian's works forty-one editions are listed, published in France, Germany, the Netherlands, and Belgium (van Ortroy 1963, 117-156).

[1] (The original meaning of this expression: 'description of the universe', is not widely used now; these days, cosmography refers to all the elements of astronomy and geodesy taught in the final classes of secondary education) (my translation).

[2] Angeli's introduction is included as an appendix to *Ptolemy's Geography in the Renaissance*, where it is translated into English by Charles Burnett (in Burnett and Shalev 2011, 225-229).

[3] *La Cosmographie de Pierre Apian nouvellement tr. de lat. en fr. et par Gemma Frison corrige* (1544).

An overview of the publication, reception, and circulation of Sebastian Münster's *Cosmographia universalis* tells a similar story. Klaus Vogel has commented that over the course of the fifteenth and sixteenth centuries, cosmography began to focus increasingly on what Ptolemy had referred to as 'geography', a systematic description of the *oikumene*: the known, inhabited world (2006, 470). Although the first of the six books of Münster's *Cosmographia* is devoted to astronomical calculations derived from Ptolemy that determine latitude and longitude, and in this sense retains the dual focus of earth and heavens, the remaining books exemplify a shift away from the mathematical and astronomical towards the geocentric and humanistic. As a literary genre, Münster's cosmography encompasses what we would recognize as world and regional geography and also history, biblical history, astronomy and astrology, anthropology, horticulture, and mythology, compiled from classical and modern knowledge. The work's geographical and topographical range, as well as its inclusion of local information, is announced on the title page. Here, it is advertised, the reader will learn about all the lands, peoples, towns, notable places, government, manners, customs, orders, faiths, sects, and trades throughout the whole world.

Categorizing 'the order and collection of historians' in his *Methodus*, the late-sixteenth-century philosopher and jurist Jean Bodin placed Münster, along with Strabo and Pomponius Mela, in the category of 'geographistorians' (1945, 367-368). The term captures much of the global ambition of a work that in the first book rehearses Ptolemy's astronomy, describes the Creation (of the cosmos), the Flood, and the dispersal of Noah's sons across the earth. In the second book Münster moves to Europe, breaking down each country into regions, cities, other settlements, hamlets, rivers, islands, mountains, thermal baths, bridges, and fortified towers. In the last two books he describes less chorographically Africa, Asia, and – including as reference an abridgment of Vespucci's account of his voyages – the newly-discovered islands (1550, 1108-1111). The *Cosmographia* continued to expand after Münster's death. In later editions there are cityscapes of the New World, including, for example, a two-page drawing of the Inca city of Cuzco.

Modelled more on Strabo than Ptolemy,[4] Münster's *Cosmographia* was a huge commercial success throughout the sixteenth century and well into the seventeenth. Indeed, in Germany it became the most popular book after the Bible. First published in Basel in 1544, it went into thirty-five editions in total, translated from German into Latin, French, Italian, and Czech. It was posthumously revised, with the last edition appearing in 1650. The first edition had six books; the last edition with much material added was divided into nine. Fifty thousand copies were printed in German and ten thousand in Latin. A comparison with the print run of Shakespeare's first Folio – estimated to be about seven hundred and fifty – shows the extraordinary success and widespread appeal of this first comprehensive description of the whole world.

In broad terms, the texts of Apian and of Münster represent two strands of knowledge appertaining to cosmography: one incorporating mathematics and astronomy, and the other focusing on the histories and geographical features of earthly places. But neither the men nor their works can be readily compartmentalized. They were humanist scholars, map and instrument makers. Münster was a Hebraist. In both, scholarly knowledge was complemented by artisanal expertise. A large number of woodcuts in Münster's lavishly illustrated text were made by Münster himself, either under pressure of time because the artists had not delivered soon enough or because he was himself an experienced draughtsman and woodcutter and often helped in his stepson's workshop (Rücker 2007, 3). In its use of visual media in the form of

[4] Margaret Small discusses the different classical influences on Münster in Burnett and Shalev 2011, 167-186.

volvelles, Apian's *Cosmographia* has been described as a 'Book-Instrument Hybrid' (Gaida 2016). The work contains paper cutouts of common astronomical instruments, designed to enable the reader to determine such questions as the equality of the elevation of the pole and of the latitude of any chosen city. It is a work designed for the autodidact. When Gemma Frisius came to translate Apian's work, a work which he had done so much to promote, he supplemented it with maps and drawings of his own. His additions also included an 'Attendum' describing the new-found land, exemplifying cosmography's norm of inclusivity.

The circulation of what might be described as synthetic cosmographies, such as Martin Waldseemüller's *Cosmographiae introductio*, one of the first introductions, published in St Dié, Lorraine, in 1507, and William Cuningham's *The Cosmographical Glasse* (1559), the first English cosmography – examined by Isabelle Fernandes in this volume – further illustrate this norm of inclusivity. Waldseemüller's cosmography rehearses, as does Cuningham's, the geometrical properties of the sphere, describes the imaginary celestial spheres, climate, and zones: the fundamentals of cosmography as derived from Ptolemy. In the final part of the volume he moves from the ancients to the moderns to include the four voyages of Amerigo Vespucci, translated from French into Latin by Basinus Sendacurius, who, with Philesius Ringmann, was Waldseemüller's collaborator at St. Dié.[5] Similarly, the fifth and final book of *The Cosmographical Glasse* is entitled 'A Perticuler Description of Suche Partes of the America, as Are by Travaile Founde Out' (Cuningham 1559, 200). Aristotle's philosophical conceptions of the heavens and Ptolemy's mathematical astronomy are supplemented by the startling news of discoveries of lands not known to the ancients.

For the reader, the richness and diversity of cosmography as a field of study was part of its appeal. Thomas Elyot in his *The Boke Named the Governour* (1531) recognizes cosmography's value as an appropriate subject for a child's education. In his view, the tedious learning of countries and towns can be alleviated by beholding the tables of Ptolemy 'wherein all the worlde is paynted' (37r) and then reading treatises on the sphere. There is 'none so good lernynge', he affirms, 'as the demonstration of cosmographie, by materiall figures and instrumentes, hauynge a good instructour. And surely this lesson is bothe pleasant and necessary' (37r-37v). From its educative functions, he moves on to expound the delights offered by cosmography to the non-traveller:

> For what pleasure is it, in one houre, to beholde those realmes, cities, sees, ryuers and mountaynes … what incredible delite is taken in beholdynge the diuersities of people, beastis, foules, fisshes, trees, frutes, and herbes; to knowe the sondry maners and conditions of people and the varietie of thryr natures, and that in a warme studie or parler, without perill of the see, or daunger of longe and paynfull iournayes: I cannot tell what more pleasure shulde happen to a gentil witte, than to beholde in his owne house euery thynge that within all the worlde is contayned. (37r)

Elyot's version of cosmography brings together the mathematical and the geographical. While he emphasizes the practical application of knowledge, he recognizes the pleasures for the reader in reading about exotic fauna and the customs and manners of other peoples. The exotic quality of cosmography and its anthropological aspect found in the travel narratives appended to protoscientific works of cosmography were, in England, to be transmitted to a wider audience in the form of romance, as described by Jane Grogan in this volume, and in pamphlets and plays.

[5] Herbermann regards Sendacurius and Ringmann as collaborators, with Waldseemüller as 'the real publisher of the entire work' (1969, 5). For the contributions of Sendacurius and Ringmann, see 13-15.

Cosmography has a place in the history of science and equally in historical geography, without being confined to either discipline. Historians of science might see cosmography as ancestral to science while others, along with historical geographers, see cosmography as ancestral to geography. It is true that mathematicians and physicists are best placed to understand the geometric and astronomical practices that figure in sixteenth-century cosmographies, but early modern cosmography contained no such disciplinary boundaries. On the contrary, its practitioners were theologians, doctors of medicine, astronomers, philosophers, philologists, humanists engaged in the study of classical sources, and armchair travellers. Its readers, as the articles in this volume attest, range across rulers and noblemen, explorers, artisans, and amateurs intent on furthering general knowledge and satisfying their curiosity about the world. Universal knowledge seemed within grasp.

2. *Materials*

In recommending cosmography as a fit subject for study, Thomas Elyot conveys its multiple materials. Books, instruments, figures (in the context, this probably refers to drawings and diagrams) are all involved in its pedagogical practice. Cosmographical treatises are lavishly illustrated with drawings and diagrams of increasing technical sophistication as the chapters progress. The early chapters of Apian and Frisius' cosmography, for example, contain simple illustrations, such as drawings of a nose and face, to convey the essential and hierarchical difference between chorography and cosmography: the former constituting a section of a larger body of knowledge. A move from the simple and homely to technical instruction is indicated in later chapters outlining how to determine the circumference of the earth or compute latitude and longitude. The arrangement of the chapters suggests incremental learning. It is probable that a cosmography like that of Apian and Frisius was designed to appeal to a range of readers interested in different gradations of knowledge. Cuningham's *The Cosmographical Glasse* follows a similar pattern. As with many cosmographical treatises, the work takes the popular form of a dialogue, here between Spoudaeus, who is eager not to succumb to ignorance, and his instructor in cosmography, Philonicus. Spoudaeus responds appreciatively to Philonicus' differentiation of cosmography, geography, and chorography, concluding that cosmography is 'more excellent than the other two' and that 'it cōteineth and comprehendeth the other in it selfe' (1559, 8). However, he apprehends the difference only after Philonicus has met his request to see 'figures of euery of them' (7). An image of an armillary sphere represents cosmography, a map, geography, while a map of the city of Norwich in East Anglia conveys the microscopic concerns of chorography.

As articles in this volume demonstrate, text and image in treatises are interdependent although the function of the images varies from the illustrative to the expository to the autodidactic. Two-dimensional representations of instruments, such as the armillary sphere with its arrangement of circles used for teaching astronomy, feature in treatises as illustrations of practice. In Cuningham's work the diagrams that explain geometrical principles do not have the same autodidactic function as the volvelles in the cosmography of Apian and Frisius. Cosmography bridged *ars* and *scientia*, best understood, as Peter Burke points out, as theoretical and practical knowledge (2000, 12). Its practice included – to use Lesley Cormack's definitions – those who know by doing (practitioners or craftsmen) and those who know by thinking (scholars and philosophers). Only by taking seriously the interaction between the two groups and the resultant mathematization of natural philosophy can we understand the nature of the scientific revolution of the later sixteenth century (Cormack *et al.* 2017, 2). Amongst the first category were makers of microscopes and telescopes who established the craft in England shortly

after they had been developed as practical instruments by Dutch spectacle-makers around 1608 (Clifton 1993, 343). With the development of scientific instruments of observation, notably the telescope, cosmography can be seen to tilt away from the universal and theoretical knowledge associated with scholars and philosophers towards investigation and empiricism.

The interdependence of the verbal and the visual also characterizes the more geocentric branch of cosmography. On the title page of Münster's *Cosmographia universalis* the reader is informed that all that is found in every land will be explained with figures and fine land maps presented to the eye. In addition to world, regional, and urban maps, almost every page has a woodcut accompanying and illustrating the text. A feature of the woodprints is their mobility, as various images are shifted and repurposed in another geographical context. A finely-detailed woodcut of Ptolemy holding a quadrant, an instrument used to measure the altitude of celestial objects above the horizon, appears in Book 1 in which the principles of cosmography are elucidated; the same image is used in a section on Chaldean astrology in a chapter on Babylon in Book 5 and then in a later chapter on astronomy in Babylon. Images of cannibals appear in a variety of places – in descriptions of Tartary, Scythia, in the new islands discovered by Columbus and, in later editions, Guyana. The double-paged maps – as many as 24 in some editions – placed in the volume before the text are taken from Münster's edition of Ptolemy's *Geography*, which was first published in 1540.[6] The world map, for instance, which was to influence the cartography of Mercator and Ortelius, appeared in both the geography and the cosmography.

Images range from the quasi-scientific to the realistic to the fantastic; from the mathematical and closely observed to the speculative. Book 1 presents the reader with the scientific aspect of cosmography as Münster reworks the first book of Ptolemy's *Geography* and includes familiar diagrams of the sphere, zones, and directions for the calculation of latitude. The books on the countries of Europe contain many regional and urban maps, portraits of rulers and folk heroes, alongside detailed illustrations of work, trades, and husbandry. A woodcut in Book 3, a book devoted to Germany, shows the sieving, washing and sorting of ore, with men washing and sieving and women doing the more sedentary sorting (Münster 1550, 435). While the woodcut is technically sophisticated its design is based on everyday observation. Other cuts are derived from the descriptions of the text and clearly not founded on first-hand experience. Some woodcuts, like the two-page chart of sea wonders or monsters, evidently became collectors' items since in some extant editions the chart has been cut out of the book. Evidently, images gained a circulation beyond the text.

Maps constitute a notable omission in Elyot's list of tools for teaching cosmography, given that they offer a concrete example of learning and, as they become larger to accommodate new discoveries, provide a clear indication of the current extent of geographical knowledge. Cartographers formed part of a wide-ranging community sharing knowledge and expertise. In his *Theatrum orbis terrarium*, regarded as the first modern atlas, Abraham Ortelius – cosmographer to Philip II – includes a 'Catalogus Auctorum' representing the first printed catalogue of cartographers and the maps that Ortelius knew to have been made by them (Karrow and Bagrow 1993, xi). Amongst the eighty-six cartographers who according to Ortelius had contributed to sixteenth-century geographic knowledge were figures such as Münster, Apian, Frisius, and Thevet who were also known as cosmographers.

To keep pace with fresh discoveries, maps were redrawn, offering a visual analogy to the way in which universal cosmographies expanded to accommodate new knowledge. Martin

[6] Münster edited six editions of the *Geographia* from 1540 to 1552 (the year of his death) (see Ruland 1962, 88-89).

Waldseemüller's celebrated wall map (1507) is made up of twelve map sheets that partition the modern world and draw attention to the limits of the ancient. In the caption above 'Cathay', Waldseemüller describes his methodology, indicating the two temporal levels of the cosmographers, ancient and modern:

> In describing the general appearance of the whole world, it has seemed best to put down the discoveries of the ancients, and to add what has since been discovered by the moderns, for instance, the land of Cathay, so that those who are interested in such matters and wish to find out various things may gain their wishes and be grateful for our labour, when they see nearly everything that has been discovered here and there, or recently explored, carefully and clearly brought together, so as to be seen at a glance. (in Hessler and van Duzer 2012, 30)

The coming together of the ancient and the modern world on the surface of the map was illustrated in the drawing of Africa. The representation of Europe and North Africa is based on Ptolemy, while the removal of the border to map the lower regions of Africa which were unknown to Ptolemy draws attention to cosmographical extension. Vespucci and Columbus are celebrated for extending the known world. A caption accompanies their island discoveries:

> A general discovery of the various lands and islands, including some of which the ancients make no mention, discovered lately between 1497 and 1504 in four voyages over the seas, two commanded by Fernando of Castile, and two by Manuel of Portugal, most serene monarchs, with Amerigo Vespucci as one of the navigators and officers of the fleet; and especially a delineation of many places hitherto unknown. All this we have carefully drawn on the map, to furnish true and precise geographical knowledge. (17)

In its concern for accuracy, this 1507 world map by a German humanist carefully records the recent discoveries – knowledge of which was circulating across Europe in the form of letters – of the Italian navigators Columbus and Vespucci.

Printed in large runs, maps were widely owned and had both a decorative and utilitarian function.[7] In his dedication of *Principall Navigations* to Francis Walsingham, Richard Hakluyt recalls his early encounter with cosmography, his curiosity awakened by the sight of a 'universall Mappe':

> I do remember that being a youth, and one of her Maiesties scholars at Westminster that fruitfull nurserie, it was my happe to visit the chamber of M. *Richard Hakluyt* my cosin, a Gentleman of the Middle Temple … at a time when I found lying open vpon his boord certeine bookes of Cosmographie, with an vniversall Mappe: he seeing me somewhat curious in the view therof, began to instruct my ignorance, by shewing me the diuision of the earth into three parts after the olde account, and then according to the latter, & better distribution, into more: he pointed with his wand to all the knowen Seas, Gulfs, Bayes, Straights, Capes, Riuers, Empires, Kingdomes, Dukedomes, and Territories of ech part. (Hakluyt 1589, *2r)

Since – following his instruction on the contemporary expansion of the world – the elder Hakluyt points with his wand to various features, the map must have been imposing. It is more likely that it was a separate map on a table rather than one of the many included in translations of Ptolemy or in Münster's *Cosmographia universalis*. On the basis that Hakluyt knew Ortelius, corresponding with him about the construction of a large world map in c. 1567-1568, it has been suggested that the map in question was Ortelius' cordiform world map (on eight sheets) published in 1564 (Taylor 1935, 77-83). Among the 'bookes of Cosmographie', it seems

[7] Comparatively few copies have survived, suggesting that their beauty and utility led to over-use.

probable that one of them – since it is the geographical dimension of cosmography which sparks Hakluyt's interest – was Münster's *Cosmographia* or his edition of Ptolemy. In the address to the reader, Hakluyt pays tribute to Ptolemy's notion of geography as *perigrinationis historia* which he contrasts implicitly and favourably with volumes 'bearing the titles of vniversall Cosmographie' which in his view were 'ramassed and hurled together' (Hakluyt 1589, *3v).

3. *Media: Networks, Communities, Letters and Books*

In disseminating cosmographical knowledge it is evident that international networks and communities as well as exchanges between individuals – like those of Hakluyt and Ortelius – played an important part. Knowledge was produced amongst academic elites as well as artisans, although it is less easy to trace the pathways of the latter. Scholars – less so artisans in this period – belonged to communities that transcended national boundaries. Focusing on the astronomer Tycho Brahe, Adam Mosley (2007) has explored how astronomical knowledge circulated through exchanges of letters, books and instruments. Brahe was part of a community of scholars, instrument makers, and noblemen that facilitated not only intellectual collaboration but the exchange of gifts, the purchasing or copying of books, even the acquisition of libraries of deceased scholars. He owned a printing press – in fact, as Mosley points out, two presses – enabling the publication of his letters, *Epistolae astronomicae* (1596), in Uraniborg on the island of Hevn where he had his observatory. Brahe planned for a large print run of *Epistolae astronomicae* and, through his contact with printers and booksellers, a wide distribution linking his observatory with a public realm of knowledge. The collection of letters was the first of Brahe's published works to indicate the full scope of his astronomical project (Mosley 2007, 125-126), relaying his response to the question of world systems in the correspondence with Christoph Rothmann, court astrologer to Landgrave Wilhelm IV in Kassel. Brahe disputed the Copernican theory advocated by Rothmann, putting forward his own geo-heliocentric model. Thus, through publication, what began as a private disputation became an issue in wider astronomical circles.

As both a community and a magnet for peripatetic teachers and students, the university was a nexus for knowledge exchange. Scholars moved between universities and were bound together by multiple-stranded networks of epistolary contacts fostering diffusion and discussion of ideas across Europe (Rüegg 1992, 27). In such a wide and complex field, the role of the universities can only be briefly and selectively discussed. Obviously, there were regional differences. Padua and Leiden, for example, were amongst the most advanced universities in the development of the new science (Porter 1992, 535). In his article in this volume, Willy Maley alludes to the innovative interdisciplinary research at Leiden in the early seventeenth century. In general, however, there is little evidence to show the universities played anything but a limited part in the transmission of new knowledge. The curriculum was established on the basis of classical authors and the various commentaries on their texts rather than on research, discovery, and novelty. It was slow to change. The disciplines that could be studied officially were confined to the seven liberal arts and then theology, law, and medicine as subjects for those pursuing a career as a Master of the Faculty. Olaf Pedersen has pointed out that the technical problems of a rapidly changing society presented challenges with which the quadrivium was unable to cope. New disciplines of cartography, navigation and hydrography that developed alongside new world discoveries were taught outside the universities in special schools such as the Casa de la Contratación in Seville and, much later, at Gresham College, established in London in 1592 (1992, 466).

In astronomy the teaching was orthodox, specifically in its deference to the Aristotelean cosmology *De cælo* (On the Heavens). Roy Porter has observed that the geostatic and the

geocentric system still predominated in university teaching in 1600 (1992, 537). The manuscript lecture notes of Henry Savile, who lectured on Mathematics at Oxford in the 1570s, are extant and show that beyond the classical authors new ideas were circulating. In conjunction with the work of Ptolemy, Savile was teaching Copernican theory.[8] Nevertheless, in their cautious presentation of the latter the lecture notes convey something of the entrenchment of traditional doctrine. In Savile's estimation, Copernicus has 'indeed earned immortal fame: but he has not added anything new to astronomy that was not already thoroughly discussed by Ptolemy. Indeed, he has clarified the same problems by means of a new method, with different hypotheses' (Ms. Oxford, Savile 29, 23r in Goulding 2010, 95). Savile's stress on the theory as a hypothesis and his comment that Copernicus' ideas with their classical sources are not new is characteristic of the conservative qualification that accompanied the transmission of Copernican theory in the late-sixteenth and early-seventeenth centuries.

As Savile's lectures illustrate, teaching was broader than the formal statutes and curriculum of the university suggest. This is evident in the field of geography. Pietro Martire d'Anghiera, author of *De orbe novo* and chronicler for the Council of the Indies, taught briefly at the University of Salamanca. Sebastian Münster lectured on geography at Heidelberg. In her examination of book ownership amongst students and fellows of Oxford and Cambridge, Lesley Cormack has demonstrated that there was a marked interest in geography old and new. Details of book ownership in the 1580s reveal that amongst the most commonly owned books were Ptolemy's *Geographia*, Pomponius Mela's *De situ orbis*, Strabo's *De situ orbis*, and the cosmographies of Münster and Apian. By the turn of the century, while the classical authors were still owned, it is evident that students and fellows were beginning to experiment with new and continental ideas found in works by Apian, Ortelius, and Copernicus, among others (1997, 40-41). Geography was taught at Oxford in the 1570s. In his dedication of *Principall Navigations* to Walsingham, Hakluyt refers to his public lectures on geography although he does not refer to it by that name. He recalls that he, Hakluyt, was the first to teach by way of demonstration:

> and in my publike lectures was the first, that produced and shewed both the olde imperfectly composed, and the new lately reformed Mappes, Globes, Spheares, and other instruments of this Art for demonstration in the common schooles, to the singular pleasure, and generall contentment of my auditory. (Hakluyt 1589, *2r)

Two aspects of Hakluyt's teaching are here disclosed: the practical use of instruments and his use of old and new maps to illustrate the changing understanding of the *oikumene*. Hakluyt's lectures are generally thought to be 'ordinary' lectures (that is, read at regular times), given to all members of the university on the obligatory set texts. However, as Anthony Payne comments, this would not necessarily have precluded innovative considerations of recent developments in learning (2021, 7). Quite clearly, in terms of knowledge, 'the olde imperfectly composed' and 'the new lately reformed' – in Hakluyt's words – could co-exist, seemingly without tension.

Following such groundbreaking studies as those of Lucien Febvre and Henri-Jean Martin's *The Coming of the Book* (1976)[9] and Elizabeth Eisenstein's *The Printing Press as an Agent of Change* (1980), it has become a commonplace that print is an historically important intermediary in the circulation of knowledge. Books helped to bring about vital changes in thought and attitude.

[8] The copy of Copernicus' *De revolutionibus* in Eton College library belonged to Thomas Savile, Henry Savile's brother.

[9] The title of the English translation of *L'Apparition du livre* (1958). Scholars outside France have been slow to recognize 'The History of the Book' as the field is now known.

The momentousness of the invention of printing was well recognized by contemporaries and is eloquently encapsulated by Galileo in his *Dialogo sopra i due massimi sistemi del mondo* (*Dialogue Concerning the Two Chief World Systems*) (1632). Adopting the dialogical form enables the author to employ a rhetorical style and – as the three interlocutors, Salviati, Sagredo, and Simplicio, meet over several days to discuss ancient and modern cosmographical theories – to convey a plurality of views. Following a discussion of the acuteness of the human mind in relation to the Divine, Sagredo alludes to man's inventions, the most far-reaching being that of the printing press:

> But surpassing all stupendous inventions, what sublimity of mind was his who dreamed of finding means to communicate his deepest thoughts to any other person, though distant by mighty intervals of place and time! Of talking with those who are in India; or speaking to those who are not yet born and will not be born for a thousand or ten thousand years; and with what facility, by the different arrangements of twenty characters upon a page! (Galilei 1953, 105)

Here, in a scientific work, is a rhapsodic recognition of the far-reaching role played by print in the dissemination of thought and knowledge beyond time and place. Yet, some of the larger claims for the press by contemporaries and posterity should be qualified. Febvre and Martin argue that print did not necessarily hasten the acceptance of new ideas or knowledge. Publication revitalized works of classical authority that otherwise may not have survived and reliance continued to be placed on these texts even as new discoveries were made (2010, 278). Long-cherished and traditional beliefs were – through publication – strengthened and popularized. As Peter Burke observes, in every culture there are 'knowledges' (2000, 13). While print enabled the circulation of knowledge it was inevitably left to the reader to discriminate between the cosmographic systems of Aristotle, Ptolemy, Copernicus, Brahe, and Galileo.

To ensure circulation, established routes between the places in which knowledge is discovered or elaborated and the places from where – via printing – it is distributed are crucial. In his work on the European book world in the sixteenth century, Andrew Pettegree has demonstrated that an extraordinary proportion of the entire output of European printing was concentrated in fewer than a dozen large centres of production. What Pettegree describes as 'a steel spine' (2008, 104) ran along Europe's major trade routes from Antwerp and Paris in the north, through Cologne, Basel, Strasbourg, and Lyon, to Venice in the south. The St Gotthard Pass through the Alps provided a direct connection between Venice and the major southern German publishing and trading cities of Nuremberg and Augsburg. Expansive and lavishly-illustrated scholarly texts, such as the translations of Ptolemy's *Geography* with its multitude of tables, and the cosmographies of Sebastian Münster, André Thévet, and François Belleforest, demanded considerable financial outlay. The publication history of sixteenth-century cosmographical works largely bears out the point that the printing houses of the aforementioned cities were the natural focus of projects that required substantial investment. Different editions of Münster's *Cosmographia* and the second edition of Copernicus' *De revolutionibus* were printed by Henricus Petrus in Basel. Johannes Petrius in Nuremberg published the first edition of the latter. As leading scientific printers, Petrus and Petrius had the technical means and skills to publish such lavishly-illustrated texts, as well as wide distribution networks. In contrast, trade in learned texts in England was essentially an import trade.

The ready availability of news as well as knowledge was closely dependent on the explosion of print. Letters of discoveries addressed to patrons and sponsors and then printed the same year carried news of marvelous 'discoveries'. On his return to Spain in 1493, on what he thought was a discovery of the Indies, Christopher Columbus announced his findings in a

letter addressed to Gabriel Sanchez, the royal treasurer of Spain, and to Luis de Santangel, the secretary of the exchequer. The letter – the original is lost – was published in Spanish at Barcelona (Goff 1946, 3). In the same year, it was translated into Latin by the Italian priest Aliander de Cosco and published in Rome. It appeared in various editions printed in Rome, Florence, Basel, Paris, and Strasbourg, and in Italian and German translations (Eames 1892, v-xiii). One was an Italian version in *ottava rima* by Guiliano Dati. An edition, published in Basel in 1494 and containing illustrations, was appended to a drama in praise of King Ferdinand written by Carolus Verardus (Goff 1946, 3). The woodcuts representing Columbus' caravel, his arrival in Haiti, and his meeting with the indigenous people enhance the appeal to a potential purchaser. Mary L. Dudy Bjork has compared the letter in Spanish with its Latin translation, exposing significant semantic changes as a letter initially addressed to patrons was redirected to a wider European audience. In Cosco's translation there is a dilution of the marvellous that informed Columbus' 'understanding of the entire quest' (Bjork 2005, 44). In his reworking, Cosco normalizes and stabilizes language, subduing the text possibly, as Bjork suggests, to draw in investors (52). Amazement at the geography of the island (Española) – that had resonances of a more fantastical traveller's tale – is replaced with a more practical description conveying its suitability for investment.

As with Columbus' letter, the letters of Amerigo Vespucci, *Lettera di Amerigo Vespucci: delle isole nuovamente trovate in quattro suoi viaggi*, recounting his alleged discoveries off the coast of America, circulated in various bibliographical contexts and reached the wider public through their inclusion in the cosmographies of Waldseemüller and Münster. Appearing in different editions, their genealogy is complex. The available evidence points to the original recipients of the letters as Lorenzo di Piero Francesco de' Medici and Piero Soderini, friend of Vespucci's and chief magistrate (*gonfaloniere*) in Florence. Both letters were translated into French and Latin and published in France, Italy, and Germany (Markham 1894, xiv-xix). Indicative of their interlingual circulation, a French translation was used for the Latin version included in *Cosmographiae introductio* (Herbermann, 1969, 10-13). 'Philesius', the Hellenized name of Mattias Ringmann, the translator, addresses the reader in a preface to the translation, alluding to the new land 'encircled by a vast ocean' and 'inhabited by a race of naked men', unknown to Ptolemy, discovered through the fleets of the King of Portugal (Portugal is given its archaic name of Lusitania). Playfully, he advises the reader not to be like the rhinoceros: impervious to the momentousness of Vespucci's discoveries. The authenticity of Vespucci's account of his voyages is now much in doubt, but the wide circulation of the letters ensured that it was Vespucci who was connected throughout Europe with the discovery of the *Mundus Novus*.

An important dimension of cosmography addressed by Antonio Sánchez Martínez in this volume is practical cosmography – the domain of navigators, sailors, and their instructors. It was conveyed orally as much as by print. *The Libro de cosmografiía* by Pedro de Medina – a teacher, astronomer, chronicler, and an examiner of ships' pilots in Seville – exists only in manuscript (see Medina 1972). It takes a simple question and answer form (here, questions from a pupil to a pilot), reflecting the experience of instruction and covering all the knowledge needed for pilots, navigators, and explorers. Navigation manuals did circulate internationally. De Medina's *Arte de navegar* (1545) was translated into French and went into some twenty editions. Martín Cortés' *Breve compendio de la sphera y de la arte de nauegar* was translated into English by Richard Eden and published in 1561. In his dedication of *The Arte of Navigation* to two aldermen of the City of London, the haberdasher William Garrard and Thomas Lodge (father of the prose writer), Eden refers to his dedicatees as governors of a fellowship of the nobility and merchant adventurers whose purpose is 'the discovery of Landes, Territories,

Ilandes, and Seignories unknowen' (Cortés 1561). Eden's desired readers for his translation of Cortés' work belong to a circle of city merchants, artisans, and overseas venturers keen to acquire knowledge of new skills based on firmer astronomical navigation emanating from the Iberian Peninsula.

4. *Caution and Censorship*

In her study of the contribution of the Spanish and Portuguese empires to the practice of science, María Portuondo has revealed how the Spanish safeguarded cosmographical knowledge (2013, 103-136). Concealment, censorship, counter-narratives, and disbelief are factors that counter the circulation of knowledge. They can be seen to operate as new ideas about the world disturbed traditional and popular thought and only slowly gained traction. Jim Bennett makes the point that in the context of early-sixteenth-century cosmography the geographical description of the different parts of the earth were occupying ever more space, while the astronomical content was relatively static (2017, 37). Eventually, the revolutionary theories of Copernicus, Brahe, Kepler, and Galileo were to unsettle the static nature of celestial cosmography. Yet, the dissemination of this novel cosmology was to encounter cautious reception, censorship, and rejection. In part, this lay in the way the theories were presented and marketed as hypotheses open to acceptance or rejection. Equally, to posit the movement of the earth posed an alarming challenge to Ptolemaic and Aristotelian conceptions of the universe and, moreover, to the words of the Bible. The model of the geocentric world remained remarkably resistant.

The publication of *De revolutionibus orbium coelestium libri VI* (1543) has a complex history evidently shaped by anxieties about its radical astronomical and theological content. From the address to the Pope, Paul III, which serves as the book's Preface, it appears that Copernicus was reluctant to release his manuscript, concealing it for more than nine years.[10] Facilitated by the support of international scholars, its route to print is a further illustration of the significance of European networks linking scholars and printers. Its publication was initiated by Georg Joachim Rheticus, Professor of Wittenberg, who, while he was in Nuremberg, learnt about Copernicus' work from Johann Schöner, astronomer, instrument maker and mathematician, and from the printer Johannes Petreius. Rheticus visited Copernicus in Frauenberg, where Copernicus was canon, and was given permission to publish an introduction to the new cosmology: *Narratio prima*, printed in Gdansk in 1540, appeared in the form of a letter from Rheticus to Schöner. Having introduced the heliocentric thesis to the astronomical community, Copernicus entrusted his manuscript to Rheticus who took it to Petreius' shop in Nuremberg.

The title page includes an address advertising not only the book's scope but the subversive nature of its thesis:

> Diligent reader, in this work, which has just been created and published, you have the motions of the fixed stars and planets, as these motions have been reconstituted on the basis of ancient as well as recent observations, and have moreover been embellished by new and marvelous hypotheses. You also have most convenient tables, from which you will be able to compute those motions with the utmost ease for any time whatever. Therefore buy, read and enjoy. (Copernicus 1978, xv)

[10] In the Preface, Copernicus refers to the friends who persuaded him to publish, 'Foremost among them was the cardinal of Capua, Nicholas Schönberg … Next to him was a man who loves me dearly, Tiedemann Giese, bishop of Chelmno' (1978, 3).

Prospective readers are left to wonder at the nature of the 'marvelous hypotheses' advanced. The most startling is expressed in chapter ten of the first book containing a diagram of the celestial spheres with the sun at the centre of the universe. After referring to the annual revolution of the planets around the sun, Copernicus asserts unequivocally: 'near the sun is the center of the universe. Moreover, since the sun remains stationary, whatever appears as a motion of the sun is really due rather to the motion of the earth' (20).

The revolutionary statement is followed by caution as Copernicus acknowledges that his statements are difficult, almost inconceivable, and opposed to the beliefs of many people. Copernicus' circumspect note is followed by the promise that with God's help his statements will appear 'clearer than sunlight' or at least to 'those who are not unacquainted with the science of astronomy' (21). The notion that the treatise is directed towards the astronomical community reiterates Copernicus' unequivocal statement in the dedication of *De revolutionibus* to the Pope that 'astronomy is written for astronomers' (5).

The book's paratextual material reveals different impulses at work. In an anonymous foreword addressed to the reader, 'Concerning the Hypotheses of this Work', its author alludes to widespread reports about these novel hypotheses which are likely to cause offence and confusion. The reader is offered the assurance that neither the astronomer nor the philosopher can state anything certain about the celestial motions unless it be divinely revealed. Thus, the reader must regard *De revolutionibus* as a series of hypotheses only. The latter 'need not be true nor even probable' and they should be read in conjunction with 'ancient hypotheses, which are no more probable' (xvi). The author of the unauthorized foreword was a Lutheran theologian and priest at St Lorenz, Nuremberg, Andreas Osiander, whom Rheticus had left to oversee the final stage of publication (*ibid.*). Whatever motives lay behind Osiander's intervention it was evidently designed to predetermine the reader's response and preempt hostile rejection or enthusiastic endorsement. Its cautionary tone is at variance with Copernicus' confident address to the Pope, composed, of course, without any knowledge of the foreword. Here, after explaining why he had delayed publication, Copernicus presents his theory, supported he says by classical authorities. However, he anticipates unfounded objections to it, making an analogy between resistance – now discredited – to the idea that the earth has the form of a globe and anticipated resistance to the idea of a movable earth. While Copernicus' ideal reader is the astronomer, he recognizes that his thesis will spread amongst the educated and uneducated alike: 'Perhaps there will be babblers who claim to be judges of astronomy although completely ignorant of the subject and, badly distorting some passage of Scripture to their purpose, will dare to find fault with my undertaking and censure it' (5). His prediction was entirely accurate. There is ample evidence that *De revolutionibus* did encounter resistance of various kinds.

Censorship was far from immediate. Not until 1616 was the book placed on the *Index of Prohibited Books* 'until Corrected' and not until 1620 were the required corrections listed (Gingerich 2002, 367). Owen Gingerich makes the point that this was an extraordinary move since in very few cases did the Roman Index specify precise changes to text. The stipulated changes include the deletion of a passage from the preface that contains Copernicus' assertion that 'astronomy is written for astronomers' thereby removing the implication that the natural sciences are not the domain of theologians. The most draconian of the stipulated corrections is the removal of chapter 8 of Book I 'because it teaches the truth of the earth's motion while it discredits the time-honored reasons for proving its immobility' (*ibid.*). However, here there is a concession that since the matter is treated problematically the chapter can remain so 'the sequence and arrangement of the books would remain intact' if various suggested amendments are made. In his census of the 1543 (Nuremberg) and 1556 (Basel) editions of the work, Owen

Gingerich examined over six hundred extant copies, many recording provenance and ownership, annotation, and marginalia. Two-thirds of the copies held in Italian libraries are censored texts conforming with Roman censorship while virtually none of the Spanish and French copies contain corrections (146). Annotations in other copies illustrate a favourable response to Copernicus' theory. Michael Maestlin, Professor of Mathematics at Tübingen, in the copy he owned (now in the Stadtbibliothek in Schaffhausen) commented, according to Gingerich, soon after he acquired the book in 1570, on Osiander's address to the reader:

> This preface was added by someone whoever its author may be (for indeed its weakness of style and choice of words reveal that it is not by Copernicus), lest someone at the mention of these hypotheses would hiss them off the stage as false and unworthy of reading, or would approve them at first glance injudicially out of love of novelty: first he ought to read and reread them, and only then judge them. (220)

Hissing off the stage is perhaps too colourful a metaphor to describe the more general non-reception of Copernican theory. Certainly, as surveys of reception illustrate, it was slow to take hold (Stimson 1917; Dobrzycki 1972; Cynarski 1973). A century after the publication of *De revolutionibus*, in two public lectures on cosmography delivered in 1649 at Sir Balthazar Gerbier's Academy in Bethnel Green, London, the heliocentric system was categorically rejected on theological and rational grounds. The lectures were published in pamphlet form the same year, with the second containing an address to the President of the Council of State (the governing body of the new English Republic) in which Gerbier outlines the moral and educative purpose of his Academy erected 'for the glory of God, the honour of this State and Nation, the encouragement and *improvement* of all *Lovers of Vertue*' (Gerbier 1649b, A2r).

'Read gratis', the lectures, in their simple expository style and structure, are designed for an audience relatively unfamiliar with cosmography. Beginning with the stock definition of cosmography as the 'description of the Celestiall and Elementary Region', the first lecture expounds the Aristotelian position that the 'Earth the heavier of the foure [elements] holds in the Center' (Gerbier 1649a, B2r). In the second lecture the geocentric position is reiterated: 'all the Heavens or Orbes doe surround the Earth as a circle doth its center, and the further they are from it, the longer they are accomplishing their circuits' (Gerbier 1649b, A4v). The final section, 'That the Earth is unmovable' sets out to prove that 'excellent astronomer' Copernicus wrong. The earth's immobility at the centre of the universe is proved by reason and scripture. The stars remain of 'the selfe same bignesse' which would not be the case if the earth were 'in one place then the other' (B4v). That the sun has its course and motion needs no further proof than the citation of the Old Testament narrative of Joshua commanding the sun to stand still: 'Sunne, stande thou still upon Gibeon … And the Sunne stood still, and the Moone stopped, untill the people of Israel had avenged themselves on their enemies' (Josh. 10:12-13). Auditors are reminded of the limitations of human enquiry. The 'coelum impereum' (empyrean) must remain a mystery for the living and is beyond the reach of astrologers: 'it behooves the Divines and not the Astrologers to discourse of it' (Gerbier 1649b, 3). Even as science was breaking conceptual boundaries it was recognized that certain knowledge – *arcana Dei* – was beyond the acquisition and comprehension of humanity.

5. *Conclusion*

In the late fifteenth century cosmography appeared as a type of knowledge that was to expand considerably, crossing what we would regard as disciplinary boundaries. Within the cosmographical frame knowledge about the new world, the heavens, nature, and man

existed alongside each other, constituting a comprehensive and in that sense coherent body of knowledge, at variance with modern specialization. This article has explored how, true to its diverse make-up, the media through which cosmography was transmitted included the printed word, maps and instruments. Knowledge was purveyed by humanist scholars, philologists, university teachers, printers, cartographers, pilots, and seamen. From the originators and producers of knowledge the discussion moved to transmission and reception, with an emphasis on the circulation of cosmographical knowledge amongst the relative elite who could travel, read, and afford to buy books. Inevitably, the book was the means by which knowledge was given shape, organized, and circulated. In addition to authorial production, books on cosmography went into multiple editions with additional – or less – matter, were translated, and had changing paratexts as they circulated across Europe over the course of a century, forming and formed by the world view of generations. Old and new concepts of the earth and heavens circulated concurrently, determining gradual shifts in knowledge that remained circumscribed by theological certainty.

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Part Two

Case Studies

Cosmography and Geography

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Transformer and Influencer Giovanni Battista Ramusio's Impact on Western European Geography

† Margaret Small
University of Birmingham

Abstract

In the mid-sixteenth century, the study of cosmography was in a state of upheaval in Western Europe, for the European voyages of exploration had disrupted the old ideas of the nature and structure of the world. As a consequence, cosmographers and geographers struggled to accommodate the ever-expanding influx of new empirical knowledge into their works. In the 1550s the Venetian Giovanni Battista Ramusio compiled the *Navigationi et viaggi*, initiating a new form of geography which endeavoured to present a world cosmography through the eyes of travellers, ideally transmitting the knowledge gained from an age of exploration. In framing his work, Ramusio used both his knowledge of the classics and his humanist editorial skills, while his tests for inclusion derived from attested observation. Over seventy narratives, originally written in a variety of languages, were presented by Ramusio in vernacular Italian and skilfully woven together with intervening *Discorsi*, written by Ramusio by way of commentary. Ramusio's forensic editorial skills, mastery in acquiring texts which had hitherto seen little or no printed circulation, diligence in translating, editing and presenting them in an accessible format made his work invaluable. Proposals to republish it in French or English, however, never came to fruition; therefore, scholars had to turn to the vernacular Italian for the information. The article examines how the *Navigationi et viaggi* became a bedrock of European geographical knowledge examining, in particular, its use by the English geographer John Dee and the French cosmographer royal, André Thevet. It shows how the travellers' tales, mediated through the hands of a sedentary Venetian, crisscrossed Europe and became fundamental in creating a new geographical understanding dependent on the words of the eyewitness.

Keywords: *André Thevet, Giovanni Battista Ramusio, John Dee's marginalia, Richard Hakluyt, Sebastian Münster*

1. *Introduction*

In 1550 Giovanni Battista Ramusio started a whole new geographical venture when he published the first volume of his *Delle Navigationi et viaggi*, a work which created a world

geography through carefully selected, edited and organised travel narratives.[1] It was a form of geography ideally suited to an age of expanding knowledge when the very outlines of the known world were constantly changing. With the publication of this work, he became the leading exponent of geography presented through compilation and, despite travelling remarkably little himself, placed the emphasis of terrestrial and topographical knowledge on eye-witness authority. He did not expressly state that he thought geography was best imparted by first-hand testimony, but the majority of his compilation consists of autoptic reports. Although written in the Italian vernacular, *Delle Navigationi et viaggi* was read throughout Europe and provided access to much hitherto unpublished geographical material, in particular from the Iberian Peninsula which was at the forefront of European expansion. While scholars have discussed Ramusio's importance in the history of travel compendia and compilations, the novelty and significance of his world view (in approach and scope) have been largely overlooked (van Groesen 2008; Rubiés 2012). Even those who have been enthusiastic advocates for his work have tended to under-state its innovative nature. Horodowich, for example, writes that 'Ramusio's *Navigazioni* built directly on the Venetian travel compendia that had come before him. His synthetic, textual redimensioning of the world was a product of this tradition' (2018, 63). This article argues that Ramusio's real importance was in developing a form of geography which went far beyond the existing compendia, enabling Western Europeans to see the whole world through the eyes of the onlooker, while simultaneously giving readers control over which areas of the world and which facets of geography (descriptive, mathematical or cartographical) they wished to learn about. What follows therefore concentrates on his readers and the influence Ramusio had on the way in which geographical knowledge was disseminated in the sixteenth century. As will be seen, cosmographical experts such as John Dee in England and André Thevet in France read the *Navigationi* in significantly different ways and put their acquired knowledge to very different purposes. Yet both were heavily dependent upon Ramusio's book for their world view. Marginalia and texts from readers of the *Navigationi* make its importance apparent. Ramusio made the non-European regions of the newly encountered world the core of his study – in strong contrast to more traditional large-scale geographical and cosmographical works which tended to focus on Europe. These gave relatively little space to the regions which had been unknown to Europeans before the late fifteenth century because they lay outside the temperate regions of Asia, Europe and North Africa, in what had been considered the *oikoumene* or inhabitable world. In foregrounding all the newly encountered regions of the world, Ramusio created one of the most important descriptive geographical works of the sixteenth century whose influence could be felt throughout Western Europe. This article therefore positions Ramusio as both transformer and influencer in the development of Western European geography, a role far more significant than his reputation as 'compiler' would suggest.

Born in Treviso around 1485 and moving as a child to Venice, Ramusio studied at the University of Padua, and then entered the Venetian civil service, thereafter rising through the ranks to become Secretary to the Venetian State in 1515 and later to the Council of Ten in 1553.[2] Despite an extremely arduous career as a civil servant, he collected, frequently translated,

[1] I would like to thank the Sackler Fellowship at the National Maritime Museum and the British Academy Small grant for helping to fund this research. Throughout this article, I am spelling the title as it was spelt in the original version: *Delle Navigationi et viaggi*. The modern edition renders it as *Navigazioni*.

[2] The date of Ramusio's birth is contested: see Del Piero 1902, 13; Grande 1905, 95. On his membership in the Council of Ten see Giunti 1978, 8.

and edited the seventy narratives which comprise the *Navigationi et viaggi*.[3] His first interest was in the classics; he edited or assisted with the editing of several Latin texts, and in so doing, as I have argued elsewhere, he gained the humanist editorial skills which stood him in good stead when collating and editing the narratives of the *Navigationi* (Small 2012). Unlike his reader and 'disciple', Richard Hakluyt, he did not let patriotic inclination cause him to reject material from inclusion solely because they conflicted with his desire to promote Venice.[4] While there were propagandistic elements to Ramusio's work promoting Venetian interests in the East, the core purpose was to bring knowledge of the geography and inhabitability of the wider world to his readers.[5] In doing so, he created a wholly new form of world geography.

2. *Compiling and Creating World Geographies*

Ramusio's contacts with Venetian patrician, governmental and diplomatic communities as well as with the publishing world seem to have enabled him to obtain a vast amount of geographical material which was either previously unpublished or had only circulated marginally. In particular, through his friendship with Andrea Navagero, the Venetian ambassador to Charles V, and the contacts with which Navagero provided him in Spain, as well as diplomatic contacts made in Venice, Ramusio was able to acquire and publish a large volume of Spanish material which had not previously been disseminated in the rest of Western Europe (Parks 1955a, 132-133, 145-146 and 148). He also succeeded in obtaining a considerable number of Portuguese reports. His importance in releasing information about the Iberian voyages and encounters was significant since both Spain and Portugal heavily censored geographical and cartographical material in order to retain control over knowledge of the sources of the most valuable commodities and of the trade routes used for them (Harley 1988; see also Cortesão 1937; Portuondo 2009). Even Ramusio with all his diplomatic connections could not obtain all he wanted, or even complete uncensored versions of all the narratives which he did acquire, but he was more successful than any other non-Iberian geographer.[6] In addition to the Iberian material, he also included

[3] The *Navigationi* were initially published anonymously. The publisher, Tommaso Giunti, only revealed the compiler posthumously (1978, 7-8).

[4] William Allen, for instance, points out that Hakluyt did not include the material which he had read in Ramusio about the Caspian, even though it would have furthered English knowledge of the region, because it did not highlight English contributions to knowledge and empire. As he says: 'It should be remembered … that Hakluyt's theme was English voyages and English contributions to exploration rather than a detached and objective description of countries' (1974, 170-171).

[5] The leading scholar on Ramusio, Marica Milanesi, argues that he wished to promote Venetian investment in overseas exploration, and he was one of the very few Venetians actively engaged in trying to find new trading ventures. Most modern scholars have made much of his interest in the potential for global trade, and more recently, Elizabeth Horodowich has shown how his selection of material (particularly in the second volume) demonstrated the splendour and achievements of Venice. It is undeniable that trade and the aggrandisement of Venice were part of his motivation, but the comprehensiveness and scope of his compilation indicate that his chief interest extended beyond the material gains for Venice into to geography for its own sake. See Milanesi 1978, and 1984, Ch. 1; Horodowich 2018, Ch. 3. See also Rubiés 2007, 156-157; Veneri 2012, 162-201.

[6] For instance, although aware of Duarte Barbosa and Tome Pires' accounts of Asia, Ramusio was only able to obtain and publish partial accounts although he would have published them and 'non ad altro fine né per altro nostro proposito (come in piú luoghi del presente volume abbiamo detto) che per far cosa grata agli studiosi che si dilettano di tal lezione' (Ramusio 1978-1988, 'Discorso sopra il Libro di Odoardo Barbosa e sopra il Sommario delle Indie orientali', II (1979), 542) (for no other purpose of our own [as we have said in several places in the present volume], than to do a kindness to students who take pleasure in such reading). Unless otherwise stated all translations from Italian are mine. All quotations from Ramusio's *Navigationi et viaggi* are from the six-volume Italian edition by

a substantial number of classical narratives, many Italian and French documents and a few discrete reports from other parts of the world. There are no narratives which relate to voyages made by mariners from England and the Low Countries in the editions of the text published within Ramusio's lifetime, yet these were the two regions where contemporary scholars show the greatest indebtedness to Ramusio. Indeed, the only English-backed voyage mentioned in his work was Sebastian Cabot's search for a northwest passage which Ramusio referred to in his *Discorso* on his third volume. In his *Divers voyages*, Hakluyt translated into English what Ramusio had written because no English account of this venture existed (1582, 18-19).[7]

By the mid-sixteenth century when Ramusio was writing, European geographers were, in different ways, trying to cope with how to understand and describe a world whose physical outlines seemed to be changing almost daily as explorers brought back news of encounters with people and lands in parts of the globe long believed to be uninhabitable or in many cases entirely covered by the ocean. These changes brought a plethora of different forms of geographical publication. At the time of the publication of the *Navigationi*, however, there were still only a few descriptive works which, like Ramusio's, tried to present whole-world geographies. A brief look at the most famous of these gives an indication of how innovative his approach was, but also of why his influence cannot be assessed simply by enumerating the editions and full translations of his work which at first sight might seem obvious indicators of its significance.

A cursory comparison of Sebastian Münster's geographical best-seller of the sixteenth century, the expanded Latin edition of his *Cosmographiae Universalis Libri VI*, with the first volume of Ramusio's *Navigationi* which were both published in 1550, reveals how strikingly innovative Ramusio's work was in format and in subject.[8] Although the *Cosmographia* came to be at the centre of European geographical understanding, the nature of the work did comparatively little to enlighten people about the newly encountered lands and peoples. Very little of it is devoted to these places, and indeed the *Cosmographia* has a format which makes these regions peripheral in importance. Germany is at the core of the work, but also of Münster's understanding of the world. Age-old ideas of environmental determinism which can be traced back in European literature to Hippocrates, Herodotus and Aristotle, which promote the idea that terrain and climate shape the characteristics of those who inhabit them, are fundamental to Münster's understanding of geography (Bergevin 1992). In his theory, Germany, at the heart of Europe, had the most balanced climate and environment in the world and therefore the most balanced people. It consequently merited the most attention. It was a work very much framed by Münster's reading of Latin and Greek texts – in his own time he was called the German Strabo and his indebtedness to classical knowledge is apparent everywhere in his work (Gallois 1963, 221; Small 2011, *passim*). Although ostensibly a whole-world cosmography, this is primarily a work about Europe and its relationship to an expanding world.

Ramusio's *Navigationi* is about as far from the *Cosmographia* in focus, form and concept as two works ostensibly on the same subject could possibly be. Where Münster devoted the bulk of his synoptic cosmography to Europe, Ramusio threw the emphasis entirely onto the

Marica Milanesi (1978-1988) and are referred hereafter by volume number, publication date of the specific volume and page numbers. Ramusio's work was first printed in Venice between 1550 and 1559.

[7] For the original, see Ramusio 1978-1988, V (1985), 12.

[8] Burmeister estimated that by 1628 there had been 50,000 copies of Münster's work printed in German alone and a further 10,000 in Latin. It was translated into Latin, French, Italian and Czech and even partially into English, undergoing more than thirty editions by the end of the century, and becoming one of the most widely circulated geographical texts in Western Europe. For more on the various editions of the *Cosmography*, see Ruland 1962; Burmeister 1964, *passim*; McLean 2007.

newly encountered lands. He carefully chose and ordered his documents to provide an image of the lesser-known regions of the world and supplement the work of Ptolemy and other ancient authorities, as he explained:

Ma la cagione che mi fece affaticar volentieri in questa opera, fu che, vedendo e considerando le tavole della «Geografia» di Tolomeo, dove si descrive l'Africa e la India, esser molto imperfette rispetto alla gran cognizione che si ha oggi di quelle regioni, ho stimato dover esser caro e forse non poco utile al mondo il mettere insieme le narrazioni degli scrittori de' nostri tempi che sono stati nelle sopradette parti del mondo e di quelle han parlato minutamente; alle quali aggiugnendo la descrizion delle carte marine portoghesi, si potrian fare altretante tavole che sarebbero di grandissima satisfazione a quelli che si dilettano di tal cognizione, perché sarian certi dei gradi, delle larghezze e lunghezze almanco delle marine di tutte queste parti, e de' nomi de luoghi, città e signori che vi abitano al presente … (Ramusio 1978-1988, 'All'eccellentiss. M. Hieronimo Fracastoro', I (1978), 4-5).[9]

Such an introduction throws the emphasis onto the regions of the world which were new features in European geographical conception. Europe is the undiscussed heart of the *Navigationi*, but there are no narratives about it. Although we know that Ramusio had obtained material about European geography (for instance a description of Spain by Andrea Navagero), he made no attempt to publish it.[10] Instead his first volume focussed on Africa, the second on Asia and the third on the New World. According to Marica Milanesi, he also intended to add a fourth volume on Antarctica and South America, but this was never compiled (1984, 41). These were all regions of the world which were not properly described in the ancient geographies. The effect was still on one level to emphasise Europe as a core – the part of the world so familiar that it need not be discussed, but it also brought the outlying regions into the *oikoumene*, the inhabitable world. The regions described in Ramusio's narratives were all places which had previously been little known to Europeans, but they were also ones which travellers (and predominantly European travellers) had visited, stayed in and recorded. Whereas Münster's cosmography still gave the sense that the core of the inhabitable world was Europe, Ramusio's *Navigationi* demonstrated that the whole-world was inhabitable. He was creating a new form of publication to cope with a new geography in which Europeans were becoming convinced of the total inhabitability of the world (Small 2020).

3. *Reception of Ramusio's* Navigationi

Although the *Navigationi* had an extensive readership throughout Europe, these readers all relied on the various Italian editions, and no complete translation was made of the compilation.[11] The Englishman Richard Hakluyt proposed translating the entire work, but the project failed, and

[9] (But the reason which made me willingly weary myself in this work, was, seeing and considering that the maps of the Geography of Ptolemy, in which he describes Africa and India, were very imperfect in respect to the great knowledge which one has nowadays of that region, I decided that it would be valuable and perhaps not a little useful to the world to put together the narratives of the writers of our time who have been in the aforementioned parts of the world and who have spoken in minute detail about them. By adding the description of the Portuguese marine charts to these, one could make so many other maps, which would give the greatest satisfaction to those who delight in such knowledge; because they would be certain of the degrees of width and length at least of the sea and of all those regions, and of the names of the places, cities and leaders who currently live there …).

[10] Ramusio's friend Andrea Navagero sent him geographical descriptions of Spain which Ramusio's son Paolo edited and published in 1563, but none of these find a place in the *Navigationi* (see Navagero 1563).

[11] By 1606 the first volume had undergone five, the second, four, and the third three Italian editions.

he had to make do with translating or causing the translation of several of the narratives (Small 2012). The Frenchman Jean Temporal, who translated Ramusio's version of Leo Africanus' travels in Africa into French, also proposed whole volume translations that never came to fruition (1556). Ultimately the *Navigationi* were never translated in full into any other language, but the number of documents which were translated from Ramusio's work throughout Western Europe shows how valuable a source he provided. His work was translated and read selectively. His versions of travels in such widely disparate areas as North Africa and the St Lawrence River became the standard sources of authority on these regions. The *Navigationi* were the apex of the Italian contribution to written geography, but their success, and even their existence, derived from a cultural ambience in which humanist scholarship and an interest in geography and the new discoveries combined. Ramusio wrote to entertain and inform a European reading public about the nature of a world which neither they nor he were likely to see. In taking the narratives out of context, however, his selective translations produced invaluable contributions to geographical knowledge of particular regions, but they lost the sense of the whole-world cosmography and overall inhabitability of the world that the *Navigationi* provided.

Ramusio's choices for publication, editorial skills and his own understanding of his texts, all of which were partly the result of the way in which he read his material, had repercussions for much of European geographical scholarship in the sixteenth century and even later since for many of these texts, his version became the consummate authority. His translation from Greek into Italian of the voyages of the fifth-century B.C. Carthaginian navigator Hanno down the west coast of Africa preceded even the first Latin editions and wakened Europe to the voyage. It became the basis for a hive of interpretations trying to correlate geographical realities with the Greek texts (Hair 1987, 45; Kroupa 2018). Samuel Purchas in England, for instance, writing nearly a century after Ramusio, still took his version of Hanno from Ramusio including his editorial interpretation (1625). Ramusio's edition of Barbosa's *History* remained the only one published in Western Europe until the nineteenth century (Parks 1955b, 290). Ramusio's textual choices and efforts in tracking down comparative material for his edition of Marco Polo's narratives were so important that even in the twentieth century editors of Marco Polo's *Travels* have had to take Ramusio's composite edition into account.[12]

In addition to the range of material he provided on newly known regions, Ramusio's exacting standards and humanist approach, perfected over years of classical editorial work, were a key reason for his use by other cartographers, geographers and proponents of expansion and colonisation. The *Navigationi* were used by those interested in ancient texts, in regional narratives, in empire building, in map-making. Ramusio put the words of the eye-witness directly into the readers' hands. The readers could trust Ramusio's editorship, knowing that his interpolations and interpretations were confined to his own *Discorsi* with which he introduced many of the texts. As a result, they were able to trust the autoptic report and turn it to their own ends, often ones which were far removed from the whole-world descriptive geography that Ramusio's organisation and selection offered. The English polymath and geographical advisor, John Dee, and the French cosmographer royal, André Thevet, provide particularly good examples of geographers who were extremely influential in their own right, but whose geographical knowledge and texts were in large part founded on Ramusio's *Navigationi*.

[12] 'Di messer Giovambattista Ramusio prefazione sopra il principio del libro del magnifico messer Marco Polo', (Ramusio 1978-1988, III (1980), 34). See Davies 2012; Ross 2014, ix-xv.

4. *Dee, Thevet and Ramusio*

John Dee makes a particularly interesting case study of the readership and use of the *Navigationi* because Dee's own marginalia can be found in his copy of the work in Trinity College Dublin.[13] These give a clear insight into Dee's own geographical interests, but also into the way in which European armchair geographers could explore the world through reading.[14] Like Ramusio, Dee never travelled beyond Europe, yet through extensive reading they both became experts whose knowledge was trusted widely. Whereas Ramusio's authority was acknowledged through the material he edited and published, Dee's geographical reputation was garnered in large part through his teaching since he published very little on the subject although he wrote a series of manuscript treatises on empire which were strongly dependent on geography.[15] He became known as a geographer long before he wrote anything about geography, and the *Navigationi* played a significant role in the creation of his authority. Aside from the manuscript treatises on empire, he wrote one large geographical work, *Of Famous and Rich Discoveries*, whose text is heavily dependent on the *Navigationi*. It exists only in a partially burned manuscript in the British Library, and while it was certainly written for circulation if not publication, it is rambling and somewhat disconnected (Dee 1577, Ms. C.VII). One can see a flow of thought, but it does not come out readily and clearly on the page. There are masses of revisions throughout, and Dee seems to have had difficulty setting his words into clear and definitive form. Dee was drawn to the empirical narratives and eye-witness testimony of the *Navigationi*, but he read the narratives not simply to gain a broad cosmographical understanding of the world – to supplement the work of Ptolemy, as Ramusio suggested (1978-1988, I (1978), 4-5) –, but rather from a desire to promote his own country's interests and to form a British empire as became evident when he synthesised and adapted material from the *Navigationi* into his own work in the *Of Famous and Rich Discoveries*.[16] It was evidently one of the works Dee saw as important because despite its size, he took it with him in 1583 when he left the country.[17] When read in conjunction with the marginalia from his copy of the *Navigationi*, the *Famous and Rich Discoveries* give an admirable indication of the way in which the *Navigationi* could be read and re-used for an entirely different purpose from whole-world cosmography. Through Dee's marginalia we can witness the process of his using the *Navigationi* to develop geographical knowledge as he read and reacted to the texts before he converted the knowledge he gleaned to more propagandistic purposes.

Dee, like Ramusio, was keen to establish the truth of the texts and did not blindly accept someone's word merely because they claimed to have eye-witness authority. Accepting Ramusio's editorial capabilities, he was interested not so much in correcting version against version, as in assessing Ramusio's judgement. On the first page of his volume, Dee wrote marginalia about 'the uncorrected bokes' when Ramusio was explaining his editorial principles and the problems he encountered with many of the texts which had come to him damaged and full of errors (DD.

[13] John Dee's copy of Ramusio's *Navigationi et viaggi* (Venetia, Giunti, 1559-1565) is in Dublin, Trinity College Library, shelf mark DD. dd. 40-41; see Roberts and Watson 2009. Hereafter, Dee's marginalia are referred to by shelf mark, volume number, publication date of the specific volume and page number.

[14] Sherman 2009 discusses some of these marginalia.

[15] On Dee as a geographical educator, see Taylor 1930.

[16] Dee constantly referred to a British rather than an English empire. He asserted a British identity that included Wales, and emphasised claims to empire reaching back to Madoc and King Arthur. See Williams 1980, 12-13.

[17] Roberts and Watson 1990, entry 273. The book is marked with T for taken and with a Δ indicating Dee's ownership.

dd. 40, I (1563), aiiv). It is true that he underlined the reference to infinite errors with which Ramusio characterized his first manuscript of Ludovic of Varthema's travels in Asia (and which Ramusio had refused to publish without comparanda), noting in the margin 'the Originall Copy of Vartomommus', but accepted the version presented as the correct one (DD.dd. 40, I (1563), 147r). He did, however, compare works for knowledge where he thought it useful to do so. Throughout Ramusio's version of Oviedo's discussion of the deeds of Columbus, Dee made references to Ferdinand Columbus' *History*, comparing reports of events. He was interested in correcting inaccuracies which he saw in the text. For instance, he remarked 'that King Henry made a mark of this offer it is untrue; as you may see in the II chap of Don Fernando Columbus his historie, written of his fathers travayyls translated out of the Spanish into Italian by Alfonsus Ulloa' (DD.dd. 41, III (1565), 80r). Similarly, he peppered all three volumes with references saying *vide supra* or *vide infra* and then a page reference, which seems to indicate not only that he read the *Navigationi et viaggi* closely but also that he read it more than once.[18]

The volumes bear witness to such close reading that almost every page has some form of annotation or underlining. It is noticeable when these are absent as in the case of the report of Leo Africanus' *History of Africa*, and of several of Ramusio's own.[19] *Discorsi* were Ramusio's commentaries on the texts in which he presented his own editorial notes and theories about the geography. They were not eye-witness reports, however, and Dee, like Ramusio, was clearly more interested in autoptic authority than in material filtered through other scholars. What rapidly becomes apparent is Dee's interest in the possibilities and practicalities of colonisation; the problems of communication and his desire to create a verbal map of the world. Nearly every time that an author mentioned a number of leagues, Dee noted how many miles there were to a given author's league – either three or four.[20] He recorded most distances mentioned in the narratives and, at the foot of the page, he often drew these together into a sort of table indicating the distance from place to place. He also supplemented such descriptions with information from elsewhere. For instance, when recording Verazzano's voyage down the east coast of north America in 1524, he mentioned that 'from the point of Florida to Cap of Baccalaos the length of the coast is 3440 miles as Francesco Lopes de Gomara reckoned it in his *Historia Generalis* Cap. 12' (DD.dd. 41, III (1565), 420r).

From narrative to narrative and place to place he was trying to build a relative map of the world which worked on distances, positions and sailing times. It is the kind of information useful for an explorer. It is also the kind of information whose importance Ramusio was clearly aware of and knew his selected narratives to contain, even if it was not what captivated him. As he said, such narratives, when combined with marine charts, could be used to create new and more accurate maps of the world (Ramusio 1978-1988, I (1978), 4-5). Dee noted Ramusio's comments on the need to supplement Ptolemy, saying 'Ptollemy has gross imperfections' (DD. dd. 40, I (1563), aiiv). He underlined Ramusio's words about making many other maps, and then proceeded to extract the mathematical, cartographical information, using the *Navigationi* for a

[18] Just one example is his comment '*the straicts of Persia Goulf mowth. The land may be seen on Gulf Sides being of 8 Leagues on either side. /vide infra 265*' which can be found in DD.dd. 41, III (1565), 187r. Such evidence of close reading can be found throughout.

[19] Ramusio's version of Leo Africanus' *History of Africa* is one of the few parts of the *Navigationi* entirely without any marginalia or underlining. Dee appears not to have read it, and his interest in the African sections of the *Navigationi* are in general less than for other regions. We do not know exactly when Dee acquired his copy of *Delle Navigationi*, but Parry argues that he was reading it about 1577-1578 at the same time as he was reading Ferdinand Columbus (2012, 96).

[20] E.g. DD.dd.40, I (1563), 187v.

purpose that went well beyond the superficially human geographical nature of the narratives. He not only drew out such information from travel writing in order to teach others, but carried out just such mapping based on travel reports and existent charts when he mapped the north of America.

Dee's use of the *Navigationi* was not, however, limited to the cartographical role which had ostensibly driven Ramusio to create them, and in Dee's marginalia in the third volume in particular, we see the purpose to which it was most often put. Here Dee was not merely interested in cartography, but was also concerned with the order and manner of conquest and colonisation. He made several annotations about possession-taking, and about the order of discovery, conquest and then thirdly pacification.[21] He was also extremely interested in the products of various countries both for trade potential and the ways in which they might be useful or needed after conquest. Unsurprisingly, he paid particular attention to reports of gold and the manner of mining it, but he also noted cloth, fruit, trees, and other products. He wrote a whole paragraph in Latin on the use of a certain Florida tree for curing syphilis – going far beyond the actual text.[22] Although he sometimes broke into full paragraphs summarising a text, he did not debate with the text except occasionally to say that something was wrong with it.[23] The marginalia give no indication whether or not he thought the Spaniards' claim to the various lands they had discovered was legitimate, for instance. He was more interested in analysing how they made their claim.

While there is nothing overtly discussing a possible British empire or English exploration within the notes, the respect he paid to the manner, nature and success of the empires which Ramusio recorded fits in well with his role as a teacher to English explorers and as a propagandist for a British empire. There is virtually no mention of the British Isles in Dee's notes. This is not wholly astonishing since there is almost no report of British activity in Ramusio's text, but it is somewhat surprising that the only use he made of Ramusio's report of Sebastian Cabot's claim to have sailed more than 60 degrees north in search of a northwest passage was to cross out 55 degrees in the title of the excerpt and replace it with 65 degrees. There is no earlier report of this event so it might be thought that Dee would have put more emphasis on it, particularly as he was known to be interested in the possibilities of a northwest passage, but his textual amendment might indicate that he had heard the story aurally elsewhere. He did not definitely disbelieve it, but instead his commentary was once more on possession-taking. At the foot of the page, he wrote 'Sebastian Gabotto gave name to the land of Baccalaos' (DD. dd. 41, III (1565), 36r). It was more important that Cabot named and claimed territory than that he explored the sea-routes.

Dee also read a temporal importance into the geography which is not there in the original. Ramusio's geography is static, constructed without any sense of history. Classical, medieval and early modern texts all sit next to one another. Ramusio discussed what is correct and what is incorrect in the texts, but he did not give any sense of change over time. For Dee, however, history was an important dimension to his geography. His marginalia are peppered with dates.

[21] See for instance his marginalia on DD.dd. 41, III (1565), 2r, where he specifically talks about possession-taking but also about the places being uninhabited and in DD.dd. 41, III (1565), 169v, 170r. He is working out his ideas about the legality of empire which he then works out in his own treatises (see MacMillan 2001).

[22] On gold, Dee makes 61 marginal notes in volume III alone. It is by far the single most noted matter. For the description of curing syphilis see DD.dd. 41, III (1565), 421r. Dee's marginalia are in Latin, English, or Italian according to his whim and occasionally in Greek. Sherman points out that gold was the 'indirect object' of all European exploration in the period so it is unsurprising that Dee had such a focus on it (2009, 123).

[23] E.g. DD.dd. 41, III (1565), 370r, where he states *'Error of a degree'*.

This is partly to calculate the travel times, but it also fits in with his idea of what is significant in claiming empire. In his manuscript on 'The Limits of the British Empire' (1577-1578), the claims which he made for British rights to territory are in part based upon priority of discovery and conquest.[24] It was therefore necessary for him to settle the order of discovery. Dee was trying to find a means of building a British empire, and Ramusio's publications enabled him to learn the kind of geographical and natural historical details that were important for empire building. When he was reading the texts, he was looking for eye-witness authoritative information and not for interpretation.

When he did finally set pen to paper to convert his readings into a geographical text, we can see to what a different purpose he put his reading. *Of Famous and Rich Discoveries* was written in 1577 at roughly the same time as Frobisher was conducting his second voyage to northern Canada with the goal of garnering support for the search for the northern passage to Cathay either westwards as Frobisher was attempting, or eastwards to the north of Europe and Asia. At the same time, Dee promoted the colonisation of northern Canada in this work. He was already known as the great geographical authority in England at the time although this expertise was beginning to be questioned as he had by then become too closely connected with the search for northern passages. *Of Famous and Rich Discoveries* was written with the express purpose of convincing the readers of the possibilities of northern navigation to Cathay. Like Ramusio, Dee wanted a trail of authority for his geography, and he too used the format of weaving collected texts together with his own interpolations in a sort of geography of compilation to form a thesis, but whereas Ramusio's work was composed of complete narratives ordered spatially, Dee's was organised 'more like a scrapbook than a treatise' (Sherman 1995, 176). He even included information from Ramusio's *Discorsi* which he had largely ignored in his own marginalia. When writing his own geography, he was taking authority from all the most credible sources and wanted to put the emphasis onto the research. On page 125 he gives a long list of the 'principal authors' used, many of whose names, such as Marco Polo, Plano Carpini and Nicolo di Conti, can be found in Ramusio. As Sherman has pointed out, Dee's use of Marco Polo is of particular importance in the treatise, and he manifestly relied on Ramusio's version. He did not accept it blindly, however, but compared it with the Latin, using some of the same humanist skills that Ramusio had employed to develop his authoritative version (18). In one marginal note, for instance, Dee writes of the 'great imperfection' of the copy of M. Polo which has 'come to our hands' (DD.dd. 40, I (1563), 171r). Like Ramusio he included long sections verbatim from classical and contemporary authorities but juxtaposed them with one another in an attempt to extract an accurate image and information about the world and, above all, about the northern routes to China, thereby demonstrating an entirely different purpose.[25] Where Ramusio was seeking to create a whole world geography which certainly showcased the importance of Venice, but where the core emphasis was geographical understanding, Dee, as the last chapter to his work makes particularly explicit, was creating a work of empire-building and above all promoting northern exploration.[26]

[24] Dee's manuscript, edited by Ken MacMillan and Jennifer Abeles, was offered for the first time into print in 2004.

[25] See for instance his discussion of Strabo, Abufelda Ismael, Guillaume Postel and Carpini in close succession (Dee 1577, Ms. C.VII, 75r-78v).

[26] Its title reads 'that all these Northern Iles and Septentrional Parts are lawfully appropriated to the Crown of this Brytish Impire: and the terrible adventure and great loss of the Brytish people and other of King Arthur his subjects perishing about the first discovery thereof. And the placing of Colonies in the same Iles and Regions by the same King Arthur. And an entire and general Description of all the part of the world within 12 degrees of the North Pole and somewhat more' (Dee 1577, Ms. C.VII, 264v). See Taylor and Mercator 1956.

Dee was only one of the many readers of the *Navigationi* who could be found all over Europe. He provides an excellent example of the influence of Ramusio, because one can see in his extant annotations and manuscript how he took notes on a whole world geography formed through compilation which he then recompiled to his own ends, creating a wholly different style of geography. We can then see how he affected those whom he taught in their understanding of geography so that the influence can be seen moving from compiler, to reader and educator, to explorer. Dee taught every English northern explorer in the last quarter of the sixteenth century and played a significant role in Humphrey Gilbert's colonising enterprise and its theoretical origins (Baldwin 2006; Probasco 2020, 24). In both his readings and writing his attention was drawn to different elements from those in which Ramusio demonstrated interest both in his own *Discorsi* and in his arrangement of texts. When read in the context of his other works, they are exactly the sort of matters one would expect him to look for, and exemplify the kind of geography one would expect him to construct to support his goals of British empire-building. Similarly, his interest in the mathematical geography contained within the narratives was directed towards mapping, exploring and recreating routes to empire and oversees trade.

Others throughout Europe likewise used the *Navigationi* to their own ends. I know of no other example where the influence can be seen in both the reader and the author, but Ramusio's legacy can easily be detected in the European geographical record. His ability to obtain and publish obscure and unknown material makes it relatively straightforward to trace that influence even when readers tried to conceal it. The French cosmographer royal, André Thevet, claimed that the majority of his knowledge came from eye-witness information but in order to bolster his work against the charge of lack of scholarly knowledge, he sought assistance to augment his work with classical allusions.[27] In his *Cosmographie universelle* (1575), Thevet used Ramusio's classical texts as starting points for such authority. In the dedicatory epistle to the 'Treschretien Roi de France et Polonie' of his *Cosmographie* for instance, he referred to Hanno, Nearchus and Onesicritus among the sources on the Middle East whom Ramusio had brought into widespread circulation (1575, vol. I, āijr). Not much further into the work he took on Ramusio's discussion of the fertility of the Nile (32r-v). In neither case did he cite Ramusio as his source, preferring to give the impression of creating his own theories about the Nile, and of direct familiarity with Hanno and the other ancient explorers. These are small borrowings, but the indebtedness to Ramusio is evident throughout his work and for every region. As P.E. Hair and Frank Lestringant have pointed out, Thevet relied heavily (though not exclusively) on published sources for his descriptions of Guinea; many of these were to be found in the *Navigationi*.[28] Most apparent was his borrowing from texts in the *Navigationi* in his discussions of the Americas.

Ramusio's versions of Jacques Cartier's first two voyages to the New World, for instance, were the only ones known or published for centuries. While Thevet claimed to have talked at length with Cartier, his discussion of Canada was, in fact, dependent on Ramusio. Thevet, as his principal biographer, Lestringant, and others have shown, was hugely self-aggrandising (Lestringant 1991, *passim*). Like Ramusio and Dee, he was struggling with how to present the

[27] For his *Singularitez de la France antarctique* (1557), Thevet hired Mathurin Héret to provide such references (see Lestringant 1994, 66-67).

[28] Hair gives all the passages in which Thevet wrote about Africa. Many of these show clear debts to works made most widely available by Ramusio, such as the voyages of Cadamosto. See Hair 1994, 98, 102, 122 and 124. See also Lestringant who talks about Thevet pilfering the contents of Cadamosto for his *Singularitez de la France antarctique* (2003, 160).

cosmography of a constantly changing world. He began with regional geographies of the Levant and the Americas but moved towards a whole-world geographical synthesis, more in keeping with the cosmography of Sebastian Münster than with that of Ramusio or Dee, and yet the foundation of his authority was based on his claims of observation (14-15). As he began to write about regions which he had never visited, he appropriated the eye-witness authority of others, and Ramusio was an excellent source for this (181-184). Because Ramusio presented first-hand narratives, Thevet could use them in such a way as to claim to have seen regions which he had never known. Schlesinger has demonstrated in detail how large sections of Thevet's *Singularitez de la France Antartique* and his *Cosmographie* and even his vast unpublished *Grand Insulaire* were derived directly from Cartier's and other's narratives as published by Ramusio (Schlesinger 1985; Schlesinger and Stabler 1986, xvi-xviii). But Thevet endeavoured to hide his use of Ramusio from his readers, pretending to have seen the things himself. For instance, in the *Cosmographie universelle*, he used indigenous Canadian words recorded in Ramusio to create an impression of conversation between himself and King Peramich the leader of one of the peoples of Norumbega (1575, vol. II, 1009r).[29] Where he could not stretch to asserting his own eye-witness authority, he purported to have gained it directly from Cartier rather than from Ramusio's narratives, even claiming to have stayed for five months in the house of Cartier at St Malo (1575, vol. II, 1014v). Yet the information which he gave uses Ramusio's Italianate spellings and there is no evidence at all that Thevet was influenced by the French manuscripts of any of the material published by Ramusio (Schlesinger 1985, 4-5).[30] He diminished or denied outright wherever possible any reliance on the written word, and as Lestringant says, his work is 'filled with "negative authorities" used to the precise extent that they are rejected and ridiculed' (Lestringant 1994, 128). Rather than using Ramusio to authenticate his own authority as Dee had done by emphasising how his geographical knowledge was informed by the empirical, autoptic information of other travellers, Thevet wished to give the impression that his authority derived from his own claims to be that traveller. He had certainly travelled more widely than the majority of Europeans of that era, but not even he had the ability or opportunity to see the whole world. Ramusio's compilation, however, enabled him to pretend to such knowledge.

The cases of Dee and Thevet demonstrate how Ramusio's readers could use the *Navigationi* in very different ways, relying on his textual renditions (though in Dee's case also using his own humanist skills to question them), and using them to produce their own cosmographies. His compilation of travel narratives brought a world to the reader's eyes so that a Thevet could purport to have gained eye-witness ethnographical knowledge and human geographical understanding when in fact he was relying on these reports, while a Dee employed them to construct a more mathematical and imperial geography, charting routes, but also asserting legal claims through them. More famously, other readers such as Giacomo Gastaldi and Abraham Ortelius used the narratives as the core sources of knowledge for some of their cartographical depictions.

Although Ramusio's influence can be traced throughout Western Europe (outside of Iberia), no subsequent writer adopted his form of whole-world geography. Even though Dee used some of the same humanist editorial practices as Ramusio had in his *Navigationi*, he never attempted

[29] See Schlesinger and Stabler (1986, 29) and Hoffman (1961, 178-179) who discuss how the words and names in this section are clearly derived from the Ramusio version. The name of the Kinglet Peramich is dropped from Thevet's *Grand Insulaire*, but in the *Cosmographie*, Thevet discusses entering his house and seeing the carcasses of wild beasts hanging there which were being prepared as a gift for the French.

[30] Thevet almost certainly had access to the French manuscript of Cartier's third voyage which Ramusio did not publish (see Schlesinger 1985, 6).

the wholesale rendition of carefully edited texts, and as the absence of his annotations in the *Navigationi* on Leo Africanus' travels indicate, there were regions of the world in which he was uninterested. The two other great geographical compilers of the sixteenth and early seventeenth centuries, Richard Hakluyt in England and Theodore de Bry in the Low Countries, were directly indebted to Ramusio both for the idea of geography through compilation and for narratives, but neither of them placed the same emphasis on tracking down multiple versions of their narrative to create the authoritative edition, and neither had the same focus on covering the whole unknown world (Sacks 2006; van Groesen 2008; Rubiés 2012). Hakluyt has even been called Ramusio's ' "English disciple" ', but neither the organisation nor the content allowed him to construct the verbal mapping of world in the way which Ramusio's collection did (Sacks 2006, 32). Hakluyt's purpose, as is well-known, was overtly nationalistic, promoting English trade and empire-building to the extent that in his first geographical compilations he included only English material. While he reframed the second edition of *Principal Navigations* to include non-English travel narratives in a way in which he had not done for the earlier edition, it still had a very English focus (as is indicated by the words in the title 'of the English Nation'). This meant that when a region lay outside English territorial claim, knowledge or interest, he did not make much attempt to go for the most complete picture. We have already seen how he overlooked key authorities on the Caspian Sea, but the case is even more evident when one looks at his provision on South America. Although he included excerpts from Jose de Acosta on El Dorado and Guiana, the region which Raleigh wished to explore for the English, he gave none of his description of Peru. Indeed, there is virtually nothing on that region, an area so firmly under Spanish control that it had little to offer the English, and what there is certainly gives no sense of the internal geography of the territory (Hakluyt 1905, 16-18).[31] Where Ramusio sought to inform readers and non-travellers about the geography of a world which they would not see, Hakluyt deliberately tried to emphasise the parts of the world which English explorers, merchants and colonists could see and know. To do so he went far beyond the travel narratives that formed the basis of Ramusio's compilation, and included proclamations, ordinances, and other non-narrative documents. This meant that while what it contained was vast and wide ranging, it still did not fully emulate Ramusio's *Navigationi* in terms of world geography. It is fair to say that no compilation other than Ramusio's sought to demonstrate so clearly that the whole world lay within the realms of the *oikoumene* as a knowable, inhabitable, connected space.

5. *Conclusion*

Ramusio developed an alternative form of world geography which, unlike the best-sellers of his era, was ideally suited to an age of expansion in which the world was constantly changing. With each new voyage of encounter, eye-witness knowledge was prized, and a reading public was on the rise. As new places were encountered, new material could be added to further editions without necessitating the change or removal of previous material and interpretations. The demands on the editor were enormous, however. They required a network of contacts reaching across every region involved in exploration, and remarkable linguistic and editorial skills. Compilations of travel narratives became common, but

[31] Moreover, Hakluyt's interest in English trade and colonisation led him to include a much wider variety of documents from proclamations and orders to lists of traded goods and commodities. While useful for some readers in providing information on potential markets they break up the flow, leading the reader naturally to read selections and breaking up the overall geography.

not even Hakluyt, his closest heir, fully adopted his approach to whole-world geography presented through the words of travellers. Ramusio compellingly showed that the inhabitable lands extended across the whole globe to a European public who had never contemplated such an idea. Yet although it was still being consulted centuries later, no-one ever truly emulated or even translated the *Navigationi*. For a European age of exploration, it proved an excellent but inimitable form of geography.

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'to finde out the pathe' Mapping the Universal Machine in William Cuningham's *Cosmographical Glasse* (1559)

Isabelle Fernandes
Université Clermont Auvergne (<isabelle.fernandes@uca.fr>)

Abstract

The article places *The Cosmographical Glasse* (1559), William Cuningham's *magnum opus*, in its English and European context. *The Cosmographical Glasse* appeared during the early modern revolution in mathematics that turned mathematics to practical use by applying it to geography for a better conceptualisation of the globe and universe. Despite the work's encyclopaedic scope and its author's pioneering attempt to help readers retrieve the growing body of data that was being amassed by scholars and explorers, the article argues that this first book in English to deal with navigation in relation to astronomy and cosmography stood at a crossroads between the old and new epistemologies as geography both resorted to and confirmed traditional sources of knowledge while challenging them. Limited and flawed as it may be, *The Cosmographical Glasse* nevertheless added another building block in the construction of a modern sense of cosmography.

Keywords: *Franciscus Maurolico, John Daye, Robert Dudley, Robert Recorde*

1. *Introduction*

William Cuningham (sometimes spelt Kennyngham or Kenningham) has been identified as the sitter for a set of three identical woodcut portraits in the National Portrait Gallery (NPG).[1] The original design comes from the opening pages of *The Cosmographical Glasse* (Aiiiv), though an earlier less refined woodcut is to be found in the 1558 edition of Cuningham's *Nevve almanacke and prognostication* (Aiir). Just as the portraits mirror each other, the identity of William Cuningham (1531-c. 1586) somewhat eludes grasp since there is little information

[1] NPG D25463, NPG D25464, and NPG D25465.

about his life and career. His magnum opus, *The Cosmographical Glasse conteinyng the pleasant Principles of Cosmographie, Geographie, Hydrographie, or Nauigation* (hereafter *CG*), was entered by its publisher John Daye in the Registers Office on 6 November 1559, a week after receiving the first-known Elizabethan patent (*CG*, 209; Arber 1875, 47; Evenden 2016, 60). For different reasons this work was a milestone: it marked the first appearance in England of the apostrophe and of the double-pica italic type developed by the typographer François Guyot; it contained the earliest surviving complete printed map of an English provincial town (Norwich), and finally, it was the first book published in English to deal with navigation in relation to astronomy and cosmography (Buisseret 1992, 52; Pignot and Piton 2009, 4; Evenden 2016, 59). Despite its appealing novelty and lavish presentation, Cuningham's work did not go through a second edition. John Parker believes this lack of success originated in the book being a disappointment, 'demonstrat[ing] no great erudition on the part of its author' (1960, 49). Mary C. Fuller concurred, arguing that Cuningham did not seem to have been well acquainted with 'the formal or informal knowledge returned to Europe by sixteenth-century mariners'; furthermore, there was no mention of the Copernican theory of the cosmos (2013, 22). David W. Waters argued, however, that *The Cosmographical Glasse* could not be accused of not being up to date simply because it did not contain any reference to Copernicus since this charge could equally be applied 'to standard books on the subject written a century later' (1958, 98). An undeniable proof that the work had nevertheless something to offer English navigators was that together with Robert Recorde's *The Castle of Knowledge* (1556) it was one of the few books forming Martin Frobisher's library when he set out to find a North-West passage to Cathay in 1576. One of Gabriel Harvey's books contains marginal annotations, some of which refer to *The Cosmographical Glasse* (Collinson 1867, x; Johnson 1937, 192). If *The Cosmographical Glasse* did have faults and limitations, William Cuningham was nevertheless a pioneer whose purpose was to bring some of the latest European discoveries to his readers even if there were epistemological boundaries he was not willing to cross.

It is relevant to start with the English and European intellectual circles Protestant, Norfolk-born and Cantabrigian Cuningham was part of or acquainted with in order to discover how he obtained information on the New World, with the exchange of ideas, references and manuscripts thanks to his belonging to the Dudley intellectual circle. The second aspect that needs to be addressed is his design, that is how he chose, organised and developed the data taken from previous or contemporary sources. Finally, we will discuss Cuningham's representation and narrative of the New World to highlight that approximate though it might be, *The Cosmographical Glasse* established temporary bounds within a field of constantly evolving knowledge.

2. *Cuningham and Europe's Intellectual Circles*

Cuningham was a member of intellectual circles in England both in Cambridge and London. His early years in Norwich ended when he settled in Cambridge to read the arts. He was admitted as a pensioner at Corpus Christi in 1548, matriculated in Easter 1551 to finally graduate BM in 1557. *The Cosmographical Glasse* provides a glimpse of his whereabouts at the time, testifying he had returned to Norwich in November 1556 to make astronomical calculations that were renewed there in March 1557, November 1558 and July 1559 (47, 92 and Aviv). The cosmographer spent much of Mary I's reign abroad, journeying to some of the Protestant-friendly cities of the continent, travelling in 1558 to Heidelberg where he acquired his doctorate and probably to Strasbourg, Antwerp and Cologne, cities he was familiar with (180-181 and 19). He returned to England and put the finishing touches to *The Cosmographical Glasse* which he completed 'at

Norwich, the xviij. of Iuly 1559' (Aviv). In 1563 he was appointed public lecturer at the London Barber-Surgeons' Company, during which time he lived in Coleman Street close to Aldersgate where John Daye's printing house was situated. Cuningham's credentials as a physician were so impeccable that he collaborated with the eminent royal naval surgeons Thomas Gale and John Halle while finishing two works, 'one of Phisique, an other of chirurgie, which you shal presently enioi' (1566, Ciiv; Fay 2015, 62). His life-long interest in astrology attracted attention but also criticism from 'some yet ignorant' who mistook 'this noble sciẽce' for 'execrable, and dãnable practice of Necromancie, Sorcerie, & witchcraft' (1558, Aiiv): in 1560 the Puritan William Fulke led a sustained attack against 'Master Cunyngham' the prognosticator, though 'a man otherwise bothe lerned and honest' (1560, Cviiir, Br). This printed censure may explain why John Daye at that point ceased collaborating with Cuningham even though there remained a lively public interest in prognostications. Cuningham's later works were published by other London printers. He did not, however, stop writing on astrology, putting to print a (now lost) Latin work on the methods of prognostication (1566, Ciir). Astrology was not his only pursuit and his intellectual range is indicated by the list of works announced in *The Cosmographical Glasse* as his intention was to present his patron with his 'laboures', whose titles where, among others, *Organographia*, *Chronographia*, 'VVith diuers others, whose names I omit for sondry causes' (Aiiv). Some were lost, some only circulated in manuscripts while others were certainly never written, Cuningham blaming his 'weake body, and croked fortune' for his failure (1566, Ciiv).

Cuningham was also a member of continental academic circles. He records his visit in 1558 to the university of Heidelberg, his impression of the university and the scholars he met there:

> à florishing Uniuersitie, mainteined by the Palsgraue, … [that] florished 1559 [sic] in Phisicke, D. John Langius, the Princes Phisician, Iacob Curio, Thomas Erastus, Petrus Lotichius Secundus, all Doctors in Phisick: And D. Balduinus the Reader of the Ciuill Lector, with diuers others, of whom I was very gently interteined at the time of my Commensment. (*CG*, 181)

The university was supported by the Elector Palatine Otto Henry who had instituted a wide-ranging overhaul of the university's programmes as well as the recruitment of reputed scholars. John Langius was physician to four successive Electors palatine; Peter Lotz was a Professor of botany and medicine, Thomas Erastus was Professor of medicine while Jacob Curio, a mathematics and medical Professor, had been appointed the university's first chair of mathematics. These influential, well-travelled and widely learned scholars specialised in mathematics, botany and medicine, the latter Cuningham's future occupation. The region of the Rhine – and particularly Basle, Strasbourg and Saint-Dié – that Cuningham visited had close ties with humanist learning and the book trade (Bierma, *et al.* 2005, 1528; Davis 2011, 533-534). *The Cosmographical Glasse* is indebted to the influence of this continental network for its presentation of the triangulation method – a modern technique used to fix the location of other sites within a triangle and determine the latitude and longitude of places – originally used by the Flemish cartographer and at one-time cosmographer to Charles V Gemma Frisius in his *Principles of Astronomy and Cosmography: with Uses of the Globe*, first published in Latin in 1530. Cuningham, the first author to present the method in England, simply adapted it with the Norfolk cities Norwich, Wymondham and Swardeston as landmarks (*CG*, 139-140; Heninger 1969, 123; Dekker 2002, 38). While on the continent he became acquainted with Thomas Langley and Gilbert Berkeley, both Marian exiles, who praised *The Cosmographical Glasse* in the Latin address adjoined to the work (Aiiir). Cuningham's own religious convictions are not too overtly expressed in *The Cosmographical Glasse* since it was written during the Marian years. In the bird's-eye view map of Norwich for instance he briefly referred to 'the place where men are customablie burnt' (n.p.). Between 1557

and 1558, about ten people died at the stake, Protestant martyrs whose death he might have witnessed. If he had in any way attended Reginald Pole's visitation of Cambridge in January 1557 or the posthumous burning of Paul Phagius and Martin Bucer the following month, he remained silent about it, which might mean he was already away.[2]

In England, the circle of intellectuals and academics with an interest in astrology, mathematics and map-making evolved, among others, around Robert Dudley who was not yet elevated to Earl of Leicester in 1559. Authors who wanted their works published, Stephen Pumfrey stresses, first had to negotiate with the secretaries of influential men, such as Dudley, Raleigh or Northumberland, so as to know whether the patron wanted the work published and his name associated with it. If he did, he then would normally become the dedicatee. The author would have had a scribe to prepare a fair manuscript copy, presented as a gift to the dedicatee, for the patron and his circle to assess the value of the work. If the patron accepted, he would carry the expense of the printed edition and the work would be sent to a press (2012, 144). Cuningham for instance presented *The Astronomicall Ring* to the 'late [2nd] Earle, Henrye Sussex' Henry Radcliffe, who had died early in 1557, but this work is no longer extant, perhaps because Radcliffe refused to have his name associated with it (1558, Aiiv-Aiiir; *CG*, Aiiv). Or was it Radcliffe's untimely death that put an abrupt end to the process? *The Cosmographical Glasse* is dedicated to Dudley and Cuningham's praise of his 'incoragement of me to knowledge, bothe in wordes and moost liberall rewardes' (*CG*, Aiiv) yielded hopeful results as the author obtained the patronage of Elizabeth's favourite and a £6 13s. 4d. allowance in 1558 'at his [Cuningham's] going into Flanders' (Dudley 1995, 66). The connections between the members of the Dudley circle proved useful for physicians too: the royal naval surgeon Thomas Gale, whom Cuningham collaborated with, was one of Dudley's earliest protégés. Cuningham had had different occasions to come into contact with John Dudley, Robert's father: Edward VI's Lord president who had been Lord Admiral since 1543 was the chancellor of the University of Cambridge between 1552 and 1553; the Dudley family had connections with Norfolk as they had purchased extensive estates there in 1553. The tight-knit intellectual community brought various scholars together when John Dudley, who was particularly interested in navigation, wanted his children to have the best scientific education available. John Cheke and William Cecil, with whom Dudley was acquainted, introduced the Lord Admiral to a possible teacher who had returned from Louvain: John Dee eventually got the position of tutor to the Dudley children. Dee's lessons must have encouraged Robert Dudley's keen interest in mathematics and geometry. It was Dee who recommended Cuningham's book to Frobisher (French 1972, 32; Baldwin 2006, 99; Loades 2006, 226 and 246). Dee's influence is noticeable in Cuningham's description of Muscovy and narration of the 1553 expedition in search of the Northeast Passage that was led by Hugh Willoughby and Richard Chancellor.

> Moscouia is à longe & ample Regiō, the people miserable, suspicious, & craftie, the chief citie of ther Empirour is also called Moskaua. Thither sailed out of England. 1553 Chancelour, & diuers other. The nature of th'inhabitantes, cōmodities of the coūtry, & à perfite description of all the parts of the same you shal se at large set oute by Sigismunde Liber baron &c. (*CG*, 182)

The Imperial diplomat Sigismund von Herberstein's treaty *Rerum Moscoviticarum Commentarii* published in Vienna in 1549 evoked the existence of a Northeast Passage to China via the Arctic

[2] In 1557 Simon Miller and Elizabeth Cooper were burnt in July, Richard Crashfield in August, and Cicely Ormes in September, William Symon, Thomas Hudson and Thomas Carman in May 1558, and Richard yeoman the following month, but Cuningham was then on the continent. See Foxe 1570, 2142-2154, 2197, 2219, 2244 and 2272, available from: <http//www.dhi.ac.uk/foxe>, accessed 1 February 2023.

Ocean. As Samuel H. Baron demonstrated, the treaty was known in some English circles and was probably used by Sebastian Cabot, John Dee and Richard Eden in order to prepare the 1553 expedition (1985).

Even before his meeting with Dudley, Cuningham might have seen John Dee when he was at Cambridge between 1551 and 1557: returning from Louvain in 1551, Dee went back to Cambridge to offer to Trinity College and St John's College a variation compass, a clock by Dibbley, two Mercator globes, a magnet stone (lodestone), and a large astronomical quadrant brought from Gemma Frisius (Baldwin 2006, 97-98). Dee's plan to stimulate the study of cosmography came to a successful conclusion: with Cuningham's publication, the University of Cambridge produced its first original work on the subject. Mathematician, astrologer and map-maker, much-travelled and widely-known, Dee played a decisive role in the intellectual development of early modern England due to his belonging to a remarkable continental network of scholars involved in, among other areas, the cosmographical art. He attracted as students and friends men of stature like Gemma Frisius, who had been Dee's professor, Gerard Mercator, the great cosmographer, globe-maker and producer of navigational instruments who had also been Frisius' student, Oronce Fine, the Professor of Mathematics at the Collège de France and one of the most important contemporary French geographers; as well as Abraham Ortelius whom Dee met in Antwerp (Taylor 1968, 26; French 1972, 177; Delano-Smith and Kain 1999, 59; Baldwin 2006, 97-99). These authors and their works were to have a considerable influence on *The Cosmographical Glasse*. Apart from Dudley and Dee, the printer John Daye must have played a pivotal role in Cuningham's career as a cosmographer for in 1556 he published Leonard Digges' *Book named Tectonicon* that introduced measurement and instrumentation (Oastler 1975, 12). Finally, thanks to William Cecil's backing, *The Cosmographical Glasse* received its patent easily and quickly. As Hakluyt remembers in Cecil's chamber he had 'found lying open vpon his boord certeine bookes of Cosmographie, with an vniversall Mappe' (1589 *2). With Cuningham's cosmography as a forerunner, Cecil perhaps wished to test the market so as to see how popular works on navigation would be received under Elizabeth, or he was simply eager to further the field (Oastler 1975, 12; Evenden 2016, 60). That *The Cosmographical Glasse* only ran to one edition means that the public was small but not that they were uninterested. The impressive scale and high cost of *The Cosmographical Glasse* militated against it ever becoming a popular work and being reprinted. In the preface, Cuningham actually expressed his gratitude to Daye for the 'charges … [he] hath susteined, … that shalbe euident conferryng [comparing] his beautiful Pictures & letters, with suche workes, as herto hath bene published' (Aviv).

3. *Cuningham's Method*

David S. Berkowitz contended *The Cosmographical Glasse*, 'the first substantial English work on mathematical geography and astronomy … had a thorough academic character' (1965, 54) and yet, Cuningham vulgarized scientific knowledge for popular consumption, devising his work with the intention to set forth the rudiments of cosmographical knowledge in a concise and accessible form: 'that the praeceptes myghte seme the more facile & plaine, I haue reduced it into the forme of à Dialoge (sic)' (*CG*, Avi r-v). The folio is divided into five chapters and structured, the fifth chapter excepted, in the form of a didactic discussion between Philonicus, the teacher/author who offers precepts and answers to his pupil Spoudaeus' questions. Just as Plato's Socratic exchanges, this means of intellectual inquiry was supposed to gradually lead the pupil to the understanding of the truth. The disputation is also cast in theatrical terms as the interlocutors are 'in dede fained' (Aviv); the first two chapters open with a soliloquy on nature and the cosmos by

the pupil who, finally espying his master in the distance, walks towards him, telling the reader about the meeting. *The Cosmographical Glasse* is in a handsome italic, as Mark Bland stresses, the double-pica italic type being actually used to indicate 'a different voice in the text … often linked with humanist concerns [and] … intended as a direct representation of speech' (1998, 97-98). Cuningham chose English 'to serue the unlerned multitude' as well as to achieve clarity of thought and of expression in order to communicate old and new concepts (*A&P* 1566, Ciir). That he was 'writing to Englishe men' ensured his work would only have a local impact (*CG*, 57). Realising that cosmographies 'ether … obserue no order, or Methode in their teaching, ether that they digresse from that they take in hande (and fyll their volumes with other sciēces', Philonicus explains he will do his outmost 'to suplie that wante in that behalfe' (3-4). Finally, the work is geared towards the retention of information providing an extensive index 'for the spedier findynge of suche thinges, as you require' (n.p.), repeating the main points taught and learnt at the end of the chapters and making lavish use of engravings, tables, graphs and diagrams to illustrate, demonstrate, simplify and adorn.

The Cosmographical Glasse is addressed not only to those who 'are delighted in trauailing as well by land, as water', but also to fireside travellers up and down the realm who might enjoy exploring 'the hole face of all th'Earthe' without leaving the comfort of 'à plesaunte house, or warme study' (Avir). Cuningham pitted the hardships of traveling through the known world against comfortable and safe map-reading, fully exploiting the parallel with drama that made the invisible become visible, as well as the different meanings of *oikemene*, a word which combines the senses of world and house (Gillies 1994, 5). Each of the five books covers the different sciences of astronomy, geography, cartography, navigation, and chorography. Cosmography as it was understood in the sixteenth century included the division of the world into five circles – the meridian, the horizon, the polar circles, the colures, and the equator – as well as the conception of a relationship between the Earth and the heavens (*CG*, 7). Following the sixteenth-century hierarchy of representation – cosmography, geography, and chorography – initiated by the German Peter Apian in *Cosmographicus Liber*, first published in 1524 (Cosgrove 2007, 55), Cuningham distinguishes between cosmography which 'describeth the [vniversall] worlde, Geographie th'earth: in lyke sorte Corographie, sheweth the partes of th'earth, diuided in them selues' (6-7). In his Preface the author lists the manifold profits of this art that benefits the defence of the country, the study of divinity, medicine, poetry, trade and navigation. 'Cosmographie is not vnfrutfull. For she setteth out the natures of all people, the lawes and statutes by which they are governed, & the sequele of euery decre established … Cosmographies … [give] the names of Regions, Cities, Townes, waters, fluddes, mountaines, ceremonies, people and monsters' (Avr).

A survey of the sources used by Cuningham shows that his major authoritative influence was naturally Ptolemy (mentioned about twenty times), followed by Strabo (mentioned seven times), Aristotle and Proclus (five times), the contemporary Oronce Fine (four times), Polybius and Hipparchus (three times).[3] The work's frontispiece functions as a testimony (figure 1): above the central cartouche is a large terrestrial globe; on the left Ptolemy looks at the stars to which he points his right finger while his left hand rests on the meridian of the globe near the North Pole; below Aratus holding a dial and Hipparchus a quadrant. On the right, Marinus measures with callipers something on the globe; below Strabo draws a map of England and Polybius uses a cross-staff. The title page is thus divided with, on the left, astronomers scrutinising the stars and, on the right, geographers measuring the earth. Traditionally, the quadrivium of the

[3] These figures rely on my indexing as Cuningham's is quite extensive yet fragmentary.

seven liberal arts included geometry, astronomy, arithmetic, and music – as indicated in the lower part's representations of the muses with their proper symbols. Astronomy, geometry, arithmetic and music played a central role in cosmography whose purpose was to reveal the divine mysteries of harmony, symmetry and pattern.

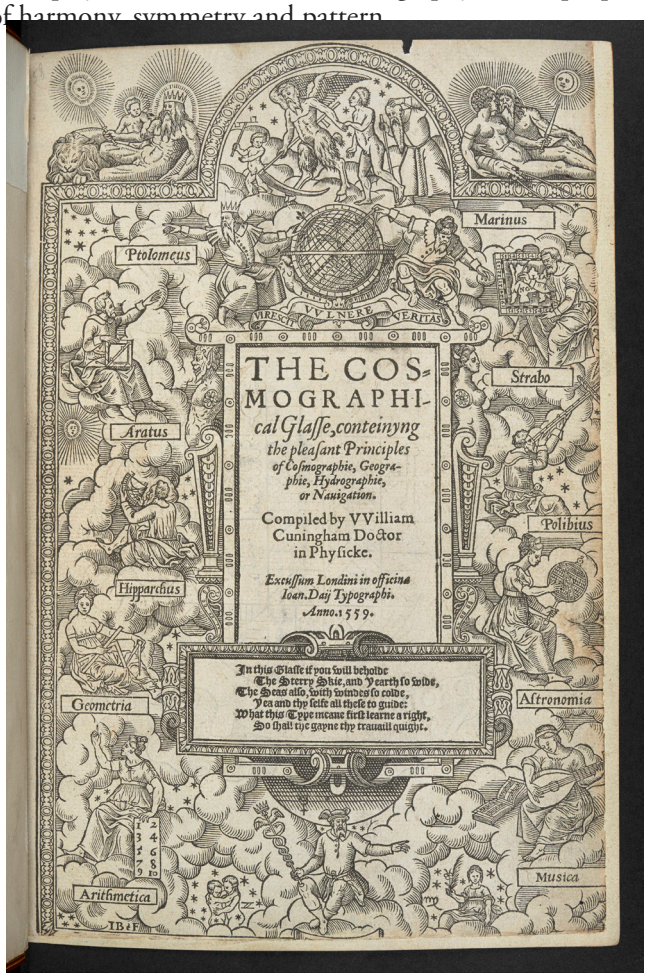


Figure 1 – Frontispiece. By permission of the British Library

Apart from these traditional authors, Philonicus advises Spoudaeus to read contemporary books on arithmetic and geometry such as 'our worthy countryman, (… John de Sacrobosco)', to which Spoudaeus replies he has read Robert Recorde's *Ground of Artes*, *Pathway to Knowledge* and *Whetstone of wytte*, to which can be added *The Castle of Knowledge*, published respectively in 1543, 1551, 1556 and 1557 (*CG*, 14, 4 and 51). Recorde (c. 1512-1558), a Welsh private mathematics tutor at Oxford and Cambridge, had prepared a series of mathematical textbooks to disseminate the new knowledge, choosing the format of the dialogic presentation with an effort to reproduce the speaking voice and a step-by-step explanation of every operation. Both Cuningham and Recorde made independent astronomical observations, drew on a wide range of sources from Antiquity to the early modern period, and offered instructions on how to make

instruments or produce a mathematically-oriented description of the earth.[4] *The Cosmographical Glasse* is often considered as the rival, copy or continuation of Recorde's *Castle of Knowledge*, where the author expressed his unfinished plan to write a cosmography (Heninger 1969, 124), but Cuningham in fact largely drew on *Cosmographia, in tres dialogos distincta*, published in 1540 by the Italian mathematician and astronomer Franciscus Maurolico (1494-1575): the typography is the same, the format is a dialogue between Nicomede and Antimache, while numerous pages in *The Cosmographical Glasse* are a simple copy of Maurolico's cosmography[5]. The most blatant example found in *The Cosmographical Glasse* is a translation of *Cosmographia*:

Parallelus oppositus ei, qui oer Canariá, it per Nili fontes, montémque Lunae.
Oppositus ei, qui per Syanen, it per insulas Médacascar, Peutam, Necurá, lauam maioré Candin, regnúmque Coilum.
Oppositus ei, qui per Damascum, it per Bonae speu promontorium.
Oppositus ei, qui per Rhodum, it per insulas Seilan & Angama. …
Italiae antipodes sunt, qui lauam minorem habitant.
Lusitanorum antipodes sunt insulae Seilam incolae. (Maurolico 1540, 101)

As the parallele (opposite vnto the North parallele, which goeth by the Canarian Ilands, is drawne by the Riuer Nilus, and Mons Lunae, the Mount of the Moone.
The parallele opposite to that which is drawne by Syëne, goeth by the Ilandes Mendacascar, Peuta, Necura, the greater Iaua, Candin, and the kingdome of Coilum.
The parallele opposite to that whiche is drawne by Damascus, goth by the promontory of good hope, called promontorium bonae Spej.
The opposite parallele, to that goeth ouer the Rhodes, is described by th'Ilands Seilan, & Augama. & they are antipodes vnto Italy, which dwell in Iaua the lesser. The antipodes to the Lucitanians, are those in the Isle of Seila. (*CG*, 80)

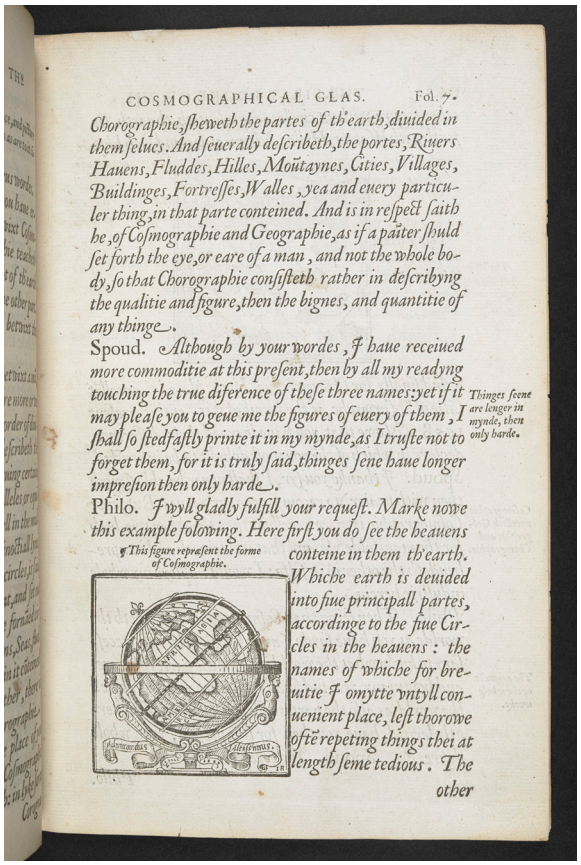
Cuningham may have come across Maurolico's work while studying medicine and mathematics on the continent. Though he mentions the Italian mathematician, astronomer, astrologer, and physician Campanus of Novara (c. 1220-1296), there is no mention of Maurolico. The recycling or copying of sources did not mean that Cuningham merely imitated: he included his own and others' observations to correct former authors' statements ('this waye also, is excellente to correcte the course of the Mone, and amend the tables, out of which hir mouinges are taken: if they do erre at any time') or to complete his fragmentary information ('therfore receiuinge … obseruations at other mens handes', *CG*, 108 and 118). Cuningham, like his contemporaries, 'did not just read texts to learn from them in a disinterested process of self-edification: he read them to use them' (Sherman 1995, 60). The end of this goal-oriented activity was either intellectual (to improve the transmission of inherited texts) or political (to apply their reading to the advancement of the commonwealth). 'One of the key strategies guiding scholarly [reading] practices during the sixteenth century was the collection of a thesaurus ("treasury" or "storehouse") of useful phrases, images, and ideas. Annotations entered directly in the margins of books were [also] a common and economical method' (*ibid.*). Mathematics had been closely associated with

[4] Cuningham reproduces passages, maps and tables from *The Castle of Knowledge* (*CG*, 13, 15, 26, 64, 30, 31 and 76; *The CK*, 9, 18, 28-29, 64, 166, 168 and 192). Due to the date of publication (1556), Protestant Recorde dedicated *The Castle* to Mary I, 'by the grace of God Queene of England, Spain, bothe Siciles, Fraunce, Jerusalem, and Irelande: Defendour of the faithe' and inserted a Latin address to Reginal Pole.

[5] Passages in Maurolico (11, 23, 37, 62, 66, 69, 70, 85 and 154) are echoed or copied in *CG* (35, 77, 42, 109, 53, 94, 32, 65 and 62).

astronomy since the Alexandrian astronomer and mathematician Claudius Ptolemy had given precise mathematical analyses of the celestial movements. The publication of the translation of Ptolemy's *Geography* into Latin in the 1470s and into Greek by Erasmus in 1533 inaugurated a mathematical revolution, as geometry could be applied to surfaces to find ways to represent space. The old cosmography based on biblical and classical comprehensions of the world was being superseded by mathematically precise geographical representations of the entire globe according to the 'logic of the grid' (Vogel 2006, 469; Jones 2019, 98). Cosmographers combined the theoretical and applied aspects of mathematics to rule the terrestrial world: the known world could be measured and mastered (figure 2). Cuningham argued that

> the whole face of th'Earth … [can be] drawne two sundry waies: either on à roūd plate forme, for which inuention the Globe moste aptlye serueth: or els on à plaine plat forme, as à Card in which we drawe th'vniuer sall Earth, or els but the half, or the one part: yea, & you please but one particuler Region: which is proper to Chorographie (as I said to you in the first booke [)]. … Th'inuention should seme much better to drawe th'Earth in à playne plate fourme, theron à Globe, for in it, we maye behoulde the whole face of th'Earthe … I wyll accōplish your desire, in describinge à perticuler Regiō, Countrey, or Prouince, Firste you shall drawe à right line in such length (in the middes of you parchement, or paper) as it will aptly receiue. This line shall represent the meridiā Line for the middes of that Regiō. Then diuide this line into so many equal portiōs, as the latitude of the regiō is: drawynge right Lines, or paralleles, in euery of the same diuisiōs, according to the capacitie of the plat forme of thy paper, or parchement. (*CG*, 114-115, 116)


COSMOGRAPHICAL GLAS. Fol. 7.

Chorographie, sheweth the partes of th'earth, diuided in themselues. And seuerally describeth, the portes, Riuers Hauens, Fluddes, Hilles, Moūtaynes, Cities, Villages, Buildinges, Fortresses, Walles, yea and euery particuler thing, in that parte conteined. And is in respect saith he, of Cosmographie and Geographie, as if a paiter should set forth the eye, or eare of a man, and not the whole body, so that Chorographie consisteth rather in describyng the qualitie and figure, then the bignes, and quantitie of any thinge.

Spoud. *Although by your wordes, I haue receiued more commoditie at this present, then by all my readyng touching the true diference of these three names: yet if it may please you to geue me the figures of euery of them, I shall so stedfastly printe it in my mynde, as I truste not to forget them, for it is truly said, thinges sene haue longer impresion then only harde.* Thinges seene are lenger in mynde, then only harde.

Philo. *I wyll gladly fulfill your requeste. Marke nowe this example folowing. Here firste you do see the heauens conteine in them th'earth. Whiche earth is deuided into fiue principall partes, accordinge to the fiue Circles in the heauens: the names of whiche for breuitie I omytte vntyll conuenient place, lest thorowe ofte repeting things thei at length seme tedious. The other*

¶ This figure representh the forme of Cosmographie.

Figure 2 – The Forme of Cosmographie, 7. By permission of the British Library

To draw the whole face of the world, Cuningham relied on grid delineators as the equinoctial line, the meridian, the tropic and polar circles, and the lines of longitude and latitude, providing tables and practical ways of finding out the meridian with an astrolabe, with a table of the sun's meridian or with the use of a cross-staff (*CG*, 137, 88 and 62). Within the visual space of the engraving, Spoudaeus and Philonicus can follow Ptolemy's method (figure 3). Because the sciences of mathematics, cosmography and astronomy bore directly on maritime navigation, his method could also be used by the navigators who could calculate

the latitude of the place by findinge the height of the Northe starre, which they call the lode starre, esteming à degre, or two, in obseruation as no error. But you shall worcke in thys maner: first find out any notable starre (that you knowe perfaitly) in the table of fixed starres, & with Ptolomaeus rule, or other instrumente, obserue his heighte in the meridian line: then in the table of declination, you shall find how much he declineth North or South, from th'equinoctiall, & obseruing th'order, as you do with the searching out of the Pole by the sonnes altitude Meridiane, and declination. (96)

Figure 3 – Untitled, 88. By permission of the British Library

As eclipses were a possible practical way of finding longitude, Cuningham inserted a table of eclipses which he had calculated for the fifty years following the publication of *The Cosmographical Glasse*, from March 1560 to September 1605. Also included were a table of the ebbs and flow 'in the Coastes of Englande, Scotlande, Irelande, Duchelande, and Fraunce', and the correction of Jofrancus Offusius' 'errors in the [merueilous] needle [that] turne[s] alwaye to the North pole' (98-102, 152 and 161). Cuningham provided some information too on clocks 'such as are brought from Flaūders, & we haue thē as excellently without Temple barre, made of our countrymen' (110).

Cuningham provided instructions on how to make a map of England by use of parallel intersection lines with a grid showing global coordinates. The scope could be widened to

> drawe à Carde for Spaine, Fraunce, Germany, Italye, Graece, or any perticuler regiō: yea, in à warme & pleasaunt house, without any perill of the raging Seas: danger of enemies: losse of time: spending of substaunce: werines of body, or anguishe of minde. Oh how precious â Iewell is this, it may rightly be called à Cosmographicall Glasse, in which we may beholde the diuersitie of countries: natures of people, & innumerable formes of Beastes, Foules, Fishes, Trees, Frutes, Stremes, & Meatalles. (120)

These practical methods not only conceptualized the Earth's surface and attempted to forecast the nature of the unknown, they connected the accidental world of the senses with the mathematical perception of the world (Livingstone 1990, 79). Mathematical cosmography provided a verbal, visual and scientific representation of chronologically and geographically remote spaces, places that could never be fully grasped by the naked eye alone. The visual dimension of knowledge was also transcribed with the glass metaphor that became a cosmographical commonplace as testified by the titles of works as William Caxton's *Myrrour: [and] dyscrypcyon of the worlde with many meruaylles* (1481), or by the device *Speculum cosmographiae* developed in *Cosmographicus Liber* by Peter Apian (Dekker 2002, 32). Unsurprisingly, Cuningham 'deuised this mirrour [in] which, mē may behold not one or two personages, but the heauens with her planets and starres, th'Earthe with her beautifull Regions, and the Seas with her merueilous increase' (*CG*, Aiiv). More than projecting the visual image of a multifaceted universe with the mirroring of earthly and astronomical knowledge, the glass metaphor turned out to be a pragmatic instrument of scientific inquiry that revealed things as they were (Grabes 1982, 4-39). John Gillies argued that Cuningham's glass was more than a simple mirror. It was in fact a 'curved mirror like a "Claude Glass" (the latter-seventeenth-century aid to landscape painting)' that was used 'to shrink that object, to reduce it to a manageable scale' (1994, 92). The glass thus relates to perspective, to the miniaturisation of the universe that could be better grasped and controlled by a hypothetical seeing for oneself or autopsy. Robert Recorde's *Pathway to Knowledge* gives us yet another interpretation. Recorde alludes to 'Fryer Bakon' who made a glass 'in whiche men myght see thynges that were doon in other places' (Preface, iijv). In his 1267 *Opus Majus* that was not printed until 1733, Roger Bacon indeed discussed glasses (lenses), claiming it was possible to shape 'transparent bodies and arrange them in such a way with respect to our sight and objects of vision' that 'from the incredible distance we might read the smallest letters and number the smallest particles of dust and sand' (Wilson 2020, 73). Glasses contracted, magnified and extended the range of vision beyond the normal and natural; they also corrected humans' defective sight. As Relihan contends though, the imperfect quality of mirrors in the early modern period simultaneously mingled the scientific experience of the universe with an inaccurate sensory perception (2004, 12-13).

4. *To Find Out the Path*

Cuningham insists the 'foule, & vglie beast Ignorance' (*CG*, 143) whose 'bondes, and chaynes' (2) could only be shaken off with 'all possible meanes, to imbrace Sciẽce & Cunning' (143). His purpose was to impart as much information as possible to his reader. In addition to geography and chorography, he also wished 'to make [his work] an Astronomical Glasse' to depict 'the Type of the world' (Aiir and 51). The full-page woodcut of 'Coelifer Atlas' that concludes Book I and that reveals his conception of the universe is an epitome of Aristotelian and Ptolemaic cosmology (figure 4): the sublunary sphere is composed of four elements whereas the heavens consist of concentric spheres including seven planetary spheres, the fixed stars, and the primum mobile whose motion revolves around the earth (50). Atlas, the bearer of the armillary sphere, has a hybrid character: he is dressed like an ancient character with his long skirts belted at the waist, and wears a crown (Cuningham wrongly believed that 'Ptolemaeus, Atlas and Alphonsus [were] kinges' 2), but he also was a Titan, Prometheus' son, who had been punished and condemned by Zeus to carry the world on his shoulders. Knowledge, imperfect as it might be, came at a price.

Figure 4 – Untitled, 50. By permission of the British Library

As Chen-Morris argued, the senses' inherent limitations were particularly perceptible in the study of heavenly phenomena as heavenly bodies were far too remote to supply a human observer with direct and reliable knowledge. The existence of 'an epistemological barrier that divides what is immediately given and can be fully known and what is distant and beyond human perception' entailed that any knowledge concerning the cosmos must be speculative (2016, 257-258). For Cuningham Icarus' fate symbolised the acute awareness of the limits of human knowledge: Daedalus' son paid the price for soaring into the stars and getting closer to God. *The Cosmographical Glasse* opens with the figure of Daedalus,

> that excellent Geometrician … [who] whan as with the eyes of knowledge, he did beholde that horrible Mõster Ignorãce … [devised] how to banish hir his praesence and companye: or els by what meanes to escape, oute of her lothsome Labyrinthe … he praepared winges (throughe Science aide) and so did flye oute of hir mooste filthy Prison. … *He made him winges wher with to flie: / Ascending to the Sterrye Skie*. (Aiir)

In his dedicatory epistle to Robert Dudley, Cuningham echoed Erasmus' introduction to the Greek edition of Ptolemy's *Geography* in which the humanist praised Ptolemy 'with whose guidance man can easily find his way out of this labyrinth' (quoted in Vogel 2006, 469). Cuningham promised to place his patron and readers above the mundane to enable them to better master obstacles and overcome ignorance, which was a manifestation of the 'Euclidean ecstasy' that infused early modern scientific culture from the sixteenth century onward (Cosgrove 1992). This elevated perspective, implying a god-like, impossibly high vantage point, is manifest in Cuningham's bird's-eye view map of Norwich in which two figures – probably Spoudaeus and Philonicus – stand upon a foregrounded hill and are engaged in viewing the details of the city (*CG*, n.p.). Philonicus, the teacher/author and Spoudaeus, the pupil/reader occupy more than once the pictorial space (1, 88 and 111) which both points at the constructed nature of the space they inhabit and their presence performing the reality of going out on the field to make observations and reckonings.

The geographer/cosmographer thus has 'to finde out the pathe … [where] to treade' (Aviv) between the old and new perceptions of the cosmos and to delineate the epistemological boundaries he was not willing to cross. Like many other early modern cosmographers Cuningham was typical in his reverence for authority. He did not look favourably upon new theories. Were not the ancients unquestionably superior to the contemporaries? 'how many sondry Artes, secrete Sciences, and wonderfull Ingens, throwgh well spending of tyme', he explains, 'did the auncient Philosophers in their dayes inuente?' (2). He was thus 'not worthy to kisse [Ptolemy's] fotesteppes, aswell for the majestie of his person, whan he lived, as also for his excellent Learning, Science, & diligence' (169r). Old geocentric theory of the universe held virtually undisputed sway over Renaissance England and Cuningham feared to tread in 'a field pre-empted by ancients' (Foster Jones 1982, 11). Rejecting the Copernican theories, he condemned 'those that will not haue [the Earth] to be the Center of the heauen. Those that suppose the Earth to moue' (*CG*, 44). As many other cosmographers he did not accept Copernicus' system but was not averse to using his observational data and calculations.[6] There were however 'matters of great difficultie', 'muche vntruthe' and 'repugnancie betwixt [some ancients'] authoritie, & dayly experience' (*CG*, 3 and 145). Sometimes putting 'reason, & experience' above tradition Cuningham corrected Polybius, amongst others, and the number

[6] 'I do not use the blind tables of Alfonce, … but Copernicus, and that famous Astrenomer Erasmus Reignholt, [who should be] reputed for yonge Ptolomaeus' (1558, Aiiv).

of zones as well as Ptolemy's calculation of latitude (159, 65 and 62), but offered at the same time excuses for their errors:

[Ptolemy] was not able being so mighty à Prince to trauell into those countris, that to à priuate person (for the greate distaunce à sunder) was impossible. And therfore receiuinge (as he confesseth) obseruations at other mens handes, dyd in many sundry places swarue from the trueth … And that was not to be imputed vnto Ptolomaeus as à crime, seyng the errour ensued by other mens obseruations. (118)

The biblical heritage was not challenged though (figure 5). Since cosmography 'confesse[d] th'omnipotency, and wonderous worke of God' (Aiiiv), it shed light on many passages of the Bible, such as the Biblical winds, the division of the Earth – Japhat, one of Noah's son, had settled in Cyprus – or the location of heaven and hell (198). Classically-trained Cuningham inferred that hell

must nedes be in the center of th' Earih … for that is of all other parts furdest from the heauen. Whych is the cause that not onlye we, but also the Poëts in their tragedies, introduce persons comming out from vnder th' earth & call that place Hell, amonge other, Senica introduceth … (82)

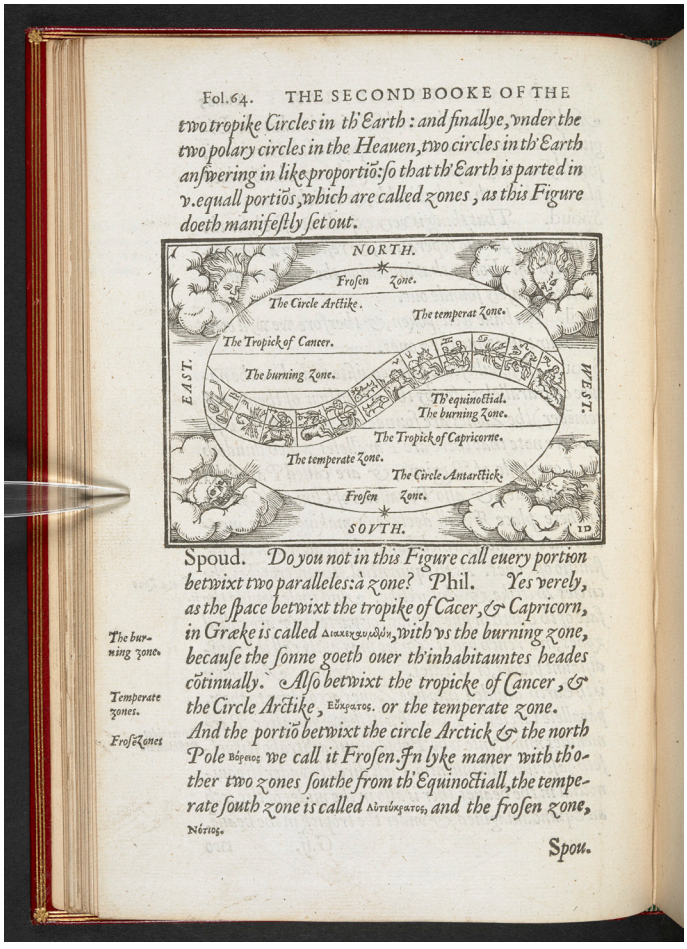


Figure 5 – Untitled, 64. By permission of the British Library

There was also no questioning of the belief that every region of the globe was governed by certain planets and 'signes' that determined the major influence to which the inhabitants were subjected (133-135). Livingstone underlines though that to speak of 'pre-modern' and 'modern' sources of knowledge does not make much sense: in the early modern period 'the notion of any conceptual bifurcation between the magical and the scientific was a distinction without a difference' (1990, 361-362).

There was one branch of knowledge that blatantly revealed the ancients' insufficiencies and modern superiority and it was geography. Early modern cosmographers were better informed than their predecessors owing to the development of printing. They also lived in an age of explorations that witnessed the expansion in geographical learning with the innumerable voyages and the accumulation of empirical data. The oceanic discoveries between Vasco da Gama's rounding the Cape of Good Hope and Ferdinand Magellan's circumnavigation had an impact on the conception of the globe, 'revealing a larger, more watery, and more geographically diverse globe than Aristotle had theorized or Ptolemy had described' (Cosgrove 2007, 59). By the 1530s, European scholars knew that oceans could be navigated and that all parts of the newly discovered lands were inhabitable. This gradual realization reinforced the need for a conceptual framework that would maintain the balance and symmetry of the Aristotelian elements, and make sense of recent geographical findings in relation to ancient authorities (Davis 2011, 531). The balance was difficult to maintain and sometimes it was necessary to differ from antiquity. A case in point is the old theory according to which the burned or torrid zone was uninhabitable. By the 1550s, English explorers had crossed the torrid zone, and seen for themselves that these regions beyond the *oikoumene* were both inhabitable and inhabited. Cunigham did not fail to record this new perception.

> Moreouer the Nauigatiō to Calicute, (of which voiage Vesputius, & Columbus were the first authors, & nowe more frequented of the spanierdes, then sayling into coūtreis nie adiacēt to vs) do witnes beare, that vnder this burning Zone there are inhabitaūtes … by these wordes it is manifest, that the burning Zone is not habitable onely, but also inhabited. (*CG*, 67)

European navigators had discovered Calicut in India or the Moluccas archipelago in Indonesian but as indicated in the above quotation, Cuningham was rather confused about the recent discoveries, attributing the navigation to Calicut to Vespucci and Columbus. Despite his apparently knowledgeable comment, Cuningham's information was quite sketchy: 'I may seme to vtter that all men know, in making rehersall of th' Indians, Calicute, Ginea, the. v. Ilandes Moluccae, also Porne, Sololi, & infinite other, which are the frutes of Cosmographie in this our age' (Avv). In the fifth and last book, the shortest portion of *The Cosmographical Glasse*, Cuningham engaged in a description of the location and description of particular regions, starting with Europe, to then focus on Africa, Asia and America,

> whiche is named the fourth parte, & was to Ptolomaeus, & th' Auncient Geographers vnknowē: as also at this praesent great part of it is not yet foūd out. It taketh the name of America, of Americus Uesputius, who by the cōmaundement of Ferdinando king of Castell, founde it out, in the yeare of Christ oure Sauiour. 1497. aboute th' ende of Iune, as doeth appeare by his owne testimonie. (200)

Cuningham devotes two and a half pages only to America, whose ontological status is unstable (in his mind, it was both a continent and an island), and comprising Peru and Hispaniola, with Brazil listed as one of a number of islands while Yucatan, Cuba and Jamaica become Asian islands associated with the Moluccas (113, 199 and 201). Though descriptions of Peru

had been circulating in Europe since the publication of Hernán Cortés' letters describing the conquest of Mexico printed in Nuremberg in 1524 and Cologne in 1532, some authors, Cunigham included, could not update their cosmography due to the paucity of the information they had (Davis 2011, 361). Cuningham could rely on his own observations or his friends' to describe England and Europe, but his approach to the geography of the New World was bookish (Fuller 2013, 23).

Separating geographical fiction from geographical fact was not as yet relevant though. From 1499, John Mandeville's *Travels* had been a chief source for the circulation of older information about the geographical and ethnographic marvels lying beyond the boundaries of Europe. Even geographers who were truly intent on representing the world as accurately as they could include persisting myths from the Middle Ages either in maps or narratives. Cuningham was not immune from this fascination with the strange and marvellous inherited from Pliny. His work includes nine historiated initials of the same size (63 mm). Given the correspondence in each case between the historiation and the subject of the chapter it introduces, they seem to have been nonce capitals (Edwards 2008; Blayney 2019). The historiated capital W opens the fifth book's section 'Of Asia the thirde Parte of th'Earth' that addresses Asia's inhabitants the 'Pygmeans' (*CG*, 190). The engraving is divided between a long-necked bird (top left corner) and diminutive human figures astride sheep directing their spears at the bird (bottom right corner). The battle between pygmies and cranes was taken from Pliny's *Natural History* (1969, VII, ii, 26).

Contemporary information on the New World was spread by Richard Eden's *A Treatise of the New India*, printed in 1553, and followed up in 1555 by his translation of Peter Martyr's *Decades of the New World*, a source of inspiration for Cuningham:

> And therefore suche as trauayle throughe the same, haue nede to take great hede … because there are heard voyces of deuyls, calling them that wander alone, by theyr proper names, conterfeyting the voyces of theyr companie that goeth beefore, by this meanes withdrawing them from the right waye, and bringinge them to destruccion. There is often tymes heard in the ayre, as it were a noyse of musicall instruments. (1885, 27)

> The spirites in this coūtrie, by many illusions seke to bringe trauailers into daungers, sumtime by calling them by theyr names, other times by musicall noise, as it were alluringe thē by the swetnes of the sounde, vntil they be brought into danger through wilde beastes. (*CG*, 190)

Eden's *Decades* printed accounts of the first two English voyages to sub-Saharan Africa and interpolated into them sections about uncanny creatures. As mistrustful as he may have been, Cuningham still presented a version of Africa which suggested that at the edge of the *oikemene* lurked monstrous creatures displaying morphological aberrations or indulging in horrific cultural practices:

> The people blacke, Sauage, Monstrous, & rude: yet in those countries, cities, & townes where the Spaniardes, Portugalles, Italians, & other do frequent, the people are sumwhat more ciuill, modest, & reasonable. Diuers also (yea right graue authors) make mētion of certaine deformed that dwell in Africk, as men with dogges heades, called Cynocephali, some with one eye & that in the forehead, named Monoculi, others without heades, & theyr face in the breast, with diuers such like which I suppose rather fables then any truth. (186)

> Th'inhabitauntes [Pygmies] are sundrye, & diuers: for some are Anthropophagi, which eate the flesh of men: & drinke their bloud. (190)

In the fifth book like a gazetteer of a sort, Cuningham lists topographical details of most of the then known countries of Europe and Asia, including Thibet and Cathay, and a few ethnographic and economic elements about the incredible wealth abounding in the newly-discovered spaces. These lands of plenty were found out 'to the great benefites of all Europe' (Avr-v). In *The Cosmographical Glasse*, Cuningham intended to profit '[him] selfe, & also [his] natiue country' (112). In his praise of the art of cosmography, he emphasised that with its knowledge, 'the famous marchaunts, haue by it not onlye inriched them selues, but also their country … [while] mariners & trauailers on the seas (without which no realme can long stand, or mans life be sustaind)' could take stock of the world as it was then perceived (Avr-v). But Cuningham had not yet fathomed how the discoveries could serve the grandeur and economy of the fledgling Elizabethan regime and of early modern England.

Cuningham's purpose was to bring some of the latest European discoveries to his readers outside intellectual and university circles. In his attempt to instruct but also to maintain dreams of unity and harmony, he had amassed volumes of data and synthesized them (Cosgrove 2007, 98). *The Cosmographical Glasse* perfectly illustrates the tensions between traditional sources and recent discoveries, received anecdotes and observation-based geography in its attempt to marry mathematics and marvels. New continents being empty spaces open to imagination, in his depiction of areas of enormous magnitude, Cunigham adopted a synoptic god-like perspective, which positions the reader/viewer out of and above space, a perspective that implied a kind of possession and the imagined conquest of space (Gillies 1994, 92; Chen-Morris 2016, 258). 'Paper theatres of the world', maps mastered, reified and colonized space, but they also spatialised knowledge, marking the operations from which they resulted. They were perfect embodiments of the tensions inhering in early modern cosmography in their juxtaposing of heterogeneous data furnished by tradition and those coming from navigators, forming 'the tableau of a "state" of geographical knowledge … a place in which to exhibit the products of knowledge from tables of legible results' (De Certeau 2011, 119-121). If *The Cosmographical Glasse* does not meet our modern scientific requirements, it surely had some scientific merit for Cuningham's contemporaries. William Bullein's 1562 'A little Dialogue, betwene twoo men' praised 'worthie persones, and cunning men, profitable to our common wealthe' who were in the vanguard of advancing knowledge. To this category belonged Andrew Borde, Robert Recorde, William Turner and 'Doctor William Kunyngham' who contributed much to the dissemination of knowledge, having 'well trauailed, like a good soldiour, against the ignoraunt enemie: setting forthe the commendaciõ praise, and profite of Astronomie, Cosmographie, and Geographe' (Aaiiii).

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Assembling a Cosmography
The *Divers Voyages* of Richard Hakluyt

Anthony Payne
University of East Anglia (<payne.anthony@btinternet.com>)

Abstract

The article explores the sources from which Richard Hakluyt assembled his *Divers Voyages* (1582) and the circumstances of the book's publication. It then places Hakluyt's work in the context of his religious cosmography and his belief that histories of the discovery of the world should be those of eyewitnesses and unmediated, contrary to the practice of certain other cosmographers.

Keywords: *Book History, Cosmography, Geography, Hakluyt, Religion*

1. *Introduction: The Contents and Sources of* Divers Voyages

Richard Hakluyt's first printed work, *Divers Voyages touching the Discoverie of America, and the Ilands Adiacent unto the Same, Made First of All by Our Englishmen, and Afterward by the Frenchmen and Britons: And Certaine Notes of Advertisements for Observations, Necessarie for Such as Shall Heereafter Make the Like Attempt, with Two Mappes Annexed Heereunto for the Plainer Understanding of the Whole Matter* (1582), is a collection of material concerning North America, assembled and edited by Hakluyt from various manuscript, printed and personal sources.[1] At the time of compiling and publishing *Divers Voyages*, Hakluyt was a senior member of Christ Church, Oxford, and a priest in the Church

[1] The book has no page or folio numerals, and references are, therefore, by signature. A quarto of sixty leaves, it collates π^2, ¶^{4}, A-D^4, ^{2}A-G^4, H^2, I-K^4 (¶4 is signed ❧4; ^{2}B3 is mis-signed B5; G4 is blank), with two maps on separate sheets inserted. For bibliographical accounts, see Quinn 1967; Payne 2019, vol. I, 37-114. For Hakluyt (1552-1616) and his works generally, see Taylor 1935; Parks 1961; Quinn 1974b; Mancall 2007; Payne 2008. For critiques of Mancall, see Payne 2009; Sacks 2009. The usage of u/v has been modernised and contractions silently expanded when quoting in this article from early printed material.

of England (Quinn 1974b, vol. I, 267-274).[2] He had already, in 1580, been instrumental in the publication of John Florio's translation of *A Shorte and Briefe Narration of the Two Navigations and Discoveries to the Northweast Partes Called Newe Fraunce* of Jacques Cartier.[3]

Hakluyt's authorship is not given on the book's title-page, but his initials 'R.H.' appear at the end of the dedication to Philip Sidney (¶4r). Immediately after the title-page are printed chronological lists 'of certaine late writers of Geographie, with the yeere wherein they wrote' (π1v),[4] and 'of certaine late travaylers, both by sea and by lande, which also for the most part have written of their owne travayles and voyages' (π2r).[5] These indicate the authors whose works Hakluyt knew of and considered significant, although it seems likely that he derived much from the inclusion of many in Giovanni Battista Ramusio's *Navigationi et viaggi*, which 'gathered many notable things' (π1v), rather than from direct familiarity with the original texts; indeed, as Taylor notes, Ramusio's volumes 'formed the foundation of his cosmographical studies' (1935, vol. I, 171, note 1),[6] and we know that Hakluyt not only frequently referred to them but also possessed a set.[7] Following the lists is a note on 'A verie late and great probabilitie of a passage, by the Northwest part of America', in which Hakluyt gives his source as a personal informant, an 'excellent learned man of portingale' (π2v), 'most privie to all the discoveries of his nation', with whom he had recently 'had great conference in matters of Cosmographie', learning also about João de Barros, 'their chiefe Cosmographer', and the Portuguese colonisation of Brazil (¶1v). Unnamed in *Divers Voyages*, he was later identified by Hakluyt in his (manuscript) *Discourse of Western Planting* (1584) as Antonio de Castillo (Castilho), the former Portuguese ambassador in London (Quinn 1974b, vol. I, 274-275; Hakluyt 1993, 84).[8] Another personal source was Rumold Mercator, London factor of the Cologne booksellers Birckmann (Worman 1906, 3-5 and 40-41;

[2] Hakluyt proceeded MA in 1577 and was ordained c. 1580. For his time at Oxford, see Payne 2021b.

[3] Cartier 1580, which in *Divers Voyages* Hakluyt said was undertaken 'at my charges, and other of my friendes by my exhortation' (¶3v). For Cartier, see Yates 1934, 55-60; Quinn 1967, 6-7; Payne 2019, vol. I, 1-36; Probasco 2020, 59-65.

[4] Beginning in 1300 and ending in 1580, these are Abulfida Ismael, Sir John Mandeville, Albert Krantz, Pietro Martire d'Anghiera, Gonzalo Fernández de Oviedo y Valdés, Robert Thorne (the younger), Girolamo Fracastoro, Gemma Frisius, Antonio de Mendoza, Gerard Mercator, Giovan Battista Guicciardini, Giovanni Battista Ramusio, Sebastian Münster, Tommaso Giunti, Clement Adams, Oronce Fine, Abraham Ortelius, Jerónimo Osório, André Thevet, François de Belleforest, Sir Humphrey Gilbert, Dionyse Settle, George Best and Nicholas Chancellor.

[5] Beginning in 1178 and ending in 1582, these are Benjamin of Tudela, Marco Polo, Hetoum, Sir John Mandeville, Nicolò Zeno, Antonio Zeno, Nicolò de' Conti, Christopher Columbus, Sebastian Cabot, Robert Thorne (the elder), Hugh Eliot, Vasco da Gama, Gaspar Corte-Real, Duarte Barbosa, Ferdinand Magellan, João de Barros, Jacques Cartier, Francisco Vázquez de Coronado, Juan Gaetano, Francis Xavier, Sir Hugh Willoughby, Richard Chancellor, António Galvão, Stephen Borough, William Borough, Anthony Jenkinson, Jean Ribault, André Thevet, Martin Frobisher, Sir Francis Drake, Arthur Pet, Charles Jackman, Edward Fenton, Luke Ward, Sir Humphrey Gilbert, Edward Hayes and Anthony Brigham.

[6] The writer's or traveller's inclusion in Ramusio is recorded when applicable in the annotated transcriptions of Hakluyt's lists in Payne 2019, vol. I, 81-97. Editions available by 1582 were Ramusio 1550, 1554, 1563 (the first volume), 1559, 1574 (the second volume), 1556, 1565 (the third volume). Parks 1955 gives a detailed guide to their contents. For Ramusio, see Lejosne 2021.

[7] Ownership can be inferred from Hakluyt's remark in *Divers Voyages* that 'I caused Iaques Cartiers two voyages … to bee translated out of my Volumes' (¶3v), i.e., Cartier 1580, translated by Florio from Ramusio 1556 or 1565. For discussions of Hakluyt and Ramusio, see Parks 1961, 124-126 and 161; Small 2012.

[8] Castillo acknowledged the succession of Philip II of Spain as ruler of Portugal in 1580 and was trusted by Philip and the Spanish ambassador in London, Bernardino de Mendoza. Although the English supported the exiled Don Antonio (prior of Crato) as rightful claimant to the Portuguese crown, Castillo was allowed to continue to represent Portuguese interests in England and did not depart until April 1582. Hume 1896, 25, 37, 47-48, 68, 72, 87, 113, 162-163, 284-285, 303, 310 and 344-345.

Barnard and McKenzie 2002, 153-156),[9] who showed Hakluyt letters from his father, 'the excellent Geographer Gerardus Mercator', discussing the possibility of a north-west passage:

> You write (saith hee to his sonne) great matters though very briefly of the newe discoverie of Frobisher, which I wonder was never these many yeeres heeretofore attempted. For there is no doubt, but that there is a straight and short way open into the West even unto Cathay.[10] Into which kingdome, if they take their course aright, they shall gather the most noble merchandise of all the worlde, and shall make the name of Christe to bee knowne unto many idolatrous and Heathen people. (¶2r-v)[11]

After the dedication, the text proper of *Divers Voyages* opens with 'A latine copy of the letters patentes' given by Henry VII on 5 March 1496 to John Cabot and his three sons 'for the discovering of newe and unknowen landes', accompanied by an English translation (A1r-A2v).[12] Next is 'A note of Sebastian Gabotes voyage of discoverie', taken, Hakluyt states, from 'an old Chronicle' by Robert Fabyan in 'the custodie' of John Stow (A3r).[13] This is followed by Ramusio's record of Sebastian Cabot's voyage northwards along the Atlantic coast of North America in search of a passage leading to Asia (A3v-A4r), translated from 'his Preface to the thirde volume of the navigations' (A3v), that is, Ramusio's *Terzo volume delle navigationi et viaggi*.[14] Hakluyt adds at the end, 'This much concerning Sebastian Gabotes discoverie may suffice for a present tast: but shortly, God willing, shall come out in print all his owne mappes & discourses drawne and written by himselfe', and that these were in the care of William Worthington, who was willing to allow them to be 'published in as good order as may bee, to the encouragement and benefite of our Countriemen' (A4r).[15]

[9] Birckmann's London branch, operating wholesale and retail, was one of the largest importers of books in England until wound up by Rumold Mercator after 1581. Among its customers was John Dee.

[10] Although Cathay and China became synonymous, there was still uncertainty in the sixteenth century about whether they were separate countries in east Asia or not. See Payne 2019, vol. I, 29.

[11] Hakluyt and Gerard Mercator (then living in Duisburg) corresponded with each other directly in 1580 on the supposed north-east passage. Hakluyt 1589, 483-485; Quinn 1974b, vol. I, 272. For Gerard Mercator's interest in Martin Frobisher's attempts to find a north-west passage and other English ventures, and the interest of English geographers, including Hakluyt, John Dee and William Camden, in Mercator's cartography, see Crane 2002, 240-249. For Frobisher's three north-western voyages (1576-1578), see Andrews 1984, 168-178.

[12] Hakluyt's side-note gives the year as '1495' in the Latin text (A1v), but mistakenly prints '1594' in the translation (A2v). In modern reckoning, with the year beginning on 1 January (rather than 25 March), it is 1496. For the manuscripts and various printings (first in *Divers Voyages*) of the patent, see Biggar 1911, 7-10.

[13] In repeating this excerpt in 1589, Hakluyt's heading added that the 'latter part of Robert Fabians Chronicle' from which it was taken was 'not hitherto printed' (515). Fabyan's text itself, as printed by Hakluyt in 1582, concerns a voyage in 1498 under the auspices of an unnamed 'Venetian' (A3r). In 1589 Hakluyt altered this to 'one Iohn Cabot a Venetian', but, as in 1582, named Sebastian Cabot in the heading (515). Hakluyt 1600 similarly retains Sebastian Cabot in the heading and follows 1589 in naming 'Iohn Cabot a Venetian' in the text (9). The matter has been much debated, but Fabyan might well have been referring to the 1498 expedition of Sebastian's father, John Cabot (Sebastian was born c. 1484, d. 1557). See Williamson 1962, 35-37, 91-98 and 221-222. For John Stow, historian and collector of historical records, see Beer 2004. For the chronicles of Robert Fabyan (d. 1513), which circulated in manuscript and print, see Boffey 2012, 162-204.

[14] Ramusio 1556 or 1565. These two editions are the same in content. For this, and Ramusio's other references to Sebastian Cabot and his northern voyage, see Ramusio 1550, 402v-403r, or 1554, 413r-415r, or 1563, 373r-374v; Ramusio 1556, 4r (in the preface), 35v-36r, 417r, or 1565, A4v (in the preface), 35v-36r, 417r; Winship 1900, 84-89; Williamson 1962, 152-154 and 270-273. The year and other details of this expedition were, and remain, confused, but it was taken by Hakluyt and his contemporaries as demonstrating that a north-west passage existed and was an attainable objective (Andrews 1984, 50-52).

[15] Nothing came of this and Sebastian Cabot's papers are now lost. Worthington was the associate with whom Sebastian Cabot shared his pension from the crown and to whom, as the surviving beneficiary, it reverted upon

Then, printed from a manuscript copy, are Robert Thorne's two reports on the Moluccas and the spice trade, one, 'A declaration of the Indies and landes discovered, and subdued unto the Emperour, and the king of Portugale' addressed to Henry VIII (B1r-B3r), the other 'being an information of the parts of the world' discovered by the Spanish and Portuguese and 'also of the way to the Moluccaes by the north', submitted to Edward Lee (Ley), English ambassador in Spain, in 1527 (B3v-D4r), which is accompanied by 'a little Mappe or Carde of the worlde' referred to in the text (B4v).[16] These documents, Hakluyt records, were 'preserved by one master Emmanuel Lucar executour to master Robert Thorne, and was friendly imparted unto mee by master Cyprian Lucar his sonne' (D4r)[17] (although other manuscript copies are extant, Thorne's original does not survive, nor does the copy supplied to Hakluyt by Cyprian Lucar).[18] Thorne, a merchant in the Seville and Bristol trade, urged English exploration for a northern sea-passage to the East and its rich mercantile opportunities, which would be shorter than the southerly oceanic routes via the east and west used by the Portuguese and Spanish respectively. Preparations for such an expedition lapsed after Thorne's death in 1532, but his associate, Roger Barlow, continued to consider it and it was on occasions discussed in official circles (Taylor 1930, 48-52; Andrews 1984, 52-54).[19] That Thorne himself was advocating northern exploration only as a means to facilitate English trade with Asia via an advantageous route was a point not dwelt upon in *Divers Voyages*, where Hakluyt placed Thorne's proposals in a far more ambitious framework pressing English claims to North America and its colonisation (Dalton 2016, 197-199). To indicate English rights by early discovery, Hakluyt drew attention with a side-note ('M. Thorne and M. Eliot discoverers of New found land') to Thorne's remarks that his father (also named Robert, d. 1519) and another Bristol merchant, Hugh Eliot, 'were the discoverers of the newe found lands, of which there is no doubt, as now plainly appeareth, if the marriners woulde then have been ruled, and folowed their pilots mind, the lands of the west Indies, from whence all the gold commeth, had beene ours' (D2v).[20] The next side-note flags 'The cause why the west Indies were not ours: which also Sebastian Gabot writeth in an epistle to Baptist Ramusius' (*ibid.*), an allusion to Ramusio's record, translated earlier in *Divers Voyages*, of Cabot's similar explanation for his failure to find a northern passage to 'Cathaio', because 'the mutinie of the shipmaster and marriners … made him to returne homewardes' (A3v-A4r).

The next section of the book ([2]A1r-E1r), with the running title 'The discoverie of Morum bega',[21] was taken from Ramusio and ends with the acknowledgement that 'This discourse was collected by Ramusio Secretarie to the state of Venice, (or by the Printer Tho. Giunti.) Iohn

Cabot's death in 1557. He evidently assumed custody of Cabot's 'mappes & discourses' at the same time. Harrisse 1896, 368-370, 373-374 and 457-460; Quinn 1974a, 157-158; Dalton 2016, 183-184 and 214.

[16] For Thorne's map see Quinn 1967, 17-19.

[17] For the passing of Thorne's papers to Emmanuel Lucar (d. 1574), his former factor, and their provision by Cyprian Lucar to John Dee and Hakluyt, see Dalton 2016, 202-204.

[18] See Taylor 1932, xxvi-xxvii; Williamson 1962, 27-28. Known manuscripts are Hatfield House CP 245/5 (Cecil Papers) (c. 1535-1539), British Library Cotton MS Vitellius C. VII, 329r-345r (John Dee's, c. 1577) and British Library Lansdowne MS 100 (Burghley Papers), 65r-80v (c. 1580).

[19] For the commercial activities of Thorne the younger in Andalusia, including the procurement and use of slaves in the soap industry, as well as his investment in Sebastian Cabot's expedition of 1526, see Ungerer 2008, 22-26, 62-69 and 113-120; Dalton 2016, 46-62, 72-77 and 80-83.

[20] The date and nature of this venture to the Atlantic coast of North America are uncertain (Williamson 1962, 26-29 and 201-202; Dalton 2016, 31).

[21] More usually 'Norumbega', a land believed to lie somewhere on the north-east coast of America. It was thought to be that reported by Verrazzano in 1524, although not so-named in his own relation of his discoveries (see Baker *et al.* 1994, xxv-xxxi, 61-62 and 82-85).

Baptista Ramusio, died in Padua in Iuly, 1557' (E1r). It comprises two narratives, first Giovanni da Verrazzano's relation of 'the lande by him discovered' on the Atlantic coast of North America sent on his return in 1524 to Francis I, 'the most Christian king of Fraunce' ([2]A1r), which was translated from Ramusio's *Terzo volume delle navigationi*,[22] and second, 'The discoverie of the Isles of Frisland, Iseland, Engroveland, Estotiland, Drogeo and Icaria, made by M. Nicolas Zeno, Knight, and M. Antonio his brother' ([2]B4v), translated from the second edition (1574) of Ramusio's *Secondo volume delle navigationi* (it is not found in the first edition, 1559).[23] To assist or direct the reader to particular information, Hakluyt's translation provided various side-notes for both these accounts (there are none in Ramusio's originals).

The longest text in *Divers Voyages* (E2r-G3v), 'The true and last discoverie of Florida' by Jean Ribault in 1562, 'translated into Englishe by one Thomas Hackit' (E2r), was taken from *The Whole and True Discoverye of Terra Florida* published by Thomas Hacket in 1563 (Ribault 1563), a rarity which, Hakluyt informed Philip Sidney, was 'not nowe to be had, unlesse I had caused it to be printed againe' (¶3v-¶4r).[24] This account appeared after Ribault, the Huguenot commander of the French exploratory mission to Florida, had returned to find France embroiled in civil war and, with the surrender of Huguenot forces defending Dieppe, had fled to England to seek support for an expedition to follow up this reconnaissance and to relieve the small garrison he had left at Charlesfort on the coast of present-day South Carolina (see Parker 1965, 57-60; McGrath 2000, 50-56 and 67-93).[25] The book was possibly intended to promote such a venture, although Hacket might have been motivated more by the general newsworthiness and entertainment value of New World discoveries in deciding to publish it (Tromans 2015b, 114-122 and 129).[26] In reprinting it Hakluyt made some minor textual corrections,[27] and added numerous side-notes (there are none in the original) to guide the reader to informative points (e.g., 'Sevola within xx.daies travailing by boate of the river of May', 'Golde, silver, and copper in Florida', F2v and F3v),[28] providing a paratextual apparatus which Philip Tromans has suggested effectively repackaged the original book as a promotional tract (2015b, 122-123). In 1584 Hakluyt referred to Ribault's account as being 'in printe bothe in frenche and englishe' (Hakluyt 1993, 16), but no copy of a French edition, if one was published, is extant today (135 [note to lines 312-313]).[29] It cannot be said, therefore, whether Hacket produced his translation from a manuscript or a printed original.

Divers Voyages continues with two sets of 'Notes' for prospective voyagers drawn up by 'a Gentleman', headed respectively,

Notes in writing besides more privie by mouth that were given by a Gentleman, Anno. 1580. to M. Arthure Pette and to M. Charles Iackman, sent by the marchants of the Muscovie companie for the discoverie of the northeast strayte,[30] not altogether unfit for some other enterprises of discoverie, hereafter to bee taken in hande (H1r),

[22] Ramusio 1556 or 1565, 420r-422v. For this account see also Parks 1955, 310-311; Quinn 1967, 9. For Giovanni da Verrazzano (c. 1485-c. 1528), see Wroth 1970.

[23] Ramusio 1574, 222r-225v. For the publication of this account in the mid-sixteenth century, and for the Zeni and their supposed discoveries in the North Atlantic in the late fourteenth century, see Parks 1955, 300; Horodowich 2018, 143-164; Payne 2019, vol. I, 105-106.

[24] Only two copies are known today (British Library and Lambeth Palace).

[25] Ribault had English connections going back to the 1540s.

[26] For Hacket, see also Melnikoff 2009.

[27] Detailed by Quinn 1967, 38-39.

[28] Quinn 1967, 39-40, gives further examples.

[29] For possible traces of the lost French version, see Cairns 2009, 431-438.

[30] For Pet and Jackman's voyage, see Andrews 1984, 72-75.

and,

Notes framed by a Gentleman heretofore to bee given to one that prepared for a discoverie, and went not: And not unfitt to be committed to print, considering the same may stirre up considerations of these and of such other thinges, not unmeete in such new voyages as may be attempted hereafter. (K1r)

When reprinted by Hakluyt in *The Principall Navigations* (1589), these 'Notes' were attributed to Richard Hakluyt the elder,[31] who moved and advised in circles interested in overseas ventures, the Muscovy (Russia) Company among them.[32] His guidance and expertise, it is reasonable to suppose, were available to his young cousin, who, orphaned, had grown up under the elder Hakluyt's care, and were an invaluable indirect source in assembling *Divers Voyages* (Quinn 1967, 13-14).

The concluding list of 'The names of certaine commodities growing in part of America, not presently inhabited by any Christians from Florida Northward, gathered out of the discourses, of Verarzanus, Thorne, Cartier, Ribalt, Thevet, & Best' (K4r) is unattributed, but may have been compiled by the elder Hakluyt or, more likely, the younger Hakluyt himself (Quinn 1967, 12-13).

2. *The Framing of* Divers Voyages

Hakluyt dedicated *Divers Voyages* to Philip Sidney, courtier, poet and soldier, remembered by his friend Fulke Greville as 'a man fit for conquest, plantation, reformation or what action soever is greatest and hardest among men' (1986, 21).[33] Sidney had been an undergraduate contemporary of Hakluyt's at Christ Church (Stewart 2000, 53-56 and 66-67),[34] and was close to Edward Dyer, another courtier and poet, who shared Sidney's enthusiasm in investing in Martin Frobisher's voyages of north-western exploration in the 1570s and was to encourage Hakluyt's work on *The Principall Navigations* (Sargent 1968, 41-46 and 56-71).[35] In July 1582, soon after publication of *Divers Voyages*, Sidney received an assignment of three million acres in North America from Sir Humphrey Gilbert in recognition of Sidney's promise to do all he could to obtain goodwill towards Gilbert's colonial project at court (Quinn 1940, vol. II, 260-265; Kuin 1998, 573-574; Stewart 2000, 267-269). He was, therefore, a thoroughly appropriate dedicatee, both in terms of personal connections and the book's content.[36]

Hakluyt's dedicatory address to Sidney places the various texts collected in the book into a coherent framework (¶1r-¶4r).[37] He begins by saying that while the Spanish and Por-

[31] 'Notes in writing … that were given by M. Richard Hakluyt, of Eiton in the countie of Hereford, Esquire, Anno 1580: To M. Arthur Pet, and to M. Charles Iackman, sent … for the discoverie of the Northeast straight', and 'Notes framed by M. Richard Hakluit of the middle Temple Esquire, given to certaine Gentlemen that went with M. Frobisher in his Northwest discoverie' (Hakluyt 1589, 460 and 636).

[32] For Richard Hakluyt the elder (d. 1591), a lawyer at the Middle Temple and MP for Leominster (1558), see Taylor 1935, vol. I, 1-10, 13-16 and 19-21; Parks 1961, 25-55, 233-241 and 247; Bindoff 1982, vol. II, 273; Rollison 2010, 361-384. For his 'Notes' and other travel advice, see also Carey 2009, 174-179.

[33] For Sidney's interest in the New World, see Kuin 1998.

[34] Sidney left Christ Church in 1571. Hakluyt arrived in 1570.

[35] 'In respect of a generall incouragement … it were grosse ingratitude in mee to forget … Master Edward Dier' (Hakluyt 1589, *4v).

[36] Sidney was much interested in the English colonisation of Ireland, where his father, Sir Henry Sidney, had been lord deputy, and under whom Humphrey Gilbert had served as a soldier and colonial projector. See Quinn 1940, vol. I, 12-19; Duncan-Jones and Van Dorsten 1973, 3-12 and 175-177. Hakluyt, however, makes no mention of Ireland in his dedication, and, aside from its formulaic inclusion in the style of Henry VII (A1r and A2r), there are but two insignificant geographical references to Ireland in the text of *Divers Voyages* (C2r and ^{2}C1v).

[37] Transcribed and annotated in Payne 2019, vol. I, 99-113.

tuguese had achieved 'great conquests and plantings … there is a time for all men' (echoing Eccles. 3:1), and now 'we of England may share' with them 'in part of America, and other regions as yet undiscovered', in taking possession 'of those landes, whiche of equitie and right appertaine unto us, as by the discourses that followe shall appeare most plainely', and establishing 'Colonies of our superfluous people' (including minor criminals, 'able men', who would otherwise be hanged yet able 'to serve their Countrie') (¶1r). Allied to taking 'possession of that good land' he also expressed the hope that the 'shorte and easie passage by the Northwest … so long desired', might soon be found (¶1v). He then presents a series of geographical reasons for supposing this, referring to material published in the book as well as evidence from elsewhere (¶1v-¶2v). A higher purpose is sounded, that, 'in our owne discoveries', the 'desire of seeking rather gaine then Gods glorie' would be detrimental to success and it should not be forgotten 'that Godlinesse is great riches, and that if we first seeke the kingdome of God, al other thinges will be given unto us', while 'lasting riches do waite upon them that are zealous for the advauncement of the kingdome of Christ, and the enlargement of his glorious Gospell: as it is sayde, I will honour them that honour mee' (¶2v, alluding to 1 Tim. 6:6, Matt. 6:33 and 1 Sam. 2:30).[38] The need for proper training and the creation of a lectureship in the 'art of Navigation', as in Spain, was stressed (¶3r-v).[39] He concludes by offering a summary of the work's contents, beginning with 'the title which we have to that part of America which is from Florida to 67.degrees northwarde' by virtue of the letters patent granted to John Cabot and his sons, including Sebastian, and their discoveries (¶3v), which were fundamental to English claims in North America deriving from historical precedent and prior discovery (Fitzmaurice 2003, 153-154). Hakluyt's final reference is to the book's map of North America provided by Michael Lok, 'a man, for his knowledge in divers languages and especially in Cosmographie, able to doe his countrey good' (¶4r), apparently putting in a good word for an individual accused of misconduct as treasurer of the funds invested in Frobisher's north-western expeditions and not long released from debtors' prison (McDermott 1999, 132-135).[40]

3. *The Producers of the Book*

Before further consideration of *Divers Voyages* and the nature of Hakluyt's work, the processes by which it reached the public need to be described, for, 'Whatever they may do, authors do not write books. Books are not written at all. They are manufactured by scribes and other artisans, by mechanics and other engineers, and by printing presses and other machines' (Stoddard 2002, 33).

Divers Voyages was licensed to Thomas Woodcock by the bishop of London and the two wardens of the Stationers' Company for the usual fee of sixpence on 21 May 1582 (Arber 1875, 411). Sir Edmund Brudenell's acquisition of a copy the next day reveals that the book was immediately available (Payne 2019, vol. I, 60 and 67),[41] although news of

[38] For comments on this passage, see Helgerson 1992, 167-168; Armitage 2000, 75; Fitzmaurice 2003, 49; Sacks 2007, 418.

[39] For Hakluyt's idealised view of such theoretical instruction in Spain, see Sandman and Ash 2004, 813-814.

[40] For Lok, see also McDermott 2004. For his map, see Wagner 1937, vol. I, 79-80; Quinn 1967, 22-24 and 26; Wroth 1970, 195 and 211-212.

[41] For Brudenell (1521-1585), see Wake 1953, 51-84; Finch 1956, 143-152. His copy is now in the Free Library of Philadelphia. Its title-page with Brudenell's dated ownership inscription and price is illustrated in Quinn 1967,

its publication may not have reached all of Hakluyt's circle, for instance Thomas Savile in Oxford, until later.[42]

Under Elizabethan measures to regulate the press, the bishop of London was among the several ecclesiastical and civil officers with authority to give official approval of a work before it could be printed (Blayney 1997, 396-397; Clegg 1997, 36-40 and 43-44); such pre-publication approval was no guarantee against censorship of an edition after it had been printed, and although no disapproval arose from *Divers Voyages*, both editions of *The Principal Navigations* were subject to some post-publication interference.[43] The two wardens of the Stationers' Company, next in seniority to its master, were routinely responsible for granting the Stationers' licence to print (Blagden 1960, 38, 43-44 and 53-54). The Stationers' licence (as opposed to the authorisation of the ecclesiastical or civil authorities) was not in itself an instrument of censorship, but the means whereby the company expressed and regulated its monopoly control, conferred by royal charter, of printing. It was mandatory, and its evasion punished by the company when detected, but the licensee thereby established his exclusive right to print the work licensed to him and gained the protection of the company against any attempts to infringe his ownership of the 'copy', which he could later sell or assign to another party if desired. Entrance in the Stationers' Register was not a strict requirement, but it could not be obtained without the prior granting of the company's licence and it was the surest way of proving rights in a book should a dispute or other need for documentary confirmation arise. There was no comparable protection or recognition in the Stationers' regulations of any rights of authors or others in a work (Blagden 1960, 20-21, 31-33 and 40-45; Blayney 1997, 394-395 and 398-405; Clegg 1997, 15-19).

Publishing was not generally thought of or described as a distinct profession in sixteenth-century England and a publisher (that is, the individual who financed a book's printing and to whom any profits accrued) was typically either a printer or a bookseller. Booksellers were increasingly common as publishers, engaging trade printers to produce their books, while the trend among printers was towards some choosing to farm out the actual printing of their books to concentrate on publishing with its greater risks and outlays yet potentially greater returns, and others preferring simply to undertake trade printing, with its more assured, if modest, earnings (Blagden 1960, 24-25, 39-41 and 74; Blayney 1997, 391 and 2003, 35-37; Lesser 2004, 26-34; Melnikoff 2018, 6, 11 and 16-19).

Divers Voyages was published by the bookseller Thomas Woodcock (d. 1594), whose shop was at the Sign of the Black Bear in Paul's Churchyard. He became a freeman of the Stationers' Company in 1570, was admitted to the livery in May 1582, and was under warden at the time of his death (McKerrow 1910, 300; Pantzer 1991, 187 and 245). Among Woodcock's previous publications were William Bourne's *A Booke Called the Treasure for Traveilers* (Bourne 1578),[44]

20 (figure 2a). The price is unclear. It is apparently written 'x//' (i.e. £10), which Probasco suggests is a mistake for 'what should have been ten shillings' (2020, 73). This would still place it among the more highly-priced books at this time. If 10*d* was meant, it seems low if the maps, which would add considerably to the book's production costs, were reflected in the price. For a range of book-prices (scarcely any above £1, most substantially below), see Johnson 1950, 94-112. See also Turner 2012 for John Whitgift's purchases in 1582, the cheapest at 2*d*, the most expensive 9*s*.

[42] On 27 June Savile told William Camden that a work by Hakluyt was rumoured in Oxford to be in the press, but he feared it might not be forthcoming as nothing had yet emerged (Quinn 1974b, vol. I, 275).

[43] See Payne 2021c, which is the most extensive discussion of censorship in relation to Hakluyt.

[44] This is primarily a manual on surveying and navigation, but the final chapter discusses the peopling of America in relation to scriptural teaching concerning the descent of all men from Adam.

and the *Firste Fruites* of John Florio (1578),[45] but he seems to have had no special connection with Hakluyt or particular interest in navigational or travel books.

The printing of *Divers Voyages* was undertaken for Woodcock by Thomas Dawson (d. 1620), who is named as printer in the colophon (K4v). Dawson became a freeman of the Stationers' Company in 1568 and was eventually to be its master. Working near Three-Crane Wharf in the Vintry, his was a large business, and he printed more than twenty other books in 1582 (McKerrow 1910, 86; Pantzer 1991, 51 and 255). Although chiefly a trade printer, Dawson also published on his own account (Adams 1992, 215), and in 1587 he was to issue Hakluyt's translation of René de Goulaine de Laudonnière's *Notable Historie Containing Foure Voyages … unto Florida*.[46] Dawson regularly printed for Woodcock, taking twenty or so different jobs to him by the mid-1580s, which indicate a degree of collaboration in publishing projects closer than a simple bookseller-publisher and trade-printer relationship (Melnikoff 2018, 13).

To protect the employment of journeymen compositors, the rules of the Stationers' Company from c. 1587 restricted editions (excepting certain categories, such as almanacs or government publications) to a maximum of 1250 or 1500 copies. Similar limitations may well have applied earlier on a customary basis, and whatever the restrictions before and after 1587, print runs in practice would usually have been no more than a 1000 or so copies, quite possibly fewer, to be viable (McKerrow 1928, 130-133 and 214; Gaskell 1974, 160-162; Plant 1974, 92-94 and 153-154). *Divers Voyages* is known today in only twenty-two extant copies,[47] in contrast to the two editions of *The Principal Navigations* which survive in a combined total of well over 350 (Neville-Sington and Payne 1997, 32-76; Payne 2019, vol. I, xi), so it was possibly printed in a much smaller run than the 500 to 750 copies suggested for the second edition of *The Principal Navigations* (Payne 2008, 75). It should be noted, however, that it is difficult to extrapolate the number of copies originally printed from the number extant because of the considerable variables determining survival. Large books, for example, tend to survive better than small ones (compare *The Principal Navigations*, a substantial folio, to *Divers Voyages*, a slim quarto), while utilitarian works printed in large quantities might survive in few copies because discarded when worn out or obsolete, whereas much of a small, high-quality edition might survive because prized but little used (Willard 1943, 172-175; Gaskell 1974, 162-163; Barnard and McKenzie 2002, 555-560). Lastly, any consideration of the contemporary circulation of books in Hakluyt's day should bear in mind that early modern England was a partially literate society, and perhaps roughly eighty per cent of the male and over ninety per cent of the female population were illiterate in the second half of the sixteenth century, during which the total population rose from about 3 to 4.1 million (Cressy 1980, 17-18, 167-170 and 176-177; Thomas 1986; Wrigley and Schofield 1989, 207-210; Brayman Hackel 2005, 55-68). Cost might also limit accessibility, certainly to more expensive books such as Hakluyt's, with, for example, prices of 9*s* (unbound) and 11*s* 11*d* (bound) known for his 1589 *Principal Navigations*, beyond the means of much of the population at a time when a labourer might earn less than a shilling a day (Johnson 1950, 92 and 103; Watt 1991, 260-263).

[45] Florio translated Cartier 1580, referred to above.

[46] Laudonnière 1587, translated from Laudonnière 1586, which Hakluyt had 'caused … at mine owne charges to bee printed in Paris' (1599, *3r). For these two editions, see Payne 2019, vol. I, 235-285 and vol. II, 359-398.

[47] Described by Payne 2019, vol. I, 50-61. Not all are complete.

4. *The Intentions and Distribution of* Divers Voyages

The contents of *Divers Voyages*, outlined in the introduction to this article, were intended to provide information on the prospects for colonisation in North America and for finding a navigable north-western passage to Asia. At the time of the book's publication in the summer of 1582, the particular colonial enterprise in hand was that of Sir Humphrey Gilbert, who had been granted exclusive royal authorisation in 1578 to undertake such ventures over a six-year term; after a failed attempt in 1578, Gilbert was now planning a new scheme to establish an American colony (Quinn 1940, vol. I, 35-62; Andrews 1984, 187-193). While it can only be said circumstantially that Hakluyt was directly employed to gather pertinent documentary material on America to assist Gilbert's project (Quinn 1940, vol. I, 62-64), he was certainly known to Gilbert by late 1581 or early 1582 when he introduced Gilbert to his Oxford room-mate, Stephen Parmenius. Parmenius subsequently sailed with Gilbert in 1583 and it has been conjectured that besides assisting Hakluyt in compiling *Divers Voyages*, he accompanied the expedition as its chronicler instead of Hakluyt, who had commitments and potential opportunities elsewhere (Quinn 1967, 33-34; Quinn and Cheshire 1972, 8-9, 19-22, 44-45, 76-79, 108 and 168-177).[48] Whatever Gilbert's role, the publication of *Divers Voyages* nevertheless had immediate promotional value: 'Indeed the appearance of *Divers Voyages* seems to have been the signal to Gilbert and his friends to take up the pursuit of subscribers in a big way, and June is the month which sees the major land-grants made to associates in the enterprise' (Quinn 1967, 33).[49] Against this background, an especially notable copy, already referred to, is that purchased in May 1582 by the Northamptonshire landowner Sir Edmund Brudenell, who in June agreed to invest in the subsidiary colonial settlement of Gilbert's assignees, Sir George Peckham and Sir Thomas Gerrard.[50] Another supporter of Gilbert's programme was, as we have seen, the book's dedicatee, Philip Sidney, whose copy of *Divers Voyages* is possibly the one at St John's College, Oxford (Warkentin, Black and Bowen 2013, 371; Payne 2019, vol. I, 47-48).[51] That at Longleat House, Wiltshire, might have played a part in encouraging the interest of John Thynne the younger, having perhaps reached Longleat via his associate, Maurice Browne, who successfully obtained Thynne's financial support while preparing for Gilbert's expedition during 1582 and was one of its captains when it finally sailed in June 1583 (Quinn and Cheshire 1972, 38-41, 45-47 and 195-199).[52] In March 1583 Hakluyt himself was enrolled by the Queen's principal secretary (and future father-in-law of Philip Sidney), Sir Francis Walsingham, a consistent favourer of Gilbert's undertaking (Cooper 2011, 259), to promote it by visiting Bristol, where the merchant community responded favourably after Walsingham's written endorsements were read out and 'some good light given by M. Hakluyt unto them that were ignorant of the country and enterprise' (Hakluyt 1589, 718).[53] More generally, Peckham's *True Reporte* of

[48] Parmenius 1582 is a neo-Latin epic poem marking the imminent departure of Gilbert's expedition.

[49] For the promotional literature of Gilbert's enterprise, see Probasco 2020, 53-102.

[50] Quinn 1940, vol. I, 58-60, 71-76 and vol. II, 257-260; Wake 1953, 65-67. This scheme did not in the event materialise.

[51] It is bound together with Cartier 1580. The central ornament on the covers is flanked with the initials 'P' and 'S'. The volume came to St John's in the bequest of Nathaniel Crynes (1686-1745).

[52] Browne, Gilbert and Parmenius all perished on this voyage.

[53] For this visit, see Quinn 1940, vol. I, 76-80; Parks 1961, 81-83 and 247. For Hakluyt and Walsingham, see Cooper 2011, 270-275. Their association is thought to date back to late 1579 or early 1580, although it may be suggested that Hakluyt first came to Walsingham's serious attention after publishing *Divers Voyages* in 1582 (see Payne 2019, vol. I, 183-184).

Gilbert's discoveries, published later in 1583, included the advice to 'Reade the beginning of the boke intituled, divers voyages touching the discovery of America' for further information on the 'likelyhoode of a passage by the Graunde bay, into the South Seas' (E3r).[54]

The make-up of *Divers Voyages*, with two signature-sequences, neither of the complete alphabet (A-D and ²A-K) and differing in the number of lines to a page, and no foliation or pagination, suggests it was printed in a hurry, and indeed Hakluyt refers to the book as 'this hastie worke' (¶3v). He was also evidently keen to provide the latest information on 'A verie late and great probabilitie of a passage, by the Northwest part of America in 58.degrees of Northerly latitude', a 'report' that 'may bee well annexed unto the other eight reasons mentioned in my epistle dedicatorie, for proofe of the likelihood of this passage' (π2v), and it was possible to accommodate this in the preliminaries, which were usually the last sheets of a book to be printed (Gaskell 1974, 7-8 and 52). D.B. Quinn, while considering haste the more likely explanation, has proposed the alternative possibility that the book's three basic sections (A-D, the Cabot and Thorne material; ²A-G, the Verrazzano, Zeno and Ribault voyages; H-K, the advisory notes) were envisaged as instalments, and were either printed at different times and initially issued separately as the promotional campaign for Sir Humphrey Gilbert's venture developed, or, if published together, were designed for individual circulation if required. There is, however, no contemporary evidence for such distribution and, as Quinn acknowledges, it cannot be conclusively demonstrated (Quinn 1967, 30-32 and 1974b, vol. II, 461-462). Philip Tromans, who gives tentative consideration to the disassembly of the book into its three component parts by contemporary users, judges it unlikely that the printer, Thomas Dawson, shared the printing of *Divers Voyages* with another establishment, or that the various parts were printed at different times, but suggests that two or more compositors working from separate cases were used by Dawson to rush through the book's production (Tromans 2015a, 191-195).

If it is reasonable to say that *Divers Voyages* assembled encouraging geographical and other useful background information for potential venturers, and that its publication was occasioned and hastened by Gilbert's plans (Quinn 1940, vol. I, 63-64; Probasco 2020, 67), it may still be observed that Gilbert is only mentioned three times in the book, in the lists of geographical writers and travellers ('Humfrey Gilbert knight') (π1v and π2r) and in a side-note identifying land described in Verrazzano's relation as 'The Country of Sir H.G. voyage' (²B1r).[55] While helpful and pertinent to Gilbert's enterprise, *Divers Voyages* was not, therefore, explicitly focused as propaganda for it, and the range of the book's content, and the elaborations in Hakluyt's dedication, indicate a broader application and interest that did not necessarily tie it to a specific colonial scheme. Hakluyt, certainly, must have thought this, since nearly all the texts published by him in *Divers Voyages* were later reprinted in the two editions of *The Principal Navigations* (Hakluyt 1589, 250-251, 252-258, 460-466, 509-511, 513, 515 and 636-638; Hakluyt 1598, 212-220; Hakluyt 1600, 4-5, 7-10 and 45-47),[56] and the book's subject matter (including points expressed in the dedication, the documents relating to the Cabots, Thorne's proposals for northern exploration, and the Zeno, Verrazzano and Ribault voyages) was relevant to and

[54] For Peckham 1583, see Parker 1965, 112-114; Probasco 2020, 97-100.

[55] For Gilbert's use of the topographical information found in Verrazzano's relation, see Quinn 1940, vol. I, 63 and vol. II, 343.

[56] See also Payne 2019, vol. I, 74-75. The major item not reprinted was Ribault's 'discoverie of Florida', but this was superseded by Laudonnière 1587, narrating all four French voyages to Florida, which was reprinted in Hakluyt 1600, 301-360.

discussed in his *Discourse of Western Planting* (1584),[57] which was designed to promote English colonisation in North America generally and was occasioned specifically by the Virginia venture of Walter Raleigh, at whose behest it was written (Hakluyt 1993, xv, xxi–xxii).[58]

5. *Towards a Cosmography*

The practical gathering of documentary geographical material in *Divers Voyages* and the focusing framework provided by Hakluyt in his dedication to Philip Sidney might at first sight categorise it as no more than a promotional handbook for colonial ventures and discoveries. Yet, by looking at Hakluyt's later remarks about his endeavour, we can perhaps discern a cosmography that placed these in God's plan for the world and mankind.[59]

Much of *Divers Voyages* was, as mentioned above, reprinted in *The Principal Navigations*, a far more extensive and ambitious collection of voyages, where Hakluyt's methods, wider purpose and interests become apparent, most notably regarding how he first 'found his calling in cosmography' (Sacks 2012, 214) and underwent what has been aptly called 'a mystical conversion to the science of geography' (Wright 1943, 34-35).[60] This is described in Hakluyt's dedicatory address to Sir Francis Walsingham in the original edition (1589), in which he recalls his boyhood visit to 'the chamber of M. Richard Hakluyt my cosin, a Gentleman of the Middle Temple, well knowen unto you', where he saw 'lying open upon his boord certeine bookes of Cosmographie, with an universall Mappe' (*2r).[61] Responding to his curiosity, the elder Hakluyt 'pointed with his wand to all the knowen Seas, Gulfs, Bayes, Straights, Capes, Rivers, Empires, Kingdomes, Dukedomes, and Territories' of each part of the earth and spoke of 'their speciall commodities, & particular wants, which by the benefit of traffike, & entercourse of merchants, are plentifully supplied', and then, bringing him from the map to a Bible, directed the young Hakluyt to verses 23 and 24 in Psalm 107,

> where I read, that they which go downe to the sea in ships, and occupy by the great waters, they see the works of the Lord, and his woonders in the deepe, &c. Which words of the Prophet together with my cousins discourse (things of high and rare delight to my yong nature) tooke in me so deepe an impression, that I constantly resolved, if ever I were preferred to the University … I would by Gods assistance prosecute that knowledge and kinde of literature, the doores whereof (after a sort) were so happily opened before me. (*2r)

[57] See, e.g., Hakluyt 1993, 16, 19-20, 28, 31-32, 75-76, 83, 95, 120, 135-138, 145, 173, 177 and 181-182.

[58] For the *Discourse*, see further Payne 2019, vol. I, 145-192.

[59] On ordination Hakluyt would have been required to subscribe to the Thirty-Nine Articles, the formal declaration of the doctrine and practices of the Church of England (see Hampton 2017, 212-223). He left no sermons or other writings that might provide an insight into his personal religious inclinations, but for his thinking on evangelisation overseas and the duty of the English monarch as head of a true missionary church to advance the gospel, see Hakluyt 1993, 8-12 and 131-133.

[60] As Cormack points out, the terms 'cosmography' and 'geography' were sometimes used interchangeably in sixteenth-century England, but the latter was coming to be distinguished by a narrower focus on the earth itself, in contrast to the wider concerns of cosmography in 'the globe and its relationship with the heavens as a whole' (1997, 18). Given Hakluyt's 'godly mission' (Sacks 2012), 'geography' is, therefore, perhaps too prosaic a word to convey the nature of his calling.

[61] Possibly the cordiform map of the world published in 1564 by Abraham Ortelius, whom the elder Hakluyt advised on the construction of a large world map in c. 1567-1568 (Taylor 1935, vol. I, 77-83). Among the 'bookes of Cosmographie' was perhaps that of Sebastian Münster, which went through numerous editions, first in German (1544), and then in Latin (1550) (see McLean 2007, 173-188).

Hakluyt's reference to these verses in the Psalms, that could be read as signifying God's care for mankind and the promise of salvation, indicates the profoundly Christian cosmography underlying his work, especially in the context of the belief that God's providential design would see the reunion of the scattered peoples of the earth in one faith and the uncovering of the truths of His Creation lying concealed since the Fall (Sacks 2007, 432-436).

Hakluyt went on to tell Walsingham that at Oxford in accordance with 'my resolution', he 'read over whatsoever printed or written [manuscript] discoveries and voyages' he could find 'in the Greeke, Latine, Italian, Spanish, Portugall, French, or English languages', and lectured on 'Mappes, Globes, Spheares, and other instruments',[62] and, 'by reason principally of my insight in this study', became in due course 'familiarly acquainted with the chiefest Captaines at sea, the greatest Merchants, and the best Mariners of our nation' (*2r). Towards the end of his dedication, Hakluyt drew attention to the encouraging prospects for 'commerce & traffike' with the peoples of distant Asia, saying

> For mine owne part, I take it as a pledge of Gods further favour both unto us and them: to them especially, unto whose doores I doubt not in time shalbe by us caried the incomparable treasure of the trueth of Christianity, and of the Gospell, while we use and exercise common trade with their marchants. (*3r)

Hakluyt's dedication to Walsingham in 1589 is followed by an address to the 'favourable Reader', in which he outlines 'the Methode and order which I have used' in compiling the work:

> Whatsoever testimonie I have found in any authour of authoritie appertaining to my argument, either stranger or naturall, I have recorded the same word for word, with his particular name and page of booke where it is extant. If the same were not reduced into our common language, I have first expressed it in the same termes wherein it is originally written, whether it were a Latine, Italian, Spanish or Portingall discourse, or whatsoever els, and thereunto in the next roome have annexed the signification and translation of the wordes in English. And to the ende that those men which were the paynefull and personall travellers might reape that good opinion and iust commendation which they have deserved, and further, that every man might answere for himselfe, iustifie his reports, and stand accountable for his owne doings, I have referred every voyage to his Author, which both in person hath performed, and in writing hath left the same: for I am not ignorant of Ptolomies assertion, that *Peregrinationis historia*, and not those wearie volumes bearing the titles of universall Cosmographie which some men that I could name have published as their owne, beyng in deed most untruly and unprofitablie ramassed and hurled together, is that which must bring us to the certayne and full discoverie of the world. (*3v)

Hakluyt is not objecting to cosmography itself, and indeed he referred to himself, and was referred to, as a student of cosmography,[63] but rather to the indiscriminate methods of some of its practitioners in, he intimates, piling up and concocting information, disregarding the integrity of their sources, and assuming an omniscience which effectively smothered the truth, obscuring, not revealing, the secrets of the world (*La cosmographie universelle* by the French royal cosmographer, André Thevet, was particularly in his mind) (Thevet 1575).[64] By contrast,

[62] For these lectures, see Payne 2021b, 6-11.

[63] See, e.g., Hakluyt 1598, *2r, and 1600, 181, quoted below in the Conclusion of this article. For the meaning of 'cosmography', see Bennett 2017, 37-40, and n. 60 above.

[64] For Thevet's cosmography, see Lestringant 1991b. Although unnamed, there is little doubt that the principal target of Hakluyt's strictures is Thevet, whom Hakluyt met soon after joining the English embassy in Paris in 1583. For this, and their epistemological differences (and personal falling-out), see Lestringant 2004, 254-263, 325-330, 344-346 and 519-521. Other contemporaries shared Hakluyt's disdain for Thevet. See Schlesinger and Stabler

in assembling his work, Hakluyt strove in *The Principal Navigations*, as he had earlier in *Divers Voyages*, to present eyewitness accounts and documentary matter with as little mediation as possible,[65] identifying their origin or author, following the dictum of Ptolemy (*Geography* 1.2)[66] that, as Richard Willes put it, the 'first principle and chiefe ground in all Geographie, as Ptolome saith, is the history of travell, that is, reports made by travellers skilfull in Geometrie and Astronomie', and '*Peregrinationis historia*, that is, true reportes of skilful travailers, as Ptolome writeth, that in such controversies of Geographie must put us out of doubt' (Hakluyt 1589, 613 and 615).[67]

6. *Conclusion: Hakluyt's Labour*

In 1589 Hakluyt referred to his 'laborious travaile' (*4v), and on publishing the first volume of the enlarged edition of *The Principal Navigations* in 1598, he spoke of 'so much traveile and cost',

> what restlesse nights, what painefull dayes, what heat, what cold I have indured; how many long & chargeable iourneys I have traveiled; how many famous libraries I have searched into; what varietie of ancient and moderne writers I have perused; what a number of old records, patents, privileges, letters, &c. I have redeemed from obscuritie. (*4r)

As he 'waded on still farther and farther in the sweet studie of the historie of Cosmographie', Hakluyt's work (or travail) can be understood as a literary reconnaissance, seeking via the reports of credible witnesses a textual revelation of the 'unknowen quarters of the world', and a labour in its own way as demanding as the hardship of travel to 'strange, remote, and farre distant countreys' (*2r).[68]

If Hakluyt was not a traveller himself, and nothing came of his willingness to join an expedition to America expressed in a letter to Walsingham in January 1584 (Taylor 1935, vol. I, 32 and 206),[69] this need not be taken to mean that his work in collecting and publishing 'discoveries and voyages' and that 'kinde of literature' (1589, *2r) was regarded as somehow passive. In the tradition of classical rhetoric, a central component of the Renaissance humanist curriculum, words were themselves acts (and equally deserving of respect), and speech, including its written and printed manifestations, was conceived as a powerful means for the citizen to pursue the active life essential to the well-being of the commonwealth; reading, too, was positively regarded, and undertaken, as an active, goal-oriented pursuit.[70] When in early March 1583, for instance, Walsingham urged Hakluyt to continue his commendable 'study of Cosmographie, and of furthering new discoveries, &c.', he stressed Hakluyt's 'travell in these' would not only be 'to your owne good in private, but to the publike benefite

1986, xxiii and xxxiii-xxxv; Lestringant 1991a, 230-251, and for his reception generally, McLean 2007, 119-123; Lestringant 2021, 505-566.

[65] This is not to say he did not edit his texts. See Helfers 1997, 177-179 and 183-185.

[66] For modern translations, see Stevenson 1932, 26; Berggren and Jones 2000, 59.

[67] These references to Ptolemy are in the treatise on Frobisher and the north-west passage reprinted by Hakluyt from Willes 1577 (where they are at 233r and 235v-236r).

[68] For the idea of 'textual reconnaissance', see Sherman 1995, 151-152. For the association of travel with travail (the two words have common origins), see Legassie 2017, 2-3.

[69] Hakluyt was writing from the embassy in Paris.

[70] See Jardine and Grafton 1990; Jardine and Sherman 1994; Fitzmaurice 2003, 4-9 and 102-111. For rhetoric in Elizabethan England (including Hakluyt's Oxford), see Mack 2002.

of this Realme' (Hakluyt 1600, 181),[71] that Hakluyt's efforts, therefore, had political as well as private value, which Hakluyt echoed when he referred to the labour of compiling *The Principal Navigations* as 'zealously bestowed' for 'the honour and benefit of this Common weale wherein I live' (1598, *4r). Elsewhere Hakluyt wrote that those who chronicled the noble deeds of the discoverers were worthy of 'no less honour, and must be no less esteemed' (Taylor 1935, vol. II, 362).[72]

It is possible in this light to discount religion in shaping Hakluyt's corpus, emphasising instead his classicism and the debt of his intellectual projects to the Aristotelianism studied and taught by him at Oxford, yet Hakluyt's Christianity seems fundamental (if not always explicit) to his work and the light in which he not only read the classics but also formed a cosmography to frame the world and the history of mankind (Sacks 2007, 416-418).[73] If Hakluyt's personal interest in the records of travels, discoveries, trade and settlement overseas was undoubtedly assisted in material terms by his emoluments as a cleric (Lehmberg 1996, 135; Payne 2017, 16-17), it was complementary to the belief, as has been suggested in this article, that knowledge of these discoveries would fulfil God's purpose in revealing the secrets of His Creation and the bringing together of the peoples of the world. It is evident, however, that by 1600 Hakluyt felt his efforts in gathering this material were largely complete, for he signed off the final volume of *The Principal Navigations* by saying that for some time he had realised 'that my profession of divinitie, the care of my family, and other occasions might call and divert me from these kinde of endevours' and 'studies of Cosmographie and forren histories' (*(A)*3v).[74] Although Hakluyt continued to publish and advise on such matters, nothing after 1600 compared to his earlier work in scope or ambition, while from 1602 his prebend at Westminster Abbey added considerably to his income, obligations and standing as a churchman (Payne 2017, 18-20).[75]

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[71] Walsingham's letter to Hakluyt printed here is dated '1582' old style. See also Taylor 1935, vol. I, 196-197.

[72] Translated from the dedication to Raleigh in Hakluyt 1587, ã2r.

[73] For further discussion and varying perspectives, see Wright 1943, 33-56; Zakai 1992, 95-100; Helfers 1997, 168-173; Tuck 1999, 110-111 (but note the documents Tuck cites, nn. 2-3, as by Hakluyt are actually ascribed in Taylor 1935, vol. II, 327 and 339, to the elder Hakluyt); Armitage 2000, 63-85; Boruchoff 2009; Sacks 2010, 21-47; Payne 2017, 1-14 and 21-24.

[74] For the essentially ecclesiastical nature of Hakluyt's career, see Sacks 2007, 427-432.

[75] For Hakluyt's work after 1600, including his duties at Westminster Abbey, see Quinn 1974b, vol. I, 314-331. For his connection with the East India Company (chartered in 1600), see also Payne 2021a.

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Practical Cosmography in Early Modern Iberia
Alonso de Chaves and his *Espejo de Navegantes*[1]

Antonio Sánchez Martínez
Autonomous University of Madrid (<antonio.sanchezm@uam.es>)

Abstract

Ancient cosmography had to adapt to new historical circumstances during the early modern period in Europe, leading to a proliferation of roles and even a sort of identity crisis. This entailed the revival of cosmography as a new and modern science, which, however, was neither unitary nor homogeneous. Cosmography was not associated with a single epistemic community, a certain scholarly profile or a specific corpus of literature, but with different groups and practitioners who produced diverse kinds of documents. Numerous practices emerged, and knowledge circulated in several forms. The article explores so-called practical cosmography in the Iberian world from the early sixteenth century. This will be illustrated not by the classical works of the period (Faleiro, Medina, Cortés, Oliveira) but by the lesser-known figure of the Pilot Major Alonso de Chaves and his nautical encyclopaedia Quatri partitu en cosmographia pratica (c. 1530). Chaves' responsibilities as cosmographer of the Casa de la Contratación in Seville, the subjects and structure of his treatise, the intended audience and the style and language used show that there were substantial differences between the cosmography practised in Seville and Central European cosmography. The characteristics of this cosmography will be interpreted from the perspective of artisanal epistemology.

Keywords: *Artisanal Knowledge, Art of Navigation, Cosmographers, Navigators, Sixteenth Century*

1. *Introduction: Practical and Maritime Cosmography*

The sixteenth century was the golden age of new European cosmography. There are several reasons for this, among them

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the humanist rediscovery of Claudius Ptolemy's *Geography* at the beginning of the fifteenth century in Florence and the discovery of a New World at the end of the same century, but also the application of mathematics to new fields of knowledge such as oceanic navigation and cartography. These historical circumstances went beyond the etymological limits of the word κοσμογραφία, which referred to the 'descripción, traza, y pintura del mundo' (Apiano 1548, 1v).[2] Consequently, cosmography was redefined and established as a new and modern science with fresh challenges, a new discipline that had to integrate the novelty of geographical discoveries into the hegemonic conceptions of classical science. Assembling the pieces of this great puzzle was an immense and multifaceted task. The result was not a completely homogeneous knowledge, but rather a polyphonic and hybrid corpus subject to various epistemological tensions that developed and were manifested in different ways (Lestringant 1991, 162).[3] This article distinguishes between two of the most common ways of doing cosmography in early modern Europe: scholarly and encyclopaedic cosmography on the one hand, and practical and maritime cosmography on the other.[4] The first was a more academic, mathematical and theoretical cosmography that developed in university-learned and humanist environments. The second, more experimental and utilitarian, developed in a maritime environment and required the collaboration of different communities of knowledge with diverse skills and abilities. Both had a strong presence in Europe, and throughout the sixteenth century we find the term cosmography used in both traditions. This article analyses the second of these, namely early modern practical cosmography, in the Iberian Peninsula and in terms of an artisanal and even Zilselian reading.[5] To do so, I will rely on the exceptional and not so well-known case of Alonso de Chaves and his *Quatri partitu en cosmographia pratica y por otro nombre llamado espejo de navegantes*, c. 1537.[6]

It was the cosmographer and Pilot Major Alonso de Chaves who introduced – probably for the first time – the notion of 'practical cosmography' in his *Quatri partitu en cosmographia pratica* when he worked at the Casa de la Contratación in Seville. Thus, practical cosmography emerged mainly in southern Europe, in the principal maritime cities of the Portuguese and Spanish empires, such as Lisbon and Seville, but also in Venice and Dieppe. In these cities, a

[2] (description, tracing and painting of the world). Unless otherwise stated all translations are mine.

[3] Lestringant has called this tension between ancient and modern, theory and practice, old pure mathematics and new applied mathematics, experiment, and authority, direct testimony and scholarship 'the crisis of cosmography'.

[4] In an illuminating article, Adam Mosley argues that the word cosmography – understood as a 'combination of astronomy and geography' – was associated 'with a broad range of things'. Mosley distinguishes between 'cosmographic authorship' and 'cosmographic practice' to classify the different types of cosmographers in early modern Europe. Among the former, he includes authors continuing the Ptolemaic tradition, 'university-trained and pedagogically-active scholars, typically concerned with the study and promotion of mathematics' such as Apianus, but also with the 'encyclopaedic cosmography' of Münster. Among the latter were navigators working with what he calls 'maritime cosmography', or individuals such as Mercator who was a 'courtly' cosmographer (and others such as Ignazio Danti), whom Mosley considers the best example of a cosmographer in the sixteenth century (2009, 427). The notion of practical cosmography that I use in this article is similar to Mosley's notion of maritime cosmography.

[5] The so-called Zilsel thesis contends that modern science emerged around 1600 when the social barriers between artisans and scholars were broken down because of the rise of early modern capitalism. According to this broad argument, collaboration between the two groups was facilitated by intermediate figures that Edgar Zilsel called 'superior artisans'. Perhaps as a consequence of his early death, Zilsel did not develop his thesis by explaining how this interaction took place and by identifying these superior artisans (see Zilsel 1942). After the pioneering work of Zilsel in the 1930s and 1940s, in recent decades, scholarship on the artisanal dimension of knowledge in the early modern period has grown thanks to the work of Raven 2000; Smith 2004; Long 2011; Cormack 2017, among others. A recent study on the Iberian world and artisanal knowledge can be found in Leitão and Sánchez 2017a and 2022.

[6] (Practical Cosmography in four parts otherwise known as Mariners' Mirror).

new class of artisans and practical men emerged, that of oceanic pilots. New institutions of applied cosmography, new cosmographic trades, new cartographic models and a new nautical literature were inaugurated there to meet the needs of navigators. It was in non-university spaces such as the Casa de la Contratación or the Armazéns da Guiné e Índia in Lisbon, that the practical dimension of the new cosmography prompted the development of a maritime cosmography. One of the most original characteristics of this maritime cosmography is precisely that it spread in new scientific institutions. The Casa and the Armazéns constituted new spaces of knowledge characterised by the direct interaction between the different practitioners who worked there, with their different status and social backgrounds, but also with their different systems of knowledge and skills. Following Pamela O. Long's recent contribution to the field of artisanal studies of science, both institutions can be considered as 'trading zones', arenas where there was a mutual and reciprocal influence between artisans (skilled men) and learned individuals, pilots and cosmographers, and the blending of both cultures.[7]

Thus, practical cosmography was the set of tools and knowledge that an ocean navigator needed to know. It was adapted to the needs of navigation and the daily work of navigators, a body of knowledge of various kinds now suited to the experience of pilots. This direct, utilitarian and pragmatic approach to the study of nature offered a new understanding of the cosmos, a new cosmography. We can say that, in a few decades, the οἰκουμένη became *mundus*, a totality, empirically tested by seafarers (see Leitão and Sánchez 2017b, 168-173).[8] The new cosmographic knowledge stemmed from navigators and explorers and took on an experimental dimension. These navigators were the direct witnesses of a new epoch and were to become authoritative voices in the pyramid of knowledge. Thus, between 1488 (when Bartolomeu Dias rounded the Cape of Good Hope and opened up access to the Indian Ocean) and 1522 (when the first voyage round the world was completed), a great cosmographic revolution took place that altered the geographical scheme of antiquity and broke the epistemic inequality between practitioners and theoreticians, artisans and scholars. This revolution brought humanist scholars – mostly geographers, astronomers and mathematicians – as well as navigators into contact (Cosgrove 2001, 95-100; Vogel 2006, 471). Both were obliged to understand and adapt to each other if they were to offer a complete, renewed and reliable image of the cosmos (Dainville 1969; Broc 1986; Besse 2003).

[7] Long defines 'trading zones' as 'arenas in which artisans and other practitioners (trained as apprentices in workshops or in hands-on instruction at, say, construction sites) and learned men (trained in Latin at universities and other institutions) engaged in substantive communication and shared their respective expertise' (2015, 842). As Long highlights, 'trading zones' are an excellent solution to Zilsel's limits in demonstrating collaboration between artisans and scholars (see also Sánchez 2017).

[8] To these ideas should be added, to a lesser extent, the revival of Archimedean mechanics, one of the great achievements of sixteenth-century mathematics.

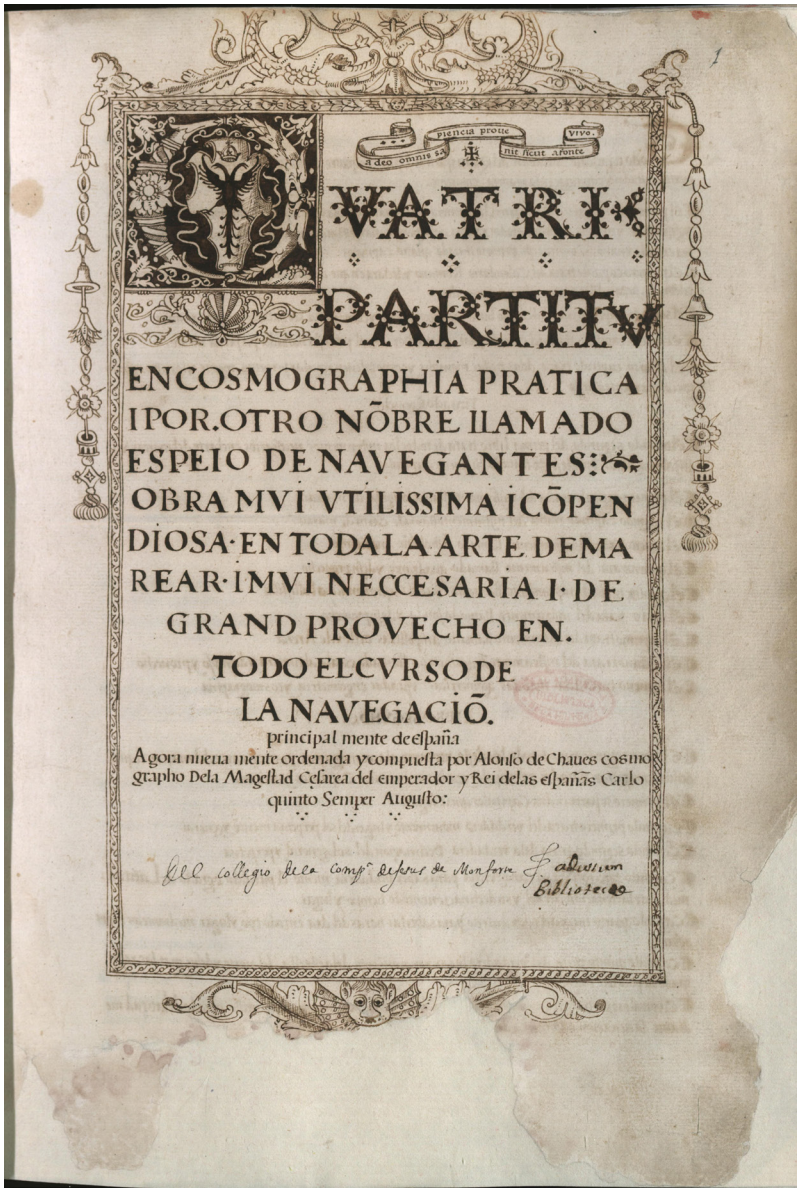


Figure 1 – Manuscript cover of Alonso de Chaves' *Quatri partitu en cosmographia pratica*, c. 1537. It bears the full title of the work and the imperial arms in a typeface that imitates printing. Real Academia de la Historia, 9/2791. Courtesy of the ©Real Academia de la Historia, Madrid, Spain.

The main aim of this article is to contribute to defining this particular form of cosmography, a knowledge linked to the world of navigation and understood as the result of the interaction between two knowledge communities. Some of the main characteristics of this kind of cosmography will be identified in Chaves' *Espejo de Navegantes* (Mariners' Mirror), an encyclopaedia of nautical knowledge that remained unpublished until the last quarter of the twentieth century

(figure 1).[9] I will argue that the practical, maritime-oriented cosmography propounded by Chaves was substantially different from the theoretical and mathematical cosmography that dominated academic and humanist circles in the rest of Europe in the same period. This raises some important questions which need to be addressed. Why use an unpublished text to talk about early modern Iberian cosmography? How widely was that knowledge circulated? How might it have been disseminated even though it was not published? More generally, what does Chaves' *Espejo de Navegantes* teach us about cosmography, and what do we learn about the type of knowledge produced, taught and practised in the Casa de la Contratación? In the following pages I will try to demonstrate that the practical, even artisanal, cosmography illustrated by Chaves was a type of knowledge that circulated through teaching rather than publication, i.e., from the (sometimes tacit) interaction between different practitioners and professionals.[10] I argue that this particular case serves to illustrate, and perhaps to resolve, Zilsel's thesis on the artisanal origins of modern science. If we assume that Zilsel's interpretation of the emergence of modern science is at least as plausible as others, then we can recognise that the maritime cosmography practised in Portugal and Spain during the second half of the fifteenth century onwards may clarify some of the gaps in Zilsel's thesis. Although the Austrian philosopher and sociologist's thesis did not provide sufficient empirical evidence showing the collaboration between artisans and scholars, I believe that the case of Iberian cosmography offers several insights that favour this interpretation. The creation of spaces of exchange or trading zones, the appearance of intermediate professionals, the elaboration of cosmographic devices with different levels of understanding, the mathematisation of nautical problems, the criticism and correction of the authority of the ancients, and the use of the vernacular are some examples that justify this approach.

2. *Biographical Elements*

Who was Alonso de Chaves (c. 1492-1587), and more importantly, why is he a good representative of Iberian cosmography? He was a Spanish cosmographer who worked for much of his life at the Casa de la Contratación de las Indias – a commercial and scientific agency created in Seville in 1503 by the Spanish Crown to manage its colonial empire –, where he held various positions, first during the reign of Charles V, and later under his son Philip II (see Fernández de Navarrete 1851, 16-17). In 1527, he took over the post of Pilot Major on an interim basis, together with the Portuguese cartographer Diogo Ribeiro, to make up for the frequent absences of the Venetian cosmographer Sebastian Cabot, who had held the post since 1518.[11] In April

[9] The detail and beauty of the writing lead us to believe that Chaves' aim was not to leave it unpublished.

[10] In *Secret Science* (2009), Maria Portuondo presents cosmography as a science subordinated to the secret state projects of the monarchy. Thus, cosmography was a useful science for the international strategy of the Spanish monarchs. Personal aspirations which did not serve the needs of the monarchy or were subordinate to the interest of the State had to be abandoned. Without denying this interpretation, the present article suggests that this science was useful to the extent that it solved the new problems of oceanic navigation. These problems could only be solved through the collaboration of individuals belonging to different communities of knowledge and with distinct professional skills. The results of this interaction did not appear in universities nor were they published in cosmography books, but materialised in lessons, voyages, maps and other types of documents, such as pilot exams, questionnaires or even logbooks. In that sense, it is a practical, even artisanal, cosmography. Chaves' text, in the form of a systematically written treaty (and not a loose and untidy document such as those mentioned above), is a wonderful exception.

[11] Archivo General de Indias in Seville (AGI), Patronato, 251, R.22.

1528, Chaves was appointed Pilot and Cosmographer of the Casa.[12] He was thus in charge of teaching pilots to use the astrolabe, the quadrant and the nautical chart, as well as participating in the Casa's most important scientific debates and disputes, such as the one that arose in the late 1530s about the making of nautical charts with multiple scales of latitudes to correct the effects of magnetic declination.[13] It may have been during these years that Chaves wrote the *Espejo de Navegantes* with the intention of renewing nautical knowledge and teaching it to new pilots. Over the years, Chaves became an authoritative voice among the Casa's cosmographers. Perhaps for this reason, and in recognition of his knowledge and experience in matters of cosmography and navigation, in 1557 he was appointed Pilot Major, the most prestigious scientific position in the Sevillian institution.[14] Chaves thus replaced Cabot, who had left for England (see Sandman and Ash 2004), and he held this position for almost thirty years until he was replaced by Rodrigo Zamorano in 1586.[15] During these years, he trained several generations of pilots and kept the Padrón Real (Royal Pattern Chart) up to date, among other tasks.[16] When Zamorano replaced him, Chaves had been linked to the Casa for more than half a century, which made him one of the most emblematic figures of the institution. He was therefore a man of great science and experience – as acknowledged at the time –, that is, a practical cosmographer. Science was represented by geographical, astronomical and mathematical knowledge. Experience embodied the ability to construct navigational instruments and to solve nautical problems. Chaves materialised this hybridisation in his *Espejo de Navegantes*, leaving us with one of the earliest testimonies of sixteenth-century Iberian cosmography, the only one that brought together all the nautical knowledge known up to that time (except for knowledge about shipbuilding). For a similar text with encyclopaedic claims, we would have to wait until 1570, when Fernão de Oliveira wrote his *Ars nautica* in Latin, which he included several pages on shipbuilding. Oliveira's work is a compendium dedicated to navigation, naval warfare and shipbuilding.[17]

In short, Chaves was one of the witnesses and protagonists of the new cosmography. Following Zilsel's terminology, he can be considered, like other renowned figures connected to the Casa, a 'superior artisan', versed in geographical sciences, who wrote in the vernacular for other 'plebeian workers' (pilots), and who, in short, represented the prelude to modern science (1942, 554). As cosmographer and Pilot Major, he updated the new image of the world through the Padrón Real and taught the art of oceanic navigation to dozens, perhaps hundreds, of pilots. He spent most of his working life – some sixty years – in contact with pilots of the Indies, cartographers and other cosmographers. His experience as a cosmographer in this maritime environment was recorded in a text that remained unpublished for centuries. This does not, however, mean that the document is insignificant and that its contents were not circulated, quite the contrary. Chaves' *Espejo de Navegantes* reliably illustrates the particularities of what he called 'practical cosmography'. In other words, it demonstrates a reality that is not to be found in any other nautical publication of the 1530s. This text is the most complete guide to maritime cosmography of the first half of the sixteenth century. It articulates the vision of the

[12] AGI, Contratación, 5784, L.1, 49v; AGI, Indiferente, 421, L.13, 82r(1); AGI, Indiferente, 421, L.13, 82r(2).

[13] On the teachings of Chaves, see AGI, Indiferente, 421, L.13, 295v. On the pilots' participation in the debates on the charts with multiple graduations, see Pulido 1950, 91-96; Sánchez 2013, 243-244.

[14] AGI, Contratación, 5784, L.1, 112; AGI, Contratación, 5784, L.1, 112v; AGI, Indiferente, 1965, L.13, 380v.

[15] AGI, Contratación, 5784, L.3, 40v-41r.

[16] The Padrón Real was a continuously updated cartographic model created in 1508 from which all the nautical charts produced in the Casa de la Contratación and used by the pilots of the Carrera de Indias were extracted. Therefore, all these charts were copies of the Padrón Real. On the Padrón Real, see Sandman 2007; Sánchez 2013; García 2018.

[17] On Oliveira's *Ars nautica* and other nautical treatises, see Contente Domingues 1985.

longest-serving Pilot Major of the Casa de la Contratación, a cosmographer whom the Spanish Crown kept in office until the end of his life. In this work, Chaves takes stock of the different dimensions of maritime life. On the one hand, he highlights the technical dimension, which attributes great importance to the way of organising time, of making mathematical calculations and astronomical observations, of constructing and using different nautical devices, of solving problems related to the determination of latitude and longitude, and so on. On the other hand, he gathers information that corresponds to a more social dimension of the maritime world, such as the hierarchy and functions of seamen, their knowledge, as well as the details of life on board.

3. *Cosmography and the World of Navigation in Seville*

The world of navigation appropriated the term 'cosmography' in early modern Iberia.[18] Thus, in institutions such as the Casa de la Contratación, new professions were created during the first half of the sixteenth century, among them the Pilot Major (1508), the Cosmographer for making nautical charts and instruments for navigation (1523), and the Chair of Cosmography (1552).[19] Similarly, in the Armazéns da Guiné e Índia in Lisbon, the post of Chief Cosmographer had existed since at least 1547 (Teixeira da Mota 1969; Sánchez 2016). These positions articulated the collaboration between the knowledge of university cosmographers and the technical skills of navigators, cartographers and nautical-instrument makers. In most cases, the posts of Pilot Major and Chief Cosmographer – the most important ones – were occupied by 'intermediate professionals' (Leitão and Sánchez 2017a, 203) possessing both practical and theoretical knowledge, men such as Sebastian Cabot, Pedro Nunes, João Baptista Lavanha, Rodrigo Zamorano, Andrés García de Céspedes and Alonso de Chaves (*ibid.*).[20] The responsibilities of these individuals, designated by the Crown, made it possible to connect seemingly distant spheres of knowledge.[21] This type of cosmography had little to do with the cosmography of Apianus, Münster and the humanists of Salamanca such as Francisco Núñez de la Yerba, Pedro Ciruelo, Antonio de Nebrija, Pedro Margallo and Fernán Pérez de Oliva, among others.[22]

This practical cosmography overlapped with the art of navigation.[23] In a maritime environment, the term 'cosmographer' referred to the construction of charts and other navigational instruments, to participation in scientific debates on territorial disputes – as was the

[18] One of the first texts to use the word 'cosmography' in the context of Iberian navigation was Duarte Pacheco Pereira's *Esmeraldo de Situ Orbis* (c. 1508).

[19] Throughout the century, the Spanish Crown would appoint other cosmographers and create new offices related to cosmography, such as the Cosmographer-Chronicler of the Indies, the Cosmographer of New Spain, the Cosmographer of the Philippines, and the Cosmographer of the Navy of the Indies, among others. On this and other scientific offices of the Casa de la Contratación, see Pulido 1950. There is an extensive bibliography on this subject. Among them, see Lamb 1995; Sandman 2001; Portuondo 2009; Sánchez 2013.

[20] The emergence of dozens of intermediate professionals in the Iberian world addresses issues raised in Zilsel as related to the analogous figure of the 'superior artisan', namely, the person who establishes links between artisans and scholars.

[21] The Portuguese Crown laid out the functions of the Chief Cosmographer in detail in the Regimento do Cosmógrafo-Mor (1592) (Regiment of the Chief Cosmographer), an official document containing a set of guidelines to regulate the scientific activities of the Chief Cosmographer. See Teixeira da Mota 1969; Sánchez 2016.

[22] On the humanist cosmography of Salamanca, see Flórez Miguel, García Castillo and Albares Albares 1990.

[23] There is an extensive bibliography in Spanish historiography on the relationship between cosmography and navigation. In this article, I will only cite the references that are directly related to my argument. For more on this subject, see, among others, Víctor Navarro, María Isabel Vicente Maroto, Mariano Esteban Piñeiro and Nicolás García Tapia.

case with the Treaty of Tordesillas and the Moluccas quarrel – and to the training of pilots in non-university environments. In Lisbon and Seville, a cosmographer had several functions. He was an instrument-maker; he reviewed and evaluated the instruments made by other cartographers and nautical instrument-makers; gave his opinion on cosmographic debates, such as the establishment of the meridian and antimeridian of Tordesillas, or the location of a territory; he instructed pilots on everything they needed to know about their craft. Sometimes, these cosmographers wrote treatises on cosmography and the art of navigation, the main addressees being navigators, although not exclusively.[24] Some of these cosmographers had a university education, others had had a military career, most belonged to families of cosmographers, and a few had experience in navigation. The common characteristic was that they did not work in humanist and academic environments. At a remove from classrooms and libraries, their daily work was carried out in nautical spaces and institutions. In this way, Iberian cosmography offered a stable and lasting institutional framework that made it possible to bridge the social – and epistemic – gap that separated scholars and artisans, a gap that, according to Zilsel, had prevented the emergence of modern science before 1600 (Leitão and Sánchez 2017a, 203-204).

3.1 *A New Genre: Nautical Literature in the Vernacular*

The considerable body of navigational treatises written by sixteenth-century Iberian cosmographers represents an extraordinary testimony to this practical and maritime cosmography. These texts responded to the need to provide teachers, students and anyone interested in the art of navigation with easy-to-consult materials that contained all the necessary information on navigation. This extensive literature reflects a systematic effort by Portuguese and Spanish cosmographers to collect and collate the knowledge of a large group of practitioners. The socio-cultural background of these navigators, who constituted the main readership of the treatises, conditioned the form and style of the texts. In general, these treatises were written for use on board ships or during sailing lessons and were intended for navigators, cartographers, instrument makers and other maritime professions. Most of the trades related to maritime culture were carried out by people of modest means and of humble origins who had not had access to formal education and were therefore unfamiliar with Latin.[25] Hence, all these treatises were originally available in the only language the pilots knew, the vernacular. The classical works of astronomy, mathematics, geometry and trigonometry by authors such as Ptolemy, Euclid, Archimedes, Sacrobosco, Peuerbach and Regiomontanus, among others, were also progressively translated into the vernacular by Iberian cosmographers. Thus it was that a new audience, a maritime readership, precipitated the production of a large corpus of scientific-technical literature in the vernacular (Schotte 2019, 18). From this moment on, men who could just about read and write would become familiar with concepts and notions

[24] The word 'cosmography' appeared in the titles of the many treatises on geography and navigation that were written throughout the sixteenth and seventeenth centuries, for example, the aforementioned *Quatri partitu en cosmographia pratica* by Alonso de Chaves, or *Libro de Cosmografía* (1538) and *Suma de Cosmographia* (1561) by Pedro de Medina, *Dos libros de cosmografía* (1556) and *Cosmographia y Geographia* (1570) by Jerónimo Girava, among others. This set of texts, together with the other copious nautical literature of the period, constitutes a very significant corpus on practical cosmography.

[25] The first pages of the Spanish edition of Apianus' *Cosmographia* (1548) refers to the importance of translating these works for the benefit of the common people who did not know Latin but who were governed by the stars, such as shepherds, farmers and sailors.

that had previously circulated among the intellectual elites, and with this knowledge they were able to solve complex, practical problems.

As was the case in fields of knowledge such as agriculture, fortification or even shipbuilding, this nautical literature in the vernacular took the form of manuals and instructional books. Their authors organised the content as a set of rules and instructions that usually ranged from the most general to the most specific. The explanations adapted and clarified the basic theoretical principles of astronomy and mathematics of authors such as Sacrobosco so that they could be used to solve problems which might arise in navigation. In that sense, they had an operational function. The knowledge had to be executable and easily put into practice. To this end, they employed a clear, concise and direct style, sometimes accompanied by images of instruments to facilitate understanding. Their aim was to transmit the knowledge necessary for making an observation or carrying out an operation on board ship without having to study the theoretical foundations of the cosmos. These treatises were thus a response to the requirement to quickly educate a poor and untutored public (Leitão and Sánchez 2017a, 205-206). The genre was probably inaugurated by the Portuguese cosmographer Francisco Faleiro in Seville with his *Tratado de la esfera y del arte de marear* (1535), written in Spanish. It reached its peak around the middle of the century with the works of Pedro de Medina and Martín Cortés.

The task of creating a genre with these characteristics was not an easy one. However, the genre's success was considerable as it spread rapidly throughout Europe in the sixteenth and seventeenth centuries as a result of the translation of works into other European vernacular languages. In 1554, the geographer Nicolas de Nicolay published in Lyon the French version of Pedro de Medina's *Arte de navegar* and in 1561 the alchemist Richard Eden produced the first English edition of Martín Cortés' *Breve compendio de la sphera y del arte de navegar* (1552). Both treatises would be translated and edited into other languages in the following decades. In 1578, the merchant John Frampton was responsible for the publication of the English version of Martín Fernández de Enciso's *Suma de geographia* (1519). Frampton dedicated the translation to the natural philosopher William Gilbert, author of the famous *De magnete* (1600). At the end of the century, Rodrigo Zamorano's *Compendio del arte de navegar* (1581) also appeared in English, this time as an appendix to *Certaine errors in navigation* (1599), in which Edward Wright explains the mathematical foundations of Mercator's famous cartographic projection of 1569 (López Piñero 1986; Basterrechea Moreno 1997). This phenomenon, namely the diffusion of Spanish nautical science, led some historians to assert that 'Europe had learned to navigate from Spanish books' (Guillén Tato 1943).

Among this considerable corpus of nautical literature is Chaves' *Espejo de Navegantes*, the first to use the notion 'practical cosmography' to refer to the nautical science of the sixteenth century. However, while it is possible to situate Chaves' text within this new literary genre, there are also important differences between the *Espejo de Navegantes* and other treatises belonging to the same genre. Despite not being published, Chaves' book is more than an art or regiment of navigation: it is an encyclopaedia for sailors.

3.2 *Chaves'* Espejo de Navegantes*: A Nautical Encyclopaedia*

Unlike the treatises mentioned in the previous section, Chaves' appears to have been preserved but largely ignored until 1895 and remained in manuscript form until 1983, which

seems to have prevented its circulation.[26] However, in 1599, Richard Hakluyt claimed to have had access to a nautical treatise by Chaves, which suggests some (limited) circulation.[27] Despite Hakluyt's words, no translation, not even partial, is known. Nor do we know when Chaves may have written his treatise. It is thought that he may have completed it around 1540 and that it may have been a work produced over several decades.[28] The reasons that prevented its publication are unknown; however, it could be conjectured that, as in other similar cases – such as the *Libro de cosmographia* (written in 1538) by Pedro de Medina and the *Itinerario de navegación* (written in 1575) by Juan Escalante de Mendoza –, it may have been the victim of the rigid control the Crown exercised on this type of text, based on the fear that such expertise could fall into the wrong hands.[29] If this was the case, then the fact that Chaves' treatise was not published does not decrease its value or originality, quite the contrary. As in the case of Escalante, the fact that it was not published makes it even more interesting, illustrating a way of practising and teaching cosmography which had to be kept secret. Alternatively, it may simply be that it was not published because it was incomplete, as the second and third parts of the work indicate. Though unpublished, Chaves' *Quatri partitu* is among the first works written in Spain on the art of navigation, and undoubtedly the first with an encyclopaedic character. In the first decades of the sixteenth century, only Martín Fernández de Enciso's *Suma de geographia* (1519) and the aforementioned Francisco Faleiro's *Tratado de la esfera y del arte de marear* (1535) had been published, in addition to Pedro Nunes' *Tratado da Sphera* on mathematical problems applied to navigation and nautical cartography which appeared in 1537 (as well as the unpublished work by Medina referred to

[26] Alonso de Chaves, *Quatri partitu en cosmographia pratica i por otro no[m]bre llamado Espeio de Navegantes: obra mui vtilissima i co[m]pendiosa en toda la arte de marear i mui neccesaria i de grand provecho en todo el curso de la navegacio[n] principalmente de España*. Real Academia de la Historia (RAH), 9/2791. After a long time in the Monastery of Monforte de Lemos (Lugo, Galicia), Chaves' text passed to the Biblioteca de las Cortes (Library of the Parliament) in the 1830s. Later, in 1850, it passed to the Royal Academy of History in Madrid. Once there, it was the Captain and Perpetual Secretary of the Academy, Cesáreo Fernández Duro, who discovered the existence of this treatise in 1895, publishing only some parts of the work. According to Ursula Lamb, in 1929, Edward Luther Stevenson made an English translation of the fourth part of Chaves' work, which remains in manuscript in the Yale Historical Manuscript Collection (1969, 3). Finally, the full edition of the manuscript was completed in 1983 (Castañeda, Cuesta and Hernández 1983). Fernández de Navarrete reports on another of Chaves' writings, a report requested by the judges of the Casa de la Contratación, entitled *Relación de la orden que observaba en el examen y admisión de pilotos y maestres de la carrera de Indias* (1851, 17).

[27] 'The late Emperor Charles the fift … established not onely a Pilote Maior for the examination of such as sought to take charge of ships in that voyage, but also founded a notable Lecture of the Art of Nauigation, which is read to this day in the Contractation house at Siuil. The readers of which Lecture haue not only carefully taught and instructed the Spanish Mariners by word of mouth, but also haue published sundry exact and worthy treatises concerning Marine causes, for the direction and incouragement of posteritie. The learned works of three of which readers, namely of Alonso de Chauez, of Hieronymo de Chauez, and of Roderigo Zamorano came long ago very happily to my hands' (Hakluyt 1599, 3r). With these words, Hakluyt revealed to the English public some of the most significant aspects of the nautical education system of the Casa de la Contratación. The writer alludes with some admiration to the position of Pilot Major, to the lessons that were taught on the art of navigation, to the training and examination of pilots, and to three of its main exponents: Alonso de Chaves, Jerónimo de Chaves, and Rodrigo Zamorano. Of them, he says that they wrote 'exact and worthy' nautical treatises that would guide and stimulate in posterity. Hakluyt ended his praise by taking pride in the fact that the works of these three cosmographers had happily come into his hands. However, nothing more is known about the texts Hakluyt claims to have read.

[28] Its drafting must have begun before 1520 and must have been completed around 1537 (Carpi 2001, x).

[29] Medina's *Libro de cosmographia* was written in 1538 and published in 1972 by Ursula Lamb. See Medina 1972. Escalante de Mendoza's *Itinerario* was written in 1575 and published in 1985 (see Escalante de Mendoza 1985).

above).[30] Not long after, Pedro de Medina's *Arte de navegar* (1545) and Martín Cortés' *Breve compendio de la sphera* (1551) would be published.

Chaves' *Quatri partitu en cosmographia pratica* is a summary of navigation, cosmography and cartography written in Spanish by a man who was an expert in the field and was aimed primarily at navigators on their way to the Indies. In this treatise, pilots could find all the necessary information on the intricacies of their profession. This was the main function of the literary of the sub-genre 'mariners' mirror', works which detailed the daily activity of pilots as navigators. The word 'mirror' in the literary sphere of the Middle Ages corresponds to a political genre called *speculo* or *speculum*, which took the form of manuals with moralising instructions, generally aimed at the good government of kings and princes. The word was also used as a synonym for encyclopaedia or compendium in the late medieval Christian tradition, the most notable example of which is the *Speculum majus* (thirteenth century) by the Dominican friar Vincent de Beauvais, a collection of all the scientific and historical knowledge of the time. Chaves could have used either of these two traditions to inaugurate a new sub-genre in the field of navigation, long before Anthony Ashley translated the Dutch pilot Lucas Janszoon Waghenaer's nautical atlas *Spieghel der Zeevaerdtal* (1584) into English under the title *The Mariner's Mirrour* in 1588. When Chaves alludes in the title of his work to the notion of 'practical cosmography', he is merely equating it with the art of navigation and the genre of *speculum*, and not with the humanist and theoretical notion of cosmography referred to above. The principal maxim of practical cosmography was, as Chaves himself indicates, to be useful and helpful to navigators.

> Obra muy utilísima y provechosa a todos, muy principalmente a los navegantes que han de tratar en las dichas Indias y en los lugares susodichos. La cual obra, otra semejante y de tanto provecho antes de esta nunca se ha visto ni escrito a este propósito. La cual asimismo ordenó y compuso con sola su industria y trabajo el dicho Alonso de Chaves, cosmógrafo de la majestad cesárea. La cual dicha obra es aprobada por los otros cosmógrafos de su majestad y conforme al voto y parecer de los más y más sabios y experimentados pilotos que navegan y han andado y residido en todas las dichas partes. (RAH, 9/2791, 74r)[31]

Chaves was well aware of the requirements that an individual had to meet to become a good pilot, having examined several dozen applicants over the decades. At a time of change in the history of navigation, where in just a few decades there had been big developments in estimated navigation and oceanic navigation, this may have been the main reason why he decided to write his treatise: nautical knowledge had to be revised and pilots had to be trained in the new knowledge. Being a good cosmographer required understanding pilots' problems and offering them solutions. According to Ursula Lamb, Chaves' text is an ideal document for the training of pilots in the *Carrera de Indias* (the West Indies fleet) and provides didactic material that is

[30] Enciso's *Suma* can be considered the first Spanish manual of geography, especially of the New World, in which questions related to the art of navigation are analysed (see Melón Ruiz de Gordejuela 1950; Fernández de Enciso 1987). Faleiro's *Tratado de la esfera*, unlike Enciso's *Suma*, is not a book of universal geography, but a treatise devoted to the sphere and the art of navigation that devotes special attention to the nautical problem of magnetic variation. Faleiro may have been the first navigational theorist in Seville and his treatise may have served as a model for other later treatises on navigation produced in Iberia (see Gil 2009, 391-392; Collins 2013).

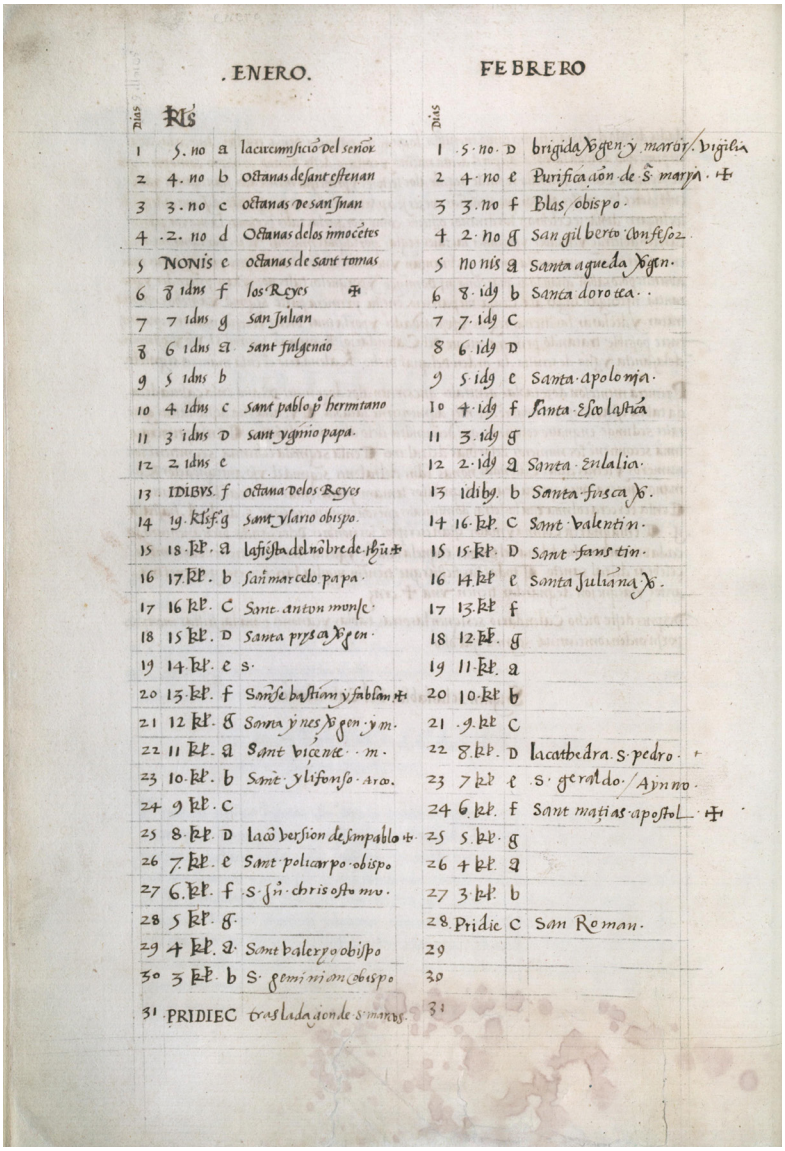
[31] (This work is very useful and profitable to all, especially to navigators who have to deal in the Indies and in the aforementioned places. Another such work, similar and previously useful, has never been seen or written for this purpose. This very same was also compiled and composed by the said Alonso de Chaves, cosmographer of the Caesarean Majesty, with his industry and labour alone. The said work is approved by the other cosmographers of his majesty and in accordance with the vote and opinion of the wisest and most experienced pilots who navigate and have travelled and resided in all the said parts).

halfway between improvisation and rigorous organisation, scientific education and practical training (Lamb 1969, 3-4). The direct and simple style employed by Chaves made his treatise appropriate pedagogical material for pilots. Its classroom materials and problems affecting pilots are organised systematically in a single treatise. It is evident that the work was written by someone who worked continuously in the Casa between the 1520s and the 1580s, and in the most responsible of positions. These decades coincide with those of the greatest scientific productivity of the Casa de la Contratación and represent the golden age of Spanish nautical cartography.

As its title indicates, the *Quatri partitu* is divided into four parts or books, further split into various treatises and chapters. The first book (3r-28v) consists of two parts, one devoted to Christian calendars and the other to a rigorous examination of the instruments necessary for navigation, as well as their use and manufacture. Here Chaves places special emphasis on the nautical chart. The second book (28r-44r) deals with 'todo lo celeste y tocante a la cosmografía y arte de marear' (28r),[32] that is, astronomical knowledge adapted to oceanic navigation. The contents of these first two books are decidedly scientific. The third book (45v-73r) is devoted to the more practical side of navigation and some of its problems, such as the dangers, misfortunes and battles that can occur at sea and how to respond to them. In this third book, Chaves includes a succinct technical dictionary of the nautical jargon then used by Spanish sailors. The fourth and final book (74v-150v) deals with the Indies of the "Mar Océano, sus partes y navegaciones tanto particulares como generales' (74v)[33], which is a *derrotero* (rutter) or nautical guide. It is made up of a set of geographical data necessary to navigate from one place to another across the oceans. In particular, we may argue that this last book together with Chaves' description of the nautical chart in the first book, and the nautical vocabulary in the third book, are the most original and significant parts of the work compared to previous and contemporary treatises such as Enciso's *Suma* (1519) and Faleiro's *Tratado de la esfera* (1535). Overall, Chaves' treatise offers a reliable and comprehensive picture of the world of ocean navigation as it was practiced in Seville in the sixteenth century, as its author touches on each component in the art of navigation. In short, it is an encyclopaedia for sailors containing all the nautical knowledge known to date.

The first part of the first book is composed of four chapters. In them, Chaves offers some basic rules and tables that enable sailors to organise the duration of a voyage and to identify the main fixed and movable feasts through the civil and ecclesiastical calendars (figure 2 and figure 3). The devout Chaves begins his work with this subject because he considered it of vital importance for navigators and discoverers for two reasons. Firstly, because they were absent for a long period 'de los lugares donde se celebran los divinos oficios' (RAH, 9/2791, 4v).[34] Secondly, because the majority of these people were illiterate ('carecen de letras', i.e., unlettered) (*ibid.*). Since a high percentage of pilots had no basic education and therefore could not read and write, they did not know the rules of the Christian calendar. For this reason, Chaves incorporated twelve tables that made it possible for the pilots to know the movable feasts throughout the year in a graphic way. Although navigators must have been familiar with the calendar in one way or another, not all authors devote as much attention to the subject as Chaves does.

[32] (everything celestial and concerning cosmography and the art of seafaring).
[33] (Ocean Sea, its parts and navigation both particular and general).
[34] (from the places where the divine offices are celebrated).



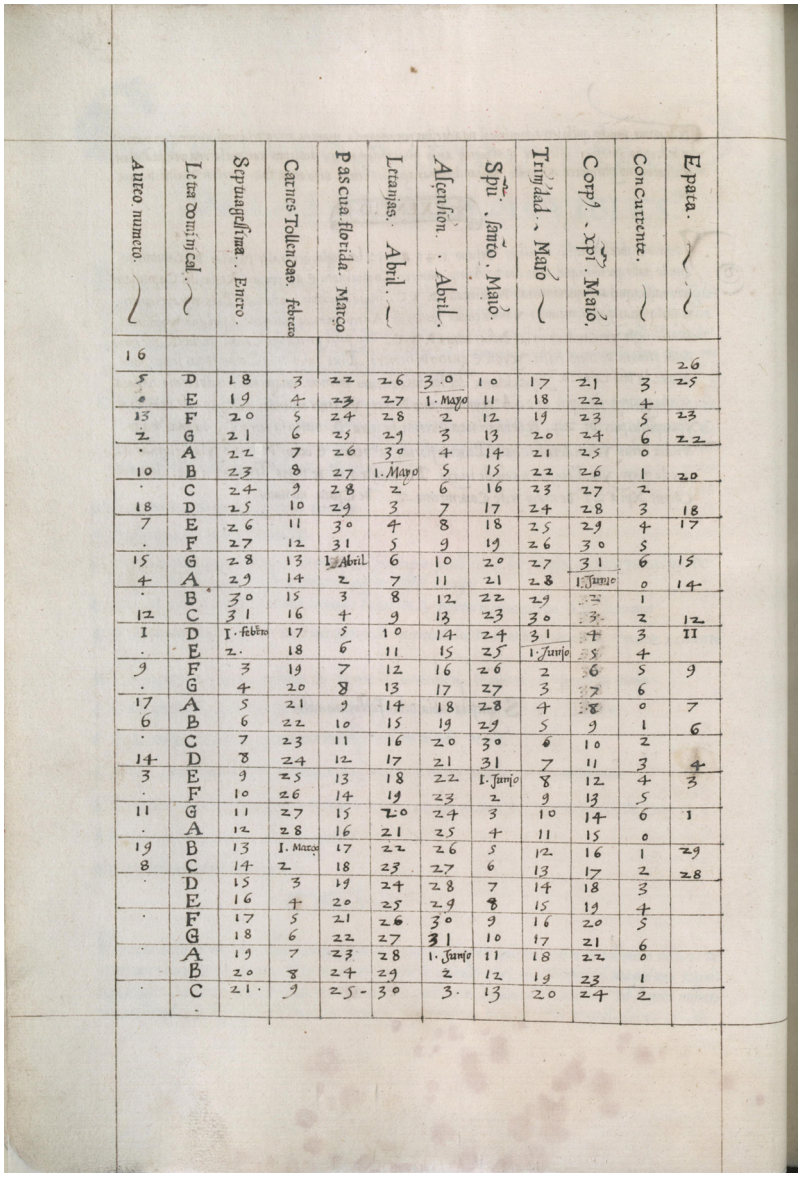
. ENERO.

Dias	Rls		
1	5. no	a	lacuremsficio del señor
2	4. no	b	octanas de sant estenan
3	3. no	c	octanas de san Juan
4	2. no	d	Octanas delos inocentes
5	NONIS	e	octanas de sant tomas
6	8 idus	f	los Reyes
7	7 idus	g	san Julian
8	6 idus	a	sant fulgencio
9	5 idus	b	
10	4 idus	c	sant pablo p.e hermitano
11	3 idus	d	sant yginio papa.
12	2 idus	e	
13	IDIBVS	f	octana delos Reyes
14	19. klis.	g	sant ylario obispo.
15	18. kl.	a	lafiesta del nobre de ihu
16	17. kl.	b	san marcelo papa.
17	16 kl.	c	Sant. anton monje.
18	15 kl.	d	Santa prysca Vgen.
19	14. kl.	e	s.
20	13. kl.	f	Sonse bastian y fabian
21	12 kl.	g	Sonia y nes Vgen. y m.
22	11 kl.	a	Sant vicente. m.
23	10. kl.	b	Sant. ylifonso. Arco.
24	9 kl.	c	
25	8. kl.	d	laco version de sinpablo
26	7 kl.	e	Sant policarpo obispo
27	6. kl.	f	s. Jn. chrisostomo.
28	5 kl.	g	
29	4 kl.	a	Sant valerio obispo
30	3 kl.	b	S. geminian obispo
31	PRIDIE		traslacion de s. marcos.

FEBRERO

Dias			
1	5. no	d	brigida Vgen y marti. Vigilia
2	4. no	e	Purificacion de s. maryn
3	3. no	f	Blas obispo.
4	2. no	g	San gil bereo confesor.
5	nonis	a	Santa agueda Vgen.
6	8. idy	b	Santa dorotea.
7	7. idy	c	
8	6 idy	d	
9	5 idy	e	Santa. Apolonia.
10	4 idy	f	Santa. Esolastica
11	3. idy	g	
12	2. idy	a	Santa. Eulalia.
13	idiby.	b	Santa. fusca y.
14	16. kl.	c	Sant. valentin.
15	15. kl.	d	Sant. fanstin.
16	14 kl.	e	Santa Juliana y.
17	13. kl.	f	
18	12 kl.	g	
19	11. kl.	a	
20	10. kl.	b	
21	9. kl.	c	
22	8. kl.	d	Lacathedra. s. pedro.
23	7 kl.	e	s. geraldo. Aynno.
24	6. kl.	f	Sant matias apostol.
25	5. kl.	g	
26	4 kl.	a	
27	3. kl.	b	
28	Pridie	c	San Roman.
29			
30			
31			

Figure 2 – Alonso de Chaves, *Quatri partitu*, 9r. Calendar tables for the months of January and February. The table is composed of four columns indicating the days of the month; the numbers and letters of the calendas, nonas and idus of the Roman calendar; the seven Sunday letters from A to G; and the names of the saints for each day. Courtesy of the ©Real Academia de la Historia, Madrid, Spain.



Aureo numero	Letra dominical	Septuagesima. Enero.	Carnes Tollendas. febrero	Pascua florida. Março	Letanias. Abril.	Ascension. Abril.	Spu. sancto. Maio.	Trinidad. Maio	Corp. xpi. Maio.	Concurrente.	Epacta.
16											26
5	D	18	3	22	26	30	10	17	21	3	25
0	E	19	4	23	27	1. Mayo	11	18	22	4	
13	F	20	5	24	28	2	12	19	23	5	23
2	G	21	6	25	29	3	13	20	24	6	22
·	A	22	7	26	30	4	14	21	25	0	
10	B	23	8	27	1. Mayo	5	15	22	26	1	20
·	C	24	9	28	2	6	16	23	27	2	
18	D	25	10	29	3	7	17	24	28	3	18
7	E	26	11	30	4	8	18	25	29	4	17
·	F	27	12	31	5	9	19	26	30	5	
15	G	28	13	1. Abril	6	10	20	27	31	6	15
4	A	29	14	2	7	11	21	28	1. Junio	0	14
·	B	30	15	3	8	12	22	29	2	1	
12	C	31	16	4	9	13	23	30	3	2	12
1	D	1. febro	17	5	10	14	24	31	4	3	11
·	E	2	18	6	11	15	25	1. Junio	5	4	
9	F	3	19	7	12	16	26	2	6	5	9
·	G	4	20	8	13	17	27	3	7	6	
17	A	5	21	9	14	18	28	4	8	0	7
6	B	6	22	10	15	19	29	5	9	1	6
·	C	7	23	11	16	20	30	6	10	2	
14	D	8	24	12	17	21	31	7	11	3	4
3	E	9	25	13	18	22	1. Junio	8	12	4	3
·	F	10	26	14	19	23	2	9	13	5	
11	G	11	27	15	20	24	3	10	14	6	1
·	A	12	28	16	21	25	4	11	15	0	
19	B	13	1. Marco	17	22	26	5	12	16	1	29
8	C	14	2	18	23	27	6	13	17	2	28
·	D	15	3	19	24	28	7	14	18	3	
·	E	16	4	20	25	29	8	15	19	4	
·	F	17	5	21	26	30	9	16	20	5	
·	G	18	6	22	27	31	10	17	21	6	
·	A	19	7	23	28	1. Junio	11	18	22	0	
·	B	20	8	24	29	2	12	19	23	1	
·	C	21	9	25	30	3	13	20	24	2	

Figure 3 – Alonso de Chaves, *Quatri partitu*, 4r. Table of movable feasts.
Courtesy of the ©Real Academia de la Historia, Madrid, Spain.

In the second part of the first book, divided into ten chapters, Chaves carefully explains the main nautical instruments used on board, in their order of importance in navigation. The first of these is the compass, intended for the correct orientation of pilots (figure 4). Chaves

states that this instrument should be called the 'guía del marear',[35] as it is 'el más necesario en la navegación … el que nos guía y nos enseña el lugar y parte donde queremos ir y de dónde venimos. Su virtud y fuerza … es divina' (*ibid*.).[36] Here Chaves synthesises the explanations anticipated by João de Lisboa in his *Tratado da Agulha de Marear* (1514), the oldest known text on the compass. The second is the nautical chart of latitudes, essential for identifying the most appropriate course, the distance travelled and the location of the ship. In third, fourth and fifth place respectively, Chaves places the nautical astrolabe, the quadrant ('la perfecta cuarta parte de un astrolabio') (RAH, 9/2791, 19v.)[37] and the cross-staff, indispensable tools for astronomical navigation that allowed the latitude or altitude of the stars (such as the sun and the North Star) to be known in order to 'echar el punto' (know the position) on the chart (figure 5, figure 6, and figure 7).[38] Due to the simplicity of its construction and its easy handling, the cross-staff was a very popular instrument among pilots, even more than the astrolabe and the quadrant. In sixth place, there is the sounding line, consisting of a rope and a ballast (lead weight), which was necessary to know the depths of the sea, especially when navigating in unknown areas.[39] Then, in seventh place, is the hourglass, used to measure courses and routes, i.e. the distance travelled over a period of approximately twenty-four hours, as well as the timing of the watch to handle the sails (RAH, 9/2791, 22r). In eighth place, Chaves writes about the altimetric scale, an instrument of practical geometry similar to a quadrant that was used to calculate the height of a tower, the length of a river or the distance between two points (figure 8).[40] This eighth chapter includes a small treatise on practical geometry where Chaves explains how to determine altitude, latitude, longitude and depth.[41] He ends this first book with a chapter on 'las medidas geométricas usadas en geometría y cosmografía' (mile, league, etc.) (RAH, 9/2791, 27r-28v).[42] The chapters of Chaves' work devoted to nautical instruments constitute the most comprehensive study at that time. Those devoted to the cross-staff and the nautical chart were completely new. No other treatise had provided such a detailed explanation of all the instruments used in ocean navigation.

[35] (sea guide).

[36] (most necessary in navigation … the one that guides us and shows us the place and part where we want to go and where we come from. Its virtue and strength … are divine).

[37] (the perfect fourth part of an astrolabe).

[38] The most common Spanish word used in sixteenth-century nautical circles to refer to the cross-staff is 'ballestilla', although it was also called 'báculo astronómico' and 'báculo mensorio'. It seems that the first time this word was used in a nautical treatise was in the work of Chaves. It would later appear in *Arte de navegar* (1545) by Pedro de Medina and in *Breve compendio de la sphera* (1551) by Martín Cortés (see Aguiar 2019, 9).

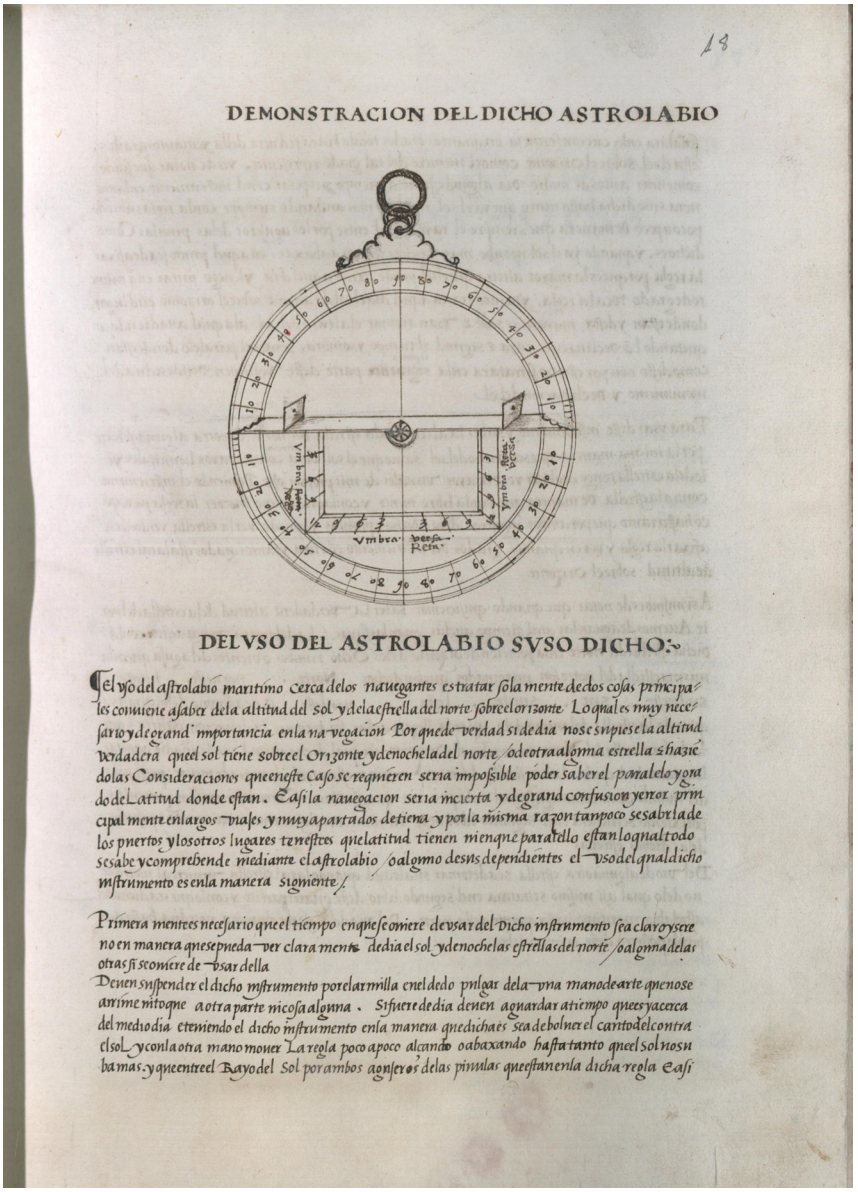
[39] The sounding line, writes Chaves, is a very useful tool in navigation, for 'nos descubre las celadas y engaños encubiertos que muchas veces nos roban las haciendas y las vidas' (RAH, 9/2791, 22v) (it uncovers the covert tricks and deceptions that often rob us of our estates and lives).

[40] Some of the instruments referred to in Chaves' *Espejo de Navegantes* have been described previously in other studies. See Davies 2003; Aguiar 2014 and 2019. Davies has compared the Chaves instruments with the instruments depicted in Diogo Ribeiro's Vatican planisphere of 1529. Aguiar has emphasised the Arabic provenance of these instruments.

[41] Chaves makes an interesting distinction between theoretical geometry and practical geometry. The first is related only to understanding, 'cuando especulamos y componemos alguna cosa y su cantidad y proporción' (when we speculate and compose something including its quantity and proportion). The second 'es cuando de alguna cosa no sabemos su cantidad y la queremos saber midiéndola con alguna cosa sensible' (RAH, 9/2791, 24v) (is when we do not know the quantity of something, and we want to know it by measuring it with something sensitive).

[42] (the geometric measures used in geometry and cosmography).

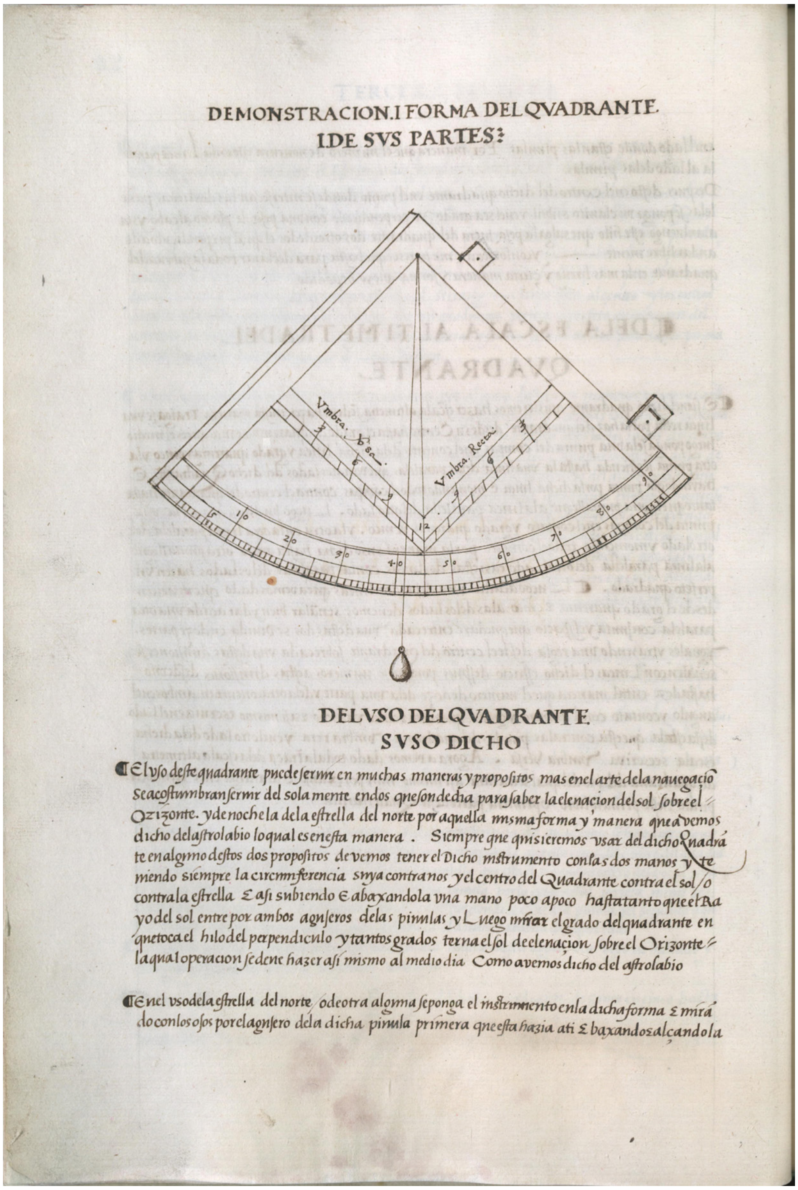
Figure 4 – Alonso de Chaves, *Quatri partitu*, 12r. Wind rose with 32 courses and the fleur-de-lis pointing north. Courtesy of the ©Real Academia de la Historia, Madrid, Spain.



DEMONSTRACION DEL DICHO ASTROLABIO

DELVSO DEL ASTROLABIO SVSO DICHO:

Figure 5 – Alonso de Chaves, *Quatri partitu*, 18v. Nautical astrolabe.
Courtesy of the ©Real Academia de la Historia, Madrid, Spain.

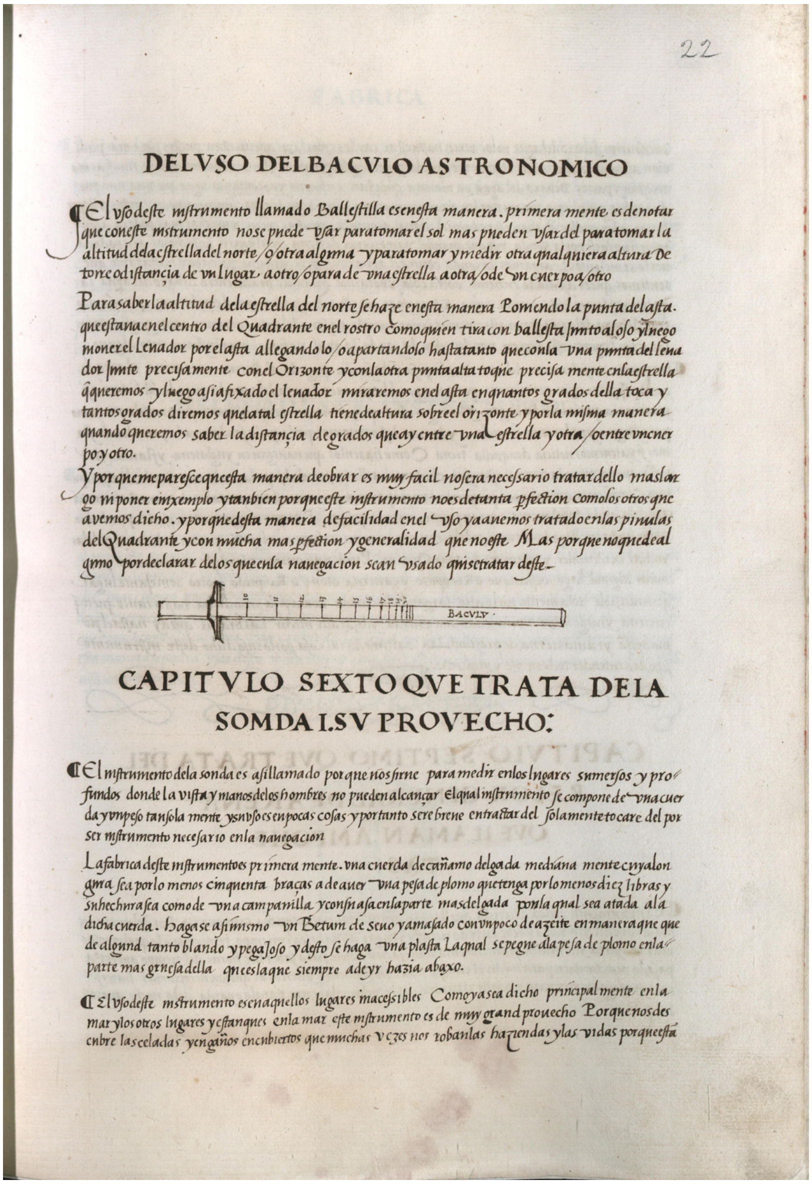

DEMONSTRACION. I FORMA DEL QVADRANTE. I DE SVS PARTES:

DEL VSO DEL QVADRANTE SVSO DICHO

¶ El uso deste quadrante puede servir en muchas maneras y propositos mas en el arte de la navegaciõ se acostumbran servir del solamente en dos que son de dia para saber la elevacion del sol sobre el Orizonte. y de noche la de la estrella del norte por aquella misma forma y manera que avemos dicho del astrolabio lo qual es en esta manera. Siempre que quisieremos usar del dicho quadrãte en alguno destos dos propositos devemos tener el dicho instrumento con las dos manos y teniendo siempre la circunferencia suya contra nos y el centro del Quadrante contra el sol/o contra la estrella & asi subiendo e abaxandola una mano poco a poco hasta tanto que el Rayo del sol entre por ambos agujeros de las pinulas y luego mirar el grado del quadrante en que toca el hilo del perpendiculo y tantos grados terna el sol de elevacion sobre el Orizonte la qual operacion se deve hazer asi mismo al medio dia como avemos dicho del astrolabio

¶ En el uso de la estrella del norte/o de otra alguna se ponga el instrumento en la dicha forma & mirãdo con los ojos por el agujero de la dicha pinula primera que esta hazia ati & baxando & alçandola

Figure 6 – Alonso de Chaves, *Quatri partitu*, 20r. Quadrant.
Courtesy of the ©Real Academia de la Historia, Madrid, Spain.


22

DEL VSO DEL BACVLO ASTRONOMICO

El vso deste instrumento llamado Ballestilla es en esta manera. primera mente es de notar que con este instrumento no se puede vsar para tomar el sol mas pueden vsar del para tomar la altitud de la estrella del norte / o otra alguna y para tomar y medir otra qualquiera altura de torre o distançia de vn lugar a otro / o para de vna estrella a otra / o de vn cuerpo a otro

Para saber la altitud de la estrella del norte se haze en esta manera Poniendo la punta del asta que esta naenel centro del Quadrante en el rostro como quien tira con ballesta junto al ojo y luego mouer el Lenador por el asta allegandolo / o apartandolo hasta tanto que con la vna punta del lenador junte precisamente con el Orizonte y con la otra punta alta toque precisa mente en la estrella que queremos y luego asi afixado el lenador miraremos en el asta en quantos grados della toca y tantos grados diremos que la tal estrella tiene de altura sobre el orizonte y por la misma manera quando queremos saber la distançia de grados que ay entre vna estrella y otra / o entre vn cuerpo y otro.

Y porque me paresce que esta manera de obrar es muy facil no sera necessario tratar dello mas largo ni poner emxemplo y tanbien porque este instrumento no es de tanta perfection como los otros que avemos dicho. y porque desta manera de facilidad en el vso ya auemos tratado en las pinulas del Quadrante y con mucha mas perfection y generalidad que no este Mas porque no quede alguno por declarar de los que en la nauegacion se an vsado quise tratar deste.

CAPITVLO SEXTO QVE TRATA DE LA SOMDA I SV PROVECHO:

El instrumento de la sonda es asi llamado porque nos sirue para medir en los lugares sumersos y profundos donde la vista y manos de los hombres no pueden alcançar El qual instrumento se compone de vna cuerda y vn peso tan sola mente y su vso es en pocas cosas y por tanto sere breue en tractar del solamente tocare del por ser instrumento necesario en la nauegacion

La fabrica deste instrumento es primera mente. vna cuerda de cañamo delgada mediana mente cuya longura sea por lo menos cinquenta braças a de auer vna pesa de plomo que tenga por lo menos diez libras y su hechura sea como de vna campanilla y con su asa en la parte mas delgada por la qual sea atada a la dicha cuerda. hagase asimismo vn Betum de seuo y amasado con vn poco de azeite en manera que que de alguno tanto blando y pegajoso y desto se haga vna plasta La qual se pegue a la pesa de plomo en la parte mas gruesa della que es la que siempre a de yr hazia abaxo.

El vso deste instrumento es en aquellos lugares inacessibles Como ya se a dicho principal mente en la mar y los otros lugares y estanques en la mar este instrumento es de muy grand prouecho Porque nos descubre las celadas y engaños encubiertos que muchas vezes nos roban las haziendas y las vidas porque esta

Figure 7 – Alonso de Chaves, *Quatri partitu*, 22v. Cross-staff.
Courtesy of the ©Real Academia de la Historia, Madrid, Spain.

Figure 8 – Alonso de Chaves, *Quatri Partitu*, 23r. Altimetric scale.
Courtesy of the ©Real Academia de la Historia, Madrid, Spain.

The most original part of this section is the one in which Chaves describes in considerable detail the second most relevant instrument of navigation, the nautical chart. It is one of the oldest descriptions known of the construction and use of this instrument, for which he, unfortunately, does not provide any images, unlike the other nautical instruments described.[43] No previous nautical treatise had devoted so much attention to the nautical chart, not even Faleiro's *Tratado de la esfera* (1535), which does not contain a single chapter on this nautical instrument. Later, other cosmographers such as Medina and Cortés would dedicate entire chapters to the nautical chart.[44] Chaves begins the second chapter by alluding to the different virtues of the chart's orientation and location. The nautical chart, Chaves states, shows 'lo que hemos andado (navegado), y lo que nos queda por andar hasta llegar al lugar que queremos, y […] nos muestra la distancia que hay de un lugar a otro, y la situación, y posición, y caminos que todos los lugares marinos y terrestres tienen entre sí' (RAH, 9/2791, 14v).[45] Chaves goes on to praise the capacity for synthesis that the representation permits, thus enabling the navigator to survey and visualise the space around him (Latour 1985, 21).

> Ella [la carta náutica] nos representa los límites y términos por donde el mar se aparta de la tierra, y cuanta sea la distancia y grandeza de cada una de ellas; y, asimismo, nos muestra en los límites de mar y tierra la verdadera descripción y los verdaderos lugares y formas de todas sus particularidades. Es a saber, de todos sus puertos, bahías y senos, ríos y promontorios y cabos, y también nos representa los caminos y vías que hay de las unas partes a las otras, y cada una de ellas con todas. Finalmente, la carta de marear es así como un espejo, en la cual se nos representa la imagen del mundo por ausencia suya de él, y nos da a entender por su traza, escritura y pintura, la misma traza, semejanza o posición que el mundo guarda consigo mismo. Y así, por este instrumento, en breve cantidad o espacio, comprendemos todo lo que por otras vías no podríamos con muy grandísimos volúmenes de libros y escrituras. Y tal instrumento hallaron los sabios antiguos ser el más cómodo y provechoso para la navegación, y para representarnos en breve figura lo que no se puede dar a entender por muchas palabras. (RAH, 9/2791, 14v)[46]

According to Chaves, nautical charts could be constructed in the form of a globe or of a 'carta plana cuadrangular'.[47] The former, in spite of their conformity – 'porque es la misma figura que lo figurado'–,[48] were not used in navigation, because, according to Chaves, navigators were not learned people and did not understand 'la teórica ni la razón, ni proporción que la tierra

[43] Chaves describes the making and use of all the other nautical instruments, which will not be analysed in this article. Similar explanations will appear later in other treatises, such as those of Cortés and Medina.

[44] See chapter VII and XIII of book three of Medina's *Arte de navegar*; and chapter II of the third part of the Cortés' *Breve compendio de la sphere*.

[45] (what we have walked [sailed], and what we have yet to walk until we reach the place we want, and … shows us the distance from one place to another, and the situation, and position, and ways that all marine and terrestrial places have between them).

[46] (It [the nautical chart] shows us the limits and boundaries where the sea departs from the land, and how long are the distances and the extent of each of them; and it also shows us at the limits of sea and land the true description and the exact positions and shapes of all their features. Those being, all of their harbours, bays, inlets and rivers, promontories and capes, and also the roads and ways from one part to the other and from each of them with all. Finally, the nautical chart is thus like a mirror, in which the image of the world is represented to us, and gives us to understand by its outlines, writing and colouring, the same outline, likeness or position that the world itself has. Thus, by this instrument, needing few in number and little space, we understand everything that we could not by other means do with very large volumes of books and scriptures. In addition, this instrument was found by the wise men of old to be the most convenient and useful for navigation, and for representing to us in illustrated form what cannot be understood by many words).

[47] (quadrangular flat chart).

[48] (because it is the same figure as the figurative).

tiene con el cielo' (*ibid*.).[49] Thus, 'el instrumento más usado en la navegación'[50] were charts '(en forma plana cuadrangular, como una tabla y por tanto es dicha mapamundi, que quiere decir manteles en que está labrada y tejida la figura del mundo' (*ibid*.).[51] These were, in short, nautical charts drawn according to magnetic bearings and observed latitudes, that is, nautical charts of latitudes. Chaves explains carefully how these charts were constructed:

Es la traza de la dicha carta en principio descrito, un círculo mayor que representa nuestro hemisferio, y aquel divido en treinta y dos puntos equidistantes entre sí, y todos a un centro. Después de esto, tiradas las líneas rectas que procedan de cada uno de los dichos puntos a todos los otros, y del centro a todos ellos, y así quedarán divisos cada uno de ellos con treinta y dos líneas, con las cuales todos los dichos puntos son comunicados los unos con los otros, y el centro con todos ellos. Todas las cuales las dichas líneas en común acostumbran diferenciar en tres colores: negras, verdes y coloradas. Por esta manera las primeras ocho que se cruzan todas entre sí, sobre cada una de los dichos puntos, son negras, y éstas son llamadas los ocho vientos principales. Luego entre medias de éstos, otras ocho líneas verdes que son dichas medios vientos, y así hacen dieciséis luego intermedias de todas estas otras dieciséis de colorado, que son dichas cuartas. Y así es cavado todo el lineamiento de dicha carta que en común se dice *arrumbado*. (RAH, 9/2791, 14v-14r)[52]

After drawing the rhumb lines and the network of meridians and parallels, the division into 360º of longitude and 90º of latitude was drawn. The equatorial line, the tropics and the polar circles were then drawn.[53] Once the geometry of the chart had been designed, Chaves explains in detail the next and final step in the construction of a nautical chart, namely, how the earth was represented on it:

Queriendo dar principio a la descripción, se tomará … un punto muy notorio, así como promontorio, o cabo, o río principal, del cual se debe notar primeramente la vera latitud que tiene, y tomando de la carta un paralelo que pase puntualmente por semejante latitud … se dé un punto … y allí formará la figura de tal cabo o río … Después de esto, buscará … otro punto muy notorio, y no muy apartado del primero, del cual se debe notar su latitud y tomar otro tal paralelo en la carta. Luego mirar en qué longitud o distancia y por qué viento o rumbo de la carta [está con respecto al primer punto] … Y de esta manera se puede ir procediendo hasta acabar la carta. (RAH, 9/2791, 15v)[54]

[49] (the theory nor the reason, nor the proportion that the earth has with the sky).

[50] (the instrument[s] most used in navigation).

[51] (in a flat quadrangular form, like a table and therefore called mapamundi, which means tablecloths on which the figure of the world is carved and woven).

[52] (The outline of the said chart as described above is a great circle representing our hemisphere, and one that is divided into thirty-two points equidistant from each other, and all to the centre. After this, the straight lines proceeding from each of the said points to all the others, and from the centre to all of them, and thus each of them will be divided into thirty-two lines, by which all these points are connected to each other, and the centre to all of them. All of which, these lines in common, are usually differentiated in three colours: black, green and red. In this way, the first eight, which all cross each other, on each of the said points, are black, and these are called the eight principal winds. Then, in between these, eight other green lines which are said half-winds, and so they make sixteen, then intervals of all these other sixteen of red, which are said quarters. And so is carved out the whole outline of the said chart, which is commonly said to have been *arrumbado* [(tracing courses on the chart]).

[53] Despite Chaves' early explanations of the nautical chart – traditionally considered as a map or as a cartographic representation –, the fact is that the construction and nature of this nautical instrument remained unclear until very recently. The main function of the chart is to establish the location of the ship, not to represent the world. In other words, it is the accuracy of the geometric grid based on latitudes that is important, not the geographical contours of a territory (see Gaspar and Leitão 2018 and 2019).

[54] (Wanting to begin the description, he will take … a very visible and recognisable point, like a promontory, or cape, or main river, of which he must first note the true latitude it has, and then taking from the chart a parallel that passes punctually through such a latitude … he will give a point … and there he will form the figure of such

Where the cartographer's work ended, the pilot's work began. That is why Chaves also explains how a nautical chart of latitudes was to be used, bearing in mind that its principal function in the field of astronomical navigation was to help the pilot to locate his ship in the middle of the ocean. In other words, it was about knowing the position of the ship on the chart by observing the meridian height of the sun during the day and the height of the Pole Star at night. To do this, it was necessary, writes Chaves, to have 'dos compases de un tamaño cuya grandeza no exceda a un palmo'.[55] In addition, he adds, 'deben ser perfectos y de amoroso juego en abrir y cerrar' (RAH, 9/2791, 15r).[56] We know that charts of latitudes were constructed in the Iberian world as early – if not earlier – as 1502, the date of construction of the so-called Cantino planisphere, the first known chart with this geometry. However, not since the introduction of astronomical methods in navigation in the mid-fifteenth century had anyone explained how to use a chart based on observed latitudes. In short, these pages devoted to the nautical chart constitute a brief treatise on the cartography of latitudes and reveal the importance of nautical cartography for practical cosmography.

The second book is devoted to the art and science of astronomical navigation. Of the five treatises listed in the index, only two, the first and the last, were completed by Chaves.[57] The first is devoted to the movements of the main celestial bodies used as a reference in navigation, with special mention of the sun and the use of the tables of solar declinations (figure 9).[58] Chaves, however, was not the first to write on this subject. Beyond the various references to the use of astronomy in navigation from 1460 onwards, it is in the so-called anonymous nautical guides of Evora and Munich, the *Regimento do astrolábio e do quadrante* (c. 1509) and the *Regimento da declinação do Sol* (c. 1517), that the procedures for finding latitude are first explained (Albuquerque 1965). The more original fifth and last treatise deals with the natural signs or signals (rain, thunder, lightning, birds, fish, sea plants, etc.) as natural indicators that navigators had to interpret through observation and experience, two essential elements of practical cosmography. The correct reading of these signs allowed pilots to both predict meteorological phenomena and know the distance still to be covered between, for example, the sighting of a certain seaweed and a specific point on the coast. It is one of the earliest extant accounts of the role of signals in navigation. Compelling accounts of these signs would later appear during the voyages on the route of the Manila Galleon (Bernabéu 2013). As Chaves reminds us towards the end of the third book, 'en este arte de la mar, la experiencia es más maestra y mejor que la teórica' (RAH, 9/2791, 68r).[59]

a cape or river … After this, he will look for … another very noticeable point, and not very far from the first, of which its latitude must be noted and another such parallel taken on the chart. Then, he looks at what longitude or distance and by what wind or course of the chart [it is at with respect to the first point] … In this way one can proceed until the chart is finished).

[55] (two compasses of a size not exceeding a span).

[56] (they must be perfect and a joy in opening and closing).

[57] The other three treatises of the second book would be dedicated to the conjunctions, oppositions and quadratures of the sun and the moon; to the eclipses that took place between 1532 and 1569; and to the division of climates and parallels.

[58] Of the nine chapters of this first treatise, the first four have survived. The others would have been devoted to the Pole Star and other fixed stars.

[59] (in this art of the sea, experience is more masterly and better than theory).

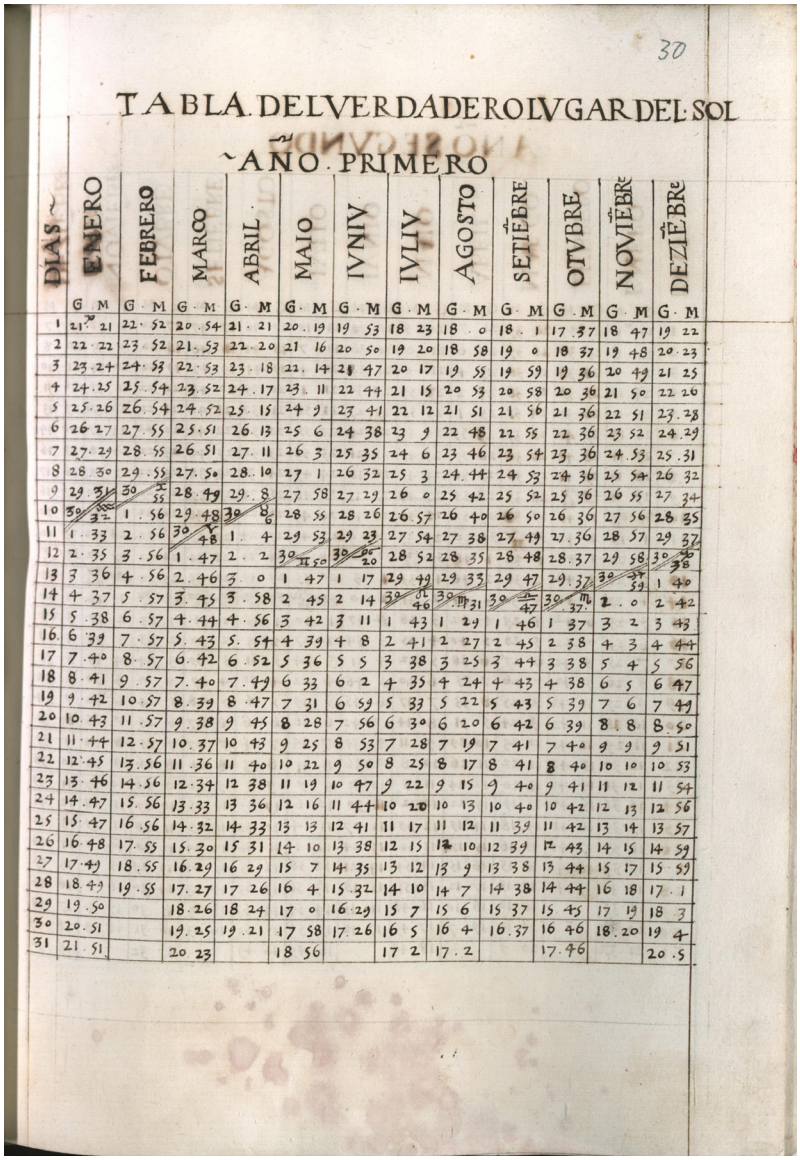


Figure 9 – Alonso de Chaves, *Quatri partitu*, 30v. Table of solar declinations.
Courtesy of the © Real Academia de la Historia, Madrid, Spain.

The third book of the *Quatri partitu*, also incomplete, is composed of three treatises, of which the second and third have survived.[60] Its principal subject is the work of navigation, namely all aspects of the life of the seafarer on board ship. The first of these contains information on the

[60] The first treatise was to be devoted to 'todo lo teórico y práctico tocante a la aguja de marear' (RAH, 9/2791, 2v) (all that is theoretical and practical concerning the seafaring needle).

effects of the moon on the tides, as well as on the tides and sea currents. Knowing when the tides occur makes it possible to predict the behaviour of the oceans and facilitates the organisation of trans-oceanic voyages. The second is devoted to Spanish vessels, especially the 200-barrel *nao* (ships), as well as to 'los lenguajes y maneras de hablar que usan los navegantes' (RAH, 9/2791, 61v-62r):[61] the author provides a sixteenth-century Spanish nautical dictionary (see Woodbridge 1951; Carpi 2001; García-Macho 2007). This dictionary would later be expanded by Diego García de Palacio who, at the end of his *Instrucción náutica* (1587), incorporated an extensive vocabulary on the art of navigation. Surprisingly, Chaves does not devote a single page to shipbuilding.[62] The first texts on this subject were written by the Portuguese friar Fernão de Oliveira – *Ars nautica* (c. 1570) and *Livro da fabrica das naos* (c. 1580) – and later (1587) by the aforementioned García de Palacio. In addition, Chaves offers information about maritime culture and life on board the first ships of the *Carrera de Indias* – the maritime and commercial network that existed between Spain and its colonies (especially in America) from the early years of the sixteenth century –, including details of the trades of the some fifty men who made up the crews, in what was a very well-organised and hierarchical world of navigation. It stretched from the master, the boatswain and the pilot to the cabin boys and the pages, as well as the scribes, carpenters and *buzones* (divers), among many others.[63] The cosmographer attaches particular importance to the skills of the pilot, especially in adverse weather conditions. He also devotes a few pages to provisions, both organic and inorganic. It was necessary to have non-perishable food to satisfy the navigators' nutritional requirements and thus avoid the dreaded scurvy, but also sufficient weapons and ammunition, should there be call to use them. According to Chaves' description, the ship resembled a big machine whose correct functioning depended on the collaboration and harmony of all its component parts. Nothing was to break this harmony, so the entertainment and distractions of the sailors were controlled, which is why, Chaves reminds us, the presence of prostitutes on board was not permitted.[64] Chaves ends this third part with a masterly lesson in military strategy on the art of war at sea. Apart from Oliveira's *Arte da Guerra do Mar* (1555), published a few years later, no other treatise of the period provides such information.

The fourth and last book is, as already mentioned, a nautical *derrotero* (rutter), the 'main' book of the *Espejo de Navegantes* according to Chaves, which he refers to as a practical and even 'modern' cosmography.[65] It is both a notebook that describes the maritime route that a pilot must follow to sail across the Atlantic between Spain and America and a description of all known lands, with their latitudes, from Florida to the Rio de la Plata and Peru. Chaves' rutter, like others that would appear throughout the century, technically sets out the quickest and safest way to go from the Barra de Sanlúcar de Barrameda (Cádiz) to the Indies, following the main islands, capes, coasts, ports and other geographical features. Long-distance voyages demanded and required a text, a cartographic representation of the earth in prose, both because of the dimensions of the enterprise itself and because of the need

[61] (the languages and manners of speech used by sailors).

[62] In Chaves' favour, it must be said that shipbuilding was not strictly speaking part of a pilot's remit. It was a different professional field.

[63] To underline the importance of the pilot, Chaves states that he is to the ship 'como el ánima en el cuerpo humano' (RAH, 9/2791, 63v) (like the soul in the human body).

[64] Before departure, the captain was to make a final examination and 'no consentir que vaya alguna mujer pública en la nao' (RAH, 9/2791, 65r) (not allow any public woman to go on board).

[65] By 'modern' Chaves may have meant both new (as opposed to old) and adapted to ocean navigation (RAH, 9/2791, 74r).

to standardise and regulate a route. It is, in short, the perfect complement to the nautical instruments described by Chaves, especially the nautical charts. This type of itinerary not only served to guide pilots and train navigators, but also to correct and improve the Padrón Real, the Casa's most important cosmographic artefact. Lamb considers this fourth part to be the earliest preserved copy relating to the Padrón Real (Lamb 1969).[66] She maintains that Chaves' description retains some parallels with the Padrón since, according to her, the cosmographer used this section to examine the pilots and to correct the charts made at the Casa before the visit of the licentiate Suárez de Carvajal in 1540. This was the year when all charts were ordered to be made according to the Padrón. Lamb suggests that for this reason the contents may well have been modified after Suárez de Carvajal's inspection, which would explain the non-publication of the work (Lamb 1969, 6). Whatever the case, Chaves' *Espejo de Navegantes* presents one of the many facets of early modern European cosmography in general, and at the same time, illustrates in detail each aspect of Spanish maritime culture, a truly practical and maritime cosmography.

4. *Conclusion*

In an Iberian context, we must think of cosmography as practical and even artisanal (although not exclusively); a cosmography built around nautical knowledge accumulated by navigators over decades of experience. It was a practical cosmography insofar as it collected together all the technical and scientific problems related to ocean navigation with a purely pragmatic and profitable purpose, to facilitate the lives of pilots and to make navigation safe and lucrative. In other words, cosmography was a science applied to the needs of navigation and, in that sense, it was a mirror for mariners. It was also an artisanal cosmography insofar as it was produced through social and epistemic interaction – ordered by the Iberian crowns – between different communities of knowledge, namely pilots and cosmographers, but also cartographers, mathematicians and astronomers in new institutional frameworks. This cosmography was necessarily different from scholarly and theoretical cosmography, both mathematical and descriptive, that circulated in the universities and humanist circles of the rest of Europe through lavish books written in Latin. The maritime context (eminently experimental), the geopolitical dimension of long-distance voyages (which was conducive to a certain secrecy) and the people involved in this enterprise – often poor and illiterate seafarers – conditioned the type of cosmography that had to be produced and the way in which this knowledge circulated, even in limited ways. This artisanal cosmography circulated through teaching, through the experience of pilots on ocean routes, and through the interaction between pilots and cosmographers in spaces of exchange as much as of publication. Chaves' compendium, as well as the Padrón Real, are excellent examples of cosmographic devices that are part of this practical cosmography and its alternative forms of circulation. Both were produced in a decisive context of the development, implementation and expansion of the maritime routes to the Indies. Improving conditions on these routes was the monarchy's foremost objective. Everything else was secondary and even dangerous (especially in the case of the publication of confidential information). For this reason, the main task of a cosmographer like Chaves was not to write books on cosmography but to train pilots and check that the nautical instruments manufactured at the Casa de la Contratación were suitable

[66] Recently, José María García Redondo has reinforced this idea by considering this book to be an extract from the Padrón Real (García 2018, 88-97).

for navigation. Even so, he wanted at least once in his lifetime to collect everything he knew and everything he taught in a single volume, in the most complete nautical encyclopaedia of his time, a reference work on maritime affairs. Chaves was convinced of the usefulness of this knowledge for navigators and even for other pilot majors and cosmographers, as well as for kings and princes or other interested readers. However, and despite the detail and beauty of the writing – which would seem to suggest Chaves' desire to publish his treatise –, his *Espejo de Navegantes* never went to press. We do not know why. What we do know is that its contents did circulate in the classrooms of the Casa de la Contratación, guiding hundreds of pilots, and it quite probably also circulated in the courts of other European powers through isolated cases of scientific espionage, as Hakluyt's case seems to suggest.

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Oronce Fine and *L'esphere du monde proprement dite Cosmographie* (1549 and 1551)

Tom Conley
Harvard University (<tconley@fas.harvard.edu>)

Abstract

The article explores tensions between cosmography and topography in maps and writings of Oronce Fine (1492-1555). Editor and illustrator of two editions of *De sphaera* of Johannes Sacrobosco (1517 and 1527), author of *De sphaera mundi* (1542), Fine composed treatises of cosmography and mathematics in French. Affiliating with typographer-publisher Michel de Vasconsan, he published a vernacular edition titled *L'esphere du monde.* Headed by a poem celebrating the virtue of mathematics, the work is a point of reference in both the history of treatises on cosmography and the history of the illustrated book. The 1551 edition of *L'esphere du monde* transcribes an ornate manuscript of the same title that Fine presented to Henri II in 1549. Close reading of the two documents reveals that in their progression they tilt away from cosmography to geography, and that the French nation and its provinces become increasingly manifest. In the manuscript the monarch is reminded of the extent of his kingdom, while in the printed text *L'esphere* is addressed to a broader readership. Stock is taken of the status of cosmography in French circles in the middle of the sixteenth century, the very moment Münster's *Cosmographia* became a major and longstanding project on the European horizon at large.

Keywords: *Earth, France, Heavens, Manuscript, Topography*

1. *Introduction*

Circulation of Cosmographies: at a cursory glance, the title of this issue of the *Journal of Early Modern Studies* calls to mind the enterprise Sebastian Münster embarked on in his *Cosmographia universalis*, a compendium first published in 1544, that in successive editions, growing substantially in girth and weight, became a bookish monster. At a light year's distance from Bernardus Sylvestris' modest work of the same name, Münster's project – first printed and disseminated in German – epitomized an unforeseen commercialization of knowledge and, along with it, an implicit avowal that in the expanding world there was 'too

much to know' (Besse 2003; Blair 2010; van Putten 2018). At the same time mathematical cosmography was in the foreground and played a significant role in mediating the more scientific and entrepreneurial aspirations of the capacious genre.

The argument of the paragraphs that follow is that mathematical cosmography must be considered as a corrective to the entrepreneurial counterpart that Münster made famous, and that, based on Ptolemy's distinction between cosmography and topography, it betrays a concern about what ties local spaces to the terraqueous globe in its relationship with the heavens. In France, it almost goes without saying that Oronce Fine (1495-1555, a life span close to that of François Rabelais) maybe counted among those who employed 'science' (astronomy, mathematics and astrology) to define the genre. His work appears modest compared with Münster's editions of Ptolemy's *Geographia* in the years 1540-1552 and above all his *Cosmographia*, which inspired François de Belleforest, French polymath, compiler and erstwhile translator, to launch a French edition in two volumes, with a bonus of 150 maps and extensive descriptive history and geography of France.[1] Appearing in 1575, his book was doubled by another of the same proportion under an identical title, André Thevet's *Cosmographie universelle*.[2] Author of a *Cosmographie du Levant* (1554) and *Les Singularitez de la France antarctique* (1557-1558), the latter a memoir of his travel to Brazil and brief sojourn in Nicolas de Villagagnon's aborted Protestant colony in the Bay of Guanabara, Thevet left for posterity the manuscript of his *Grand insulaire et pilotage* (1586).[3] In all these works, Thevet envisaged cosmography as the study of the world in the form of a loose and open-ended agglomeration of real, fabled and sometimes, as it were, imaginary islands. The daring mix of fluvial prose dotted with copious maps and images turned the science of the world and the heavens into an archipelago of often uncharted, fabulous and unreliable knowledge.[4]

This applies less to the legacy of mathematical cosmography, which had witnessed fresh and crisp definition and explication in the writings, maps, illustrations and instruments Fine had designed and executed in the growing trade of print-culture. Mathematician, astrologer, astronomer, surveyor and cartographer, Fine edited and published numerous scientific treatises from 1515 to 1551. A gifted draftsman and a typographer, he established for humanists the principles of a scientific cosmography that included, as Ptolemy had declared in the opening sentences of his *Geographia* (dating to 145 CE), a counterpart and complement in topogra-

[1] The title is a tour de force: *La Cosmographie universelle de tout le monde. En laquelle, suivant les auteurs plus dignes de foy, sont au vray descriptes toutes les parties habitables, & non habitables de la terre, & de la mer … Et encor l'origine, noms ou appellations tant modernes qu'anciennes, & description de plusieurs villes, citez & isles, avec leur plantz & pourtraitctz, & sur tout de la France, non encor jusques à present veus ny imprimez. S'y voyent aussi d'avantage, les origines, accroissemens, & changemens des monarchies, empires, royaumes, estatz, & republiques: ensemble les mœurs, façons de vivre, loix, coustumes & religion de tous les peuples, & natiõs du monde …* (The Universal Cosmography of the entire world, in which, following the most reliable authors, are truly described all the habitable and unhabitable parts of the earth and of the sea … And also the origin, names or appellations both ancient and modern, plus the description of several cities, sites, and islands, with their maps and portrayals, and especially France, not yet either seen or in print. Included too are the origins, growth, and transformations of monarchies, empires, kingdoms, states, and republics: together with the mores, ways of living, customs, and religion of all peoples and nations of the world …). Unless otherwise stated all translations are mine.

[2] *La Cosmographie universelle d'Andre Thevet cosmographe du roy; illustree de diverses figures des choses plus remarquables veuës par l'auteur & incogneuës de nos anciens & modernes* (The Universal Cosmography of André Thevet, cosmographer of the king, illustrated with diverse figures of the most remarkable things seen by the author and unknown to our ancients and moderns).

[3] The manuscript is richly illustrated with maps and is accessible online: <https://gallica.bnf.fr/ark:/12148/btv1b9065835g/f1.item> accessed 1 February 2023. See Laboire and Lestringant 2006.

[4] Especially when appearing adjacent to the *isolario*, an intermediate genre that mediated unknown lands and waters by conceiving of the world as a loose assemblage of islands (see Lestringant 1994 and 2002).

phy. The correlation is evident in *De sphaera mundi*, first published in Latin in 1542, that in 1549 he translated into French as *L'esphere du monde* (The Worldly Sphere). After designing and illustrating *L'esphere* in the form of an elegantly illuminated manuscript honoring Henri II, Michel de Vascosan printed an exquisite edition in 1551, for which Fine slightly emended the prose and set finely engraved woodcuts in place of the hand-drawn illustrations. Now in a vernacular idiom and in print, the book of the 'worldly sphere' brought mathematical cosmography to a broader public. We can speculate that it was then that – unless we recall Hans Holbein's famous depiction of the cosmographer in the twenty-seventh woodcut of his *Images de la mort* (Lyon 1538), sitting in his bureau, who blindly looks upward at an armillary sphere while a skeleton graciously tenders him a skull – cosmographers and cosmography were held in admiration. This is evidenced by numerous re-editions of Ptolemy's *Geographia*, that were expanded to include the new discoveries: translated from Latin into vernacular idioms, and formatted in quasi-portable editions, it was only after 1570, when Abraham Ortelius published the first edition of his *Theatrum orbis terrarum*, like Ptolemy, that cosmography became an object and artefact of history.[5]

Although not circulating far from Paris, or known to a public to which later and greater cosmographies would soon be pitched, Fine's writings and editions of Euclid in the 1540s and early 1550s might have been a point of reference for humanists – mathematicians, surveyors – drawing inspiration from Ptolemy's distinction between cosmography and topography.[6] In their weave of texts, diagrams and images of Fine's own design, Fine's scientific cosmography appeals to a general public; in turn, it alters received notions of topography, extending the classical distinction between a whole and a detail. A faint but implicit narrative of such a shift emerges in the passage from the general description of cosmography in the opening pages of *L'esphere* to that of topography at its closure, where the author directs his gaze away from the firmament and toward the world around him.

2. *Fine's Career and* L'esphere du monde

Born near Briançon in the mountainous Dauphiny, son of François Fine, a doctor 'who also fabricated astronomical instruments, and who wrote a *De cœlestium indagation sine calculo* (1494)', Oronce went to Paris to study at the Collège de Montaigu 'and soon after enrolled at the Collège de Navarre where he remained up to 1528' (Pantin 2009a, 73-94). Upon obtaining a master's degree in 1516 he joined the faculty of medicine, collaborating with printers and booksellers in the role of an annotator and illustrator. In the years 1516-1520, which witnessed Francis I's rise to power, Fine joined with humanists François Desmoulins and Jacques Lefèvre d'Étaples in the manufacture of illustrated manuscripts and books. In 1518, at a moment when the king sought to launch a crusade, Fine was privy to Nicole le Huen's *Grant voyage de Jerusalem* (1488), a work turning Bernard von Breidenbach's *Sancta peregrinatio* (1486) into an argument for a military expedition. In the service of propaganda and to make his talents known, Fine wrote an exhortative poem and drew a map-like image of French forces landing on the shores of the Holy Land (Lecoq 1987, 259-262 quoted in Pantin 2009a, 75; Conley 2007, 92-98). By then specializing in the composition of frontispieces, on three occasions he illustrated himself in the guise of a scribe or an intermediary between the matter of cosmography and its transmission in

[5] As attested by Lestringant 1991 and other works on Thevet.
[6] See the bibliography in Marr 2009.

print.[7] In 1524, after drafting a first version of a cordiform world map, Fine, versed in astrology, reputedly predicted the defeat of French forces at Pavia. Enervated, the king incarcerated him, but upon protest on the part of Swiss and German cartographers he was set free. In 1528 or 1529, reports Isabelle Pantin, Francis I invited Fine, then an *escholier* at the Collège de Maistre Gervais, to teach courses on mathematics and astronomy. And two years later, after the king named him royal lecturer of mathematics at the newly founded Collège de France, Fine quickly established himself at the forefront of the two disciplines in the quadrivium (2009b, 18-22).

Historians of cartography have focused on Fine's woodcut projections, that include a double cordiform world map of 1531; a single cordiform map of 1534 (that he claimed to have begun in 1519); a map of France, executed in woodcut (dated 1525, printed in 1538 and 1553); variants of a map of southeastern France and northwestern Italy, which appears in different editions of *De sphaera mundi*.[8] In 1558, three years after Fine's death, Pirro Ligorio re-drew the latter in copperplate.[9] For over three decades, Fine's legacy as typographer and book-designer (over and above that of his mathematics) had commanded praise and admiration, and so too his artistic talents, manifest in the self-portraiture in the frontispieces and historiated initials of his *Protomathesis* (1532), a compendium of mathematics and cosmography.[10] At the same time astronomers were aware of his solar clocks and, in his writings after 1543, of a propensity to consider a heliocentric model of the earth and the heavens.[11]

[7] The self-portrait in the *Protomathesis* displays the author, seated in the foreground of a barren landscape, holding with his left hand an open book that rests on his knee. With his right hand he extends an astrolabe to a regal lady named as Urania in the banderole above her head. The banderole to his left that would identify him is left blank. The empyrean above is filled with an armillary sphere supported by two rings attached to ornate columns on either side. A roman majuscule O is inscribed in the frame of the ring to the left, and an F in the ring to the right. The scene is set against a stippled background, a style peculiar to Fine's illustrations and historiated initials. Pantin suggests that by virtue of the coordination of the image and poem in the legend readers and spectators are invited 'to abandon perishable interests to force themselves to attain higher places through art and assiduous labor', and to be taken by 'luminous secrets of the divine mathesis' through recall of mathematics, astrology and theology (Fine 1532, 78). Yet the gaze that Fine casts upon the goddess could read otherwise, as a scene of seduction, an effort to bring the goddess out of the empyrean and into the world below.

[8] The double cordiform world map is available online at Gallica (<https://gallica.bnf.fr/ark:/12148/btv1b8459584n/f1.item.r=oronce%20Fine>, accessed 1 February 2023) and also online in the Houghton Collection at Harvard University. The great (and sole surviving) copy of the single cordiform map in the Bibliothèque Nationale de France is online (<https://gallica.bnf.fr/ark:/12148/btv1b531882260/f1.item.zoom>, accessed 1 February 2023). And so also the map of *Gallia*, begun in 1525, printed in 1553 (<https://gallica.bnf.fr/ark:/12148/btv1b72002306/f1.item.r=oronce%20Fine>, accessed 1 February 2023).

[9] *Totius Galliæ descriptio: cum parte Angliæ, Germaniæ, Flandriæ, Brantaniæ, Italiæ, Romanusque* (1558) is accessible online: <https://iiif.lib.harvard.edu/manifests/view/ids:17223589>, accessed 1 February 2023.

[10] See Brun 1930, who held that Geofroy Tory and Oronce Fine were leaders in typography and illustration at the start of the century. The point is not lost on Aude Le Dividich 2000 (333-334).

[11] Frank Lestringant and Monique Pelletier study the context of Fine's work (2007). Pelletier's introduction to *Cartographie de la France et du monde de la Renaissance au siècle des Lumières* (2001, 7-12) indicates how cosmography and cartography are in concert throughout the oeuvre. She studies Fine's world maps (1531 and 1534) from a similar point of view in Pelletier 1995. Critical mass includes Ross 1971; Besse 2009, 100-113; Brioist 2009; Mosely 2009, which establishes modes of projection which Fine deploys in his oeuvre. Pantin (2009b) studies the milieus out of which the maps and illustrated books emerged over the duration of his career. Elsewhere, she meticulously reviews the evolution of the illustrated matter (Pantin 2010). Concentrating on the 'Cosmographia', part 3 of the *Protomathesis* (1532), she concludes that over time (between 1515 and 1550) a personal *style* comes forward, a 'particular balance … between abstract and concrete, geometry and natural philosophy, theory and practice', especially in the intellectual and material legibility of 'text and illustration' (Pantin 2010, 305). In a study of Fine's 'mercurial' character, in a portrait of the artist asleep below the heavens, Pantin lays stress on Fine and astrology (2009a). Angela Axworthy gives an account of work correlative with cosmography (2016).

In this essay, however, focus is placed on the form of the content of his cosmography in respect to text and image in *L'esphere du monde* (1549 and 1551), a translation of *De mundi sphaera, sive cosmographia* that was first published in 1542.[12] The manuscript and printed text suggest that in the later years of his career (or at least after the decrees of Villers-Cotterêts in 1539), in translating the Latin tract into French, in part to sustain himself and his family, Fine was obliged to appeal either to a less learned public or to readers who had yet to learn principles of geometry, mathematics, and both celestial and terrestrial cartography. In doing so his writing manifested a scientific and even proto-Cartesian style. Direct and terse, in both manuscript and print, the manner and disposition of *L'esphere du monde* more than its content may be regarded as the greatest asset of its cosmography.[13] Composed of six book-chapters, at its outset the manuscript of 1549 appears to be modelled on Ptolemy's *Geographia.* The first book describes how the world fits into the heavenly realm. In the concluding corollary to its first chapter, Fine writes, '*la machine du monde, non sans cause est appellee sphere*' (4r, my emphasis)[14]. Book two (twelve chapters) studies the 'circles' of the world, notably the ecliptic band, the zodiac, the five zones of the world as seen in Macrobian world maps, and the globe as it figures in an armillary sphere. Book three, on the stars and the ascension and descension of the signs of the zodiac, mingles scientific reason with reflections on the virtues of astrology, while book four studies the length of days and nights over the duration of a year. Devoted to latitude and longitude, the fifth and last book takes up what Fine had announced as a last but essential element of the treatise, topography, and with it the art of drawing hydrographic and marine maps.

3. *Fine's View of Cosmography*

In view of its prefatory material, the existential 'situation' or *raison d'être* of *L'esphere* takes precedence over its contents. What Fine meant by cosmography, why he described it in French rather than in Latin, and how it addressed (or betrayed) its cause or its occasion are found, first, in the *Lettre dedicative* Fine addressed to his king in 1549 (and modified slightly in the printed version of 1551, perhaps for the sake of greater clarity, or as a result of the rapid transformation of French in the course of the three years); second, in the table of contents; finally, in the organization of the text – its disposition – and the relation it holds with its illustrations, whether colored in pastel in the manuscript or when printed two years later, in the matte aspect of exquisitely drawn woodcuts. Much like Montaigne, who asserted (in *De l'art de conferer*)

[12] Composed of 137 leaves, reproduced in greater detail and 49 diagrams, it includes a first version of a gridded topographic (and hydrographic) map of eastern and southern France (59v), whose point of origin or center is proximate to Fine's birthplace in the vicinity of Briançon, in the mountainous Dauphiné. Père François de Dainville studies the articulation and composition of the map in the *Protomathesis*: a point of origin is chosen, and from there intersect a meridian and a line of longitude which extend to a trapezoidal frame that accounts for the rotundity of the earthly sphere (1970, 49-55). That the point of origin is in the vicinity of Fine's birthplace indicates that subjectivity ('who' one is being a function of 'where' one happens to be) is not unrelated to cartography.

[13] This prompts the thought that Fine's translation appeared in the same year as Joachim Du Bellay's *Deffence, et illustration de la langue françoyse,* in which the poet contends that French is no less able to convey in its diction the force and grace of classical Greek and Latin. A remark on the surname: is it Fine or, as it has often appeared, Finé? Following Poulle's entry in the *Dictionary of Scientific Biography* (1970-1990), in which it is argued that scholars from the Dauphiné have omitted the acute accent, Alexander Marr asks the contributors to his *Worlds of Oronce Fine* to spell it as such. The title page of the manuscript the cosmographer presented to Henri II in 1549 could not be clearer, stating that *L'esphere*? is by 'Oronce Fine, natif du Dauphiné' (see figure 1 below).

[14] (it is not without reason that the machine of the world is called the sphere).

that we do well to heed 'la maniere, non la matiere du dire' (1965, 928),[15] Fine correlates the geometrical style of his description with images and diagrams crafted to impress readers who set their eyes upon them – most notably the king, to whom the work is dedicated. Inaugurated by a historiated D in roman majuscule, colored in gold, interlaced with four crescents (Henri II's device), the incipit stands against a dark blue background dotted with twenty-eight stars. Fine's dedicatory letter lauds the liberal arts, placing stress on the virtues of the quadrivium (Arithmetic, Geometry, Music and Astronomy), while adding that Geography and Perspective are of no lesser virtue and value[16] (figure 1):

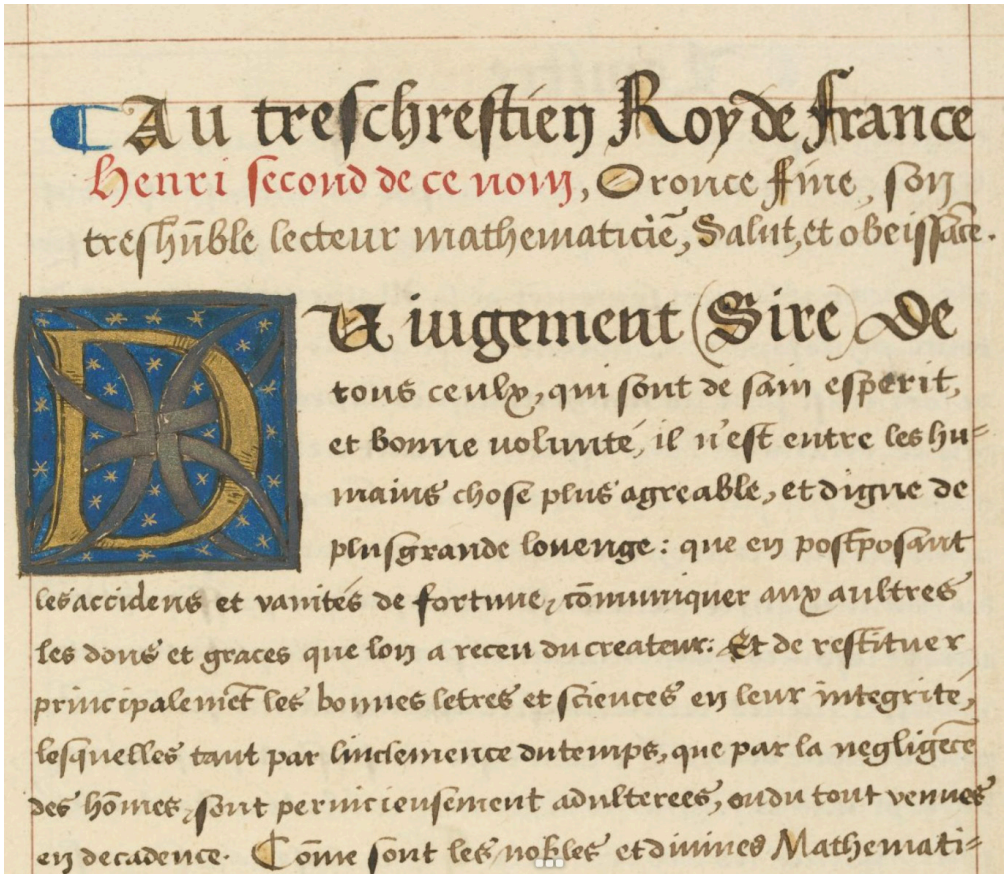

Figure 1 – Oronce Fine, *L'esphere du monde* (1549), title page of manuscript offered to Henri II, Ms. 57 Typ, Harvard Houghton Library. Online at <https://iiif.lib.harvard.edu/manifests/view/drs:18260773$11i>

Du iugement (Sire) de tous ceulx qui dont de sain esperit, & bonne volunté, il n'est entre les humains chose plus agreable, et digne de plus grande louange: que en postposant les accidents et vanités de fortune, communiquer aux aultres les dons et graces que lon a receu du createur. Et de restituer principalement les bonnes lettres et sciences en leur integrité, lesquelles tant par l'inclemence du temps, que par la neg-

[15] (the manner, and not the matter of speech).

[16] The manuscript is available online, in the Harvard Hollis catalogue. For the dedicatory letter, see <https://iiif.lib.harvard.edu/manifests/view/drs:18260773$13i>, accessed 1 February 2023.

ligence des hommes, sont premierement adulterees, ou du tout venue en decadence. Comme sont les nobles et divines Mathematiques, cest asavoir Arithmetique / Geometrie / Musique / et Astronomie, et leurs subalternes Geographie et Perspective. (1549, 2r)[17]

Mathematics, he contends, '*sont la probation de l'entendement, tirans les bonnes esprits du tout a elles,* et les contraignans passer par la rigueur de verité' (2v, my emphasis),[18] before avowing in words into which he folds his name,

Je me suis totalement souzmis à l'estude mathematique, suyvant ma naturelle inclination. En faveur duquel, iay despendu ce peu de patrimoine que dieu [sic] m'avoit donné: desirant proffiter aux aultres en ceste partie, et non sans *espoir* de pouvoir *finablement* parvenir à quelque bien, pour passer honnestement le reste de ma vie. Et fuz d'autant plus incliné audit estude, que je congneu le feu Roy vostre pere (auquel Dieu doint repos eternel) outre le bon iugement qu'il avoit de toute chose, comme prince bien né, porter singuliere affection ausdittes mathematiques. (1552, n.p., my emphasis)[19]

He continues, recalling that Henri's father, Francis I,

Me ordonna *finablement* publique interpretateur en l'université de Paris, ou i'ay fait mon devoir … Dont je suis encore attendant la recompense. Laquelle je ne puis *esperer*, apres Dieu, que de vostre liberalité. Pour inciter donques vostre maiesté me faire à la fin quelque bien, dont je puisse vivre le reste de ma vie, & avancer mes enfans, & mettre en lumiere plusieurs bonnes œuvres, qui demeurent en arriere par faute de pouvoir: je vous ay redigé par et mis en françoys, une des plus belles et delectables qui soit entre lesdites mathematiques. C'est à scavoir, la description universelle du monde, avec les choses les plus notables qui proviennent ça bas, à cause du premier et regulier mouvement de tout le ciel, que l'on appelle Cosmographie, et les principes & rudimens de la geographie & hydrographie concernant le fait de la marine … Et pour rendre le tout plus intelligible, j'ay suivi le meilleur ordre, & la plus facile tradition qu'il a esté possible: & inseré les tables, pourtraits, & figures à ce convenables & necessaires. Desirant, Sire, contenter premierement vostre maiesté … en laquelle consiste tout mon *espoir* et felicité: et puis apres, que souz l'umbre de vous, chacun en face son proffit, mesmement ceulx qui sont privés de la langue latine: en attendant que moyennant vostre aide, faveur & support, je puisse faire mieux. (1552 n.p., my emphasis)[20]

[17] Here and in the citations that follow, in the spirit of comparison, I have chosen to reproduce the texts of both the manuscript and the printed edition. The shift in the style and tenor of the French from 1549 to 1551 suggests that the idiom is undergoing rapid transformation and that perhaps, in concert with Fine's revision, the effect of roman typeface is in concert with the rapid development of the French language. (In the judgement [Sire], of everyone of sound mind and good will, nothing among humans is more pleasing and worthy of great praise, accidents and vanities of fortune set aside, than to convey to others the gifts and graces received from our creator. And principally to restitute knowledge and science in their integrity, that for cause of the inclemency of the time as of human negligence, have been adulterated or entirely fallen into decadence. Such are the noble and divine Mathematics, in other words, Arithmetic, Geometry, Music and Astronomy, and their subalterns, Geography and Perspective).

[18] (*are the probation of understanding, drawing good minds their way*, submitting them to the rigor of truth).

[19] (Following my own inclination, I have devoted myself entirely to the study of Mathematics, for which I have spent the little patrimony God gave me to help others, and not without hoping that *finally* I would achieve some wealth in order to spend the rest of my days living an honest life. I have been even more inclined to do so for having known the late King your father [to whom God owes eternal rest], besides the good judgment he had in all things, as a well-born prince, who possessed a singular affection for the said study of mathematics).

[20] (He *finally* named me [royal] professor [of mathematics] in the University of Paris, where I have done due diligence, for which I still await recompense. My only *hope* [after God] is for your liberal generosity. Thus, to urge your Majesty to be bountiful that I may live the rest of my life and provide for my children and to bring to light a number of fine works which had been held back for want of means. I have edited and translated into French for you one of the finest and most delectable works among those in mathematics: that is to say, the universal description

The preface of the manuscript ends with eight lines of verse in praise of mathematics, the formatting of which directs the reader's eyes toward Fine's carefully designed signature (figure 2).[21]

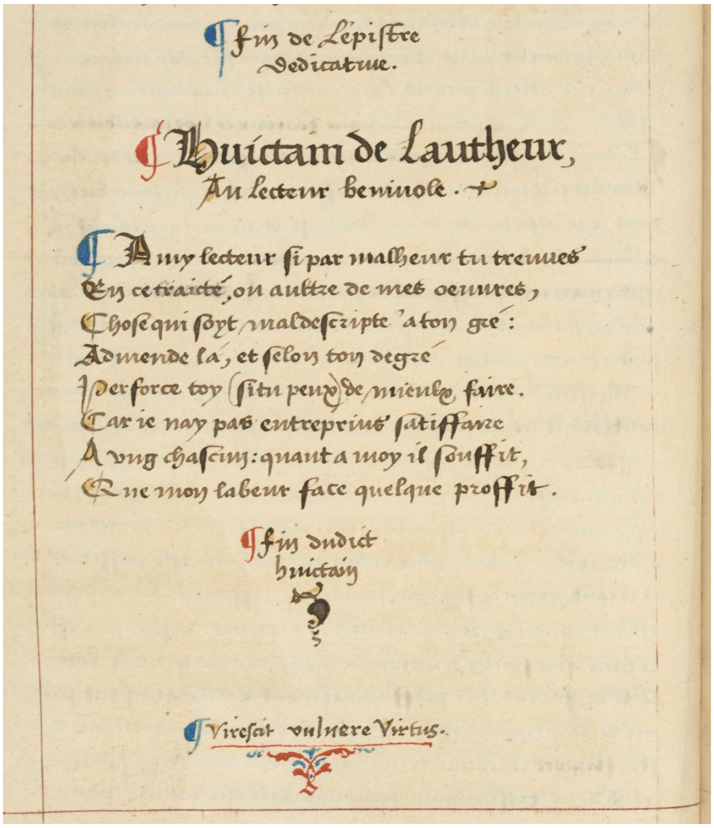

Figure 2 – *L'esphere du monde* (1549), end of dedicatory letter, eight-line *captatio benevolentiae,* signature and motto (3v)

of the world, containing the most notable things in our realm, for reason of the first and regular movement of the heavens that is called *Cosmography*, and the principles and rudiments of geography and hydrography concerning seafaring … And for the sake of greater intelligibility, I have followed the best order and the simplest tradition possible, inserting tables, portraits and figures. In the wish to please your majesty, in whom my hope and happiness are invested and further that under your patronage everyone will find profit, even those bereft of Latin. Awaiting your help, favor and support, may I do better).

[21] By contrast, designed for a general public, the 1551 edition includes an ode, 'L'autheur parlant à son livre [qui], l'envoye à Madame la duchesse de Valentinois' (speaking to his book, the author sends it to Madame the Duchess of Valentinois) in which he juxtaposes the figures of his name to the title of the king while humbly asking for recompense: 'Livre vaten saluer celle dame / Que dieu a fait l'honneur du Daulphiné, / Celle qui est noble de cœur & d'ame, / Et de vouloir, à bien faire incliné, / Dont la vertu, sur toutes a *finé* / De la faveur, de ce bon Roy de France: / Car sans support, tu sera *confiné*, / En quelque coing, & mis en obliance. / Tu ly pourras faire la remonstrance / Comment ie n'ay de travaillé cessé / Depuis trent'ans en mon art & science, / Dont n'ay encore recompense …' (ll. 1-12) (O book, go to salute my lady / Upon whom god bestowed the honor of Dauphiny, / Who is noble in her heart and soul, / And of will inclined to do well, / Whose virtue, above all has graced / The favor of the good King of France. / For without support you'll be confined / To a remote corner and put in oblivion. / You can rise in protest / Over how much I have ceaselessly labored / In my art and science for thirty years, / For which I still await recompense …). Fine is relentless in his request for remuneration.

Alternating in red and blue colors, six pilcrows follow a table of contents (1549, 4v-6v) whose first sentences define and delimit the scope of cosmography. A floral majuscule 'L' is graced by the gently curved stem and petals of a daisy. Followed by the 'monde', the inaugural character of the definite article, like a pair of dividers, opens onto the visual character of the greater project:

> Le monde est la perfaicte et entiere composition de toutes choses, et le vray imaige [sic] et admirable artifice de la divinité, de grandeur incomprehensible, et neantmoins limitee: et aorné de tous les corps et especes de creatures, qui peuvent estre en nature. *La description du quel, est proprement appellee cosmographie: comprenant soubz soy la premiere partie d'astronomie, et la geographie, cest a dire, la fabrique et ratiocination tant du ciel, que de la terre*. Le monde doncques, ha deux principales parties: comme il appert tant par la continuelle experience, que par raison naturelle. Cest a sçavoir, la region et partie elementaire, incessament occupee a la generation et corruption de toutes choses, tant vivantes que non vivantes: et la celeste machine privee de toute alteration, et decoree de innumerables estoilles tant fixes comme erratiques, environnant rondement ladicte region elementaire. Tellement que les elemens diversement comixtionnés et proprotionnés, sont la cause materielle et nourriture de toutes choses: Et le ciel par sa lumiere, mouvement, et influence des astres, est cause formelle de leur figure, varieté, et difference specifique, et qui donne la vie. Desquelles deux principales parties du Monde, sensuyt la figure, et description universelle. (1549, 6r-6v, my emphasis)[22]

Cited at length to convey the tenor of a pedagogical style blending reason (in the sense of geometry) and experience (as essay or experiment), the beginning signals that the treatise, a composite creation, is to be *seen* as it is *read* in tandem with the ordering and disposition of the diagrams and illuminated woodcuts. Of mottled coloration that moves from dark blue to light green, the first illustration is a carefully drawn image of the title, *L'esphere* (figure 3).

[22] (The world is the perfect and entire description of all things, and the true image and admirable artifice of the incomprehensible, yet limited grandeur of divinity. And it is adorned with all kinds of bodies and species of creatures we find in nature, the description of which is properly called *cosmography, which includes the first part of astronomy, and geography, in other words, the making and the measure of the heavens and the earth*. The world thus has two parts, as affirmed by continual experience and natural reason. In other words, the elementary region [is] endlessly taken up with the generation and corruption of living and non-living things alike. And the inalterable celestial machine is decorated with countless number of stars, both fixed and erratic, encompassing the elementary region, such that the diversely commixed and proportioned elements are the material cause and nourishment of all things. And the empyrean, by virtue of the light, movement and influence of the stars, is the formal cause of their figure, variety and specific difference so vital to life, whence the figure and description of the two principal parts of the world that follow).

Figure 3 – *L'esphere du monde* (1549), illuminated woodcut introducing 'L'esphere'

The intrados of the circle enclosing 'the celestial part of the world' is shaped as a frame surrounding a pupil-like 'elementary region', the brown shading and shadow in the lower left area suggesting that it could be the earth in its diurnal and nocturnal rhythms.[23] The cosmos becomes a *graphic* creation likened to an eye staring at the reader or, in greater abstraction, a circle suspended in space. In turn, the text of the three chapters that follow appears organized around their 'figures', circles that describe the nature and quality of the world and the heavens. Correlated with the textual matter in the manner of emblems, forty-nine images, grids and diagrams punctuate the cosmography. The work announces how maps, diagrams and their surrounding text are to be seen and read together, haptically, and to be taken as objects of contemplation.

[23] *Experience* as it is employed here seems close to Montaigne. Translating Aristotle, Montaigne writes at the beginning of 'De l'experience', the last chapter of his *Essais* (III, xiii): 'Il n'est desir plus naturel que le desir de connoissance. Nous essayons tous les moyens qui nous y peuent mener. Quand la raison nous faut, nous y employons l'experience, *Per varios usus artem experiential fecit: Exemplo monstrante viam,* qui est un moyen plus foible et moins digne; mais la verité est chose si grande, que nous ne devons desdaigner aucune entremise qui nous y conduise' (1965, 1065) (No desire is more natural than the desire of knowledge. We essay all means that can lead us to it. When we are lacking in reason, we appeal to experience, *it is by different trials that experience has produced art, the example leading us along the way*, which is a weaker and less dignified means; but truth is something so great that we ought never disdain any way that will lead us to it). In the cosmography, it could be said that the illustrations are 'examples' that 'lead the way' (or, as Montaigne soon implies, lead astray) in the 'desire' both *for* and *of* knowledge.

3. *From the General to the Specific*

The second and third illustrations of the first book describe the scope and vision of cosmography. Following the figure of the earth in the heavens, a 'map' or compass-diagram of the four elements locates a living subject in space and time according to moods or forces of attraction and repulsion based on the four elements. Juxtaposed to the image of the astrological house, the third illustration could be considered a 'regional' or topographical depiction of the cosmos. In place of the terraqueous globe within the orbits of the four elements, a map of Europe occupies the center of the sphere (or the pupil of its eye). A depiction of Europe and Africa lays emphasis on the Mediterranean and Black Sea, indicates how the continent may be an island, even if, in its acknowledgment of the providential design of new discoveries, the text states otherwise.[24] Portraying shadow, the dark parallel hatching on the right of the sphere suggests it might float in an aqueous realm (perhaps a remainder of the *ecoumene* of T/O diagrams) that contains *la terre* (the globe or simply telluric matter), in a circle located concentrically in the greater rings of air and fire. From this point the text takes up the mathematics and the geometry of the heavens, further stressing how the two disciplines allow the world to be 'thought' in terms of its measure within the Ptolemaic order of the planets.

Ending the tract with indirect reference to the opening sentences of Ptolemy's *Geographia*, in which the distinction between a representation of the world and that of a region can be pictured through the similitude of a portrait of a sitter and a world-map (as holistic entities) and a city- or island-view (as details), compared to an isolated ear and eye (that bear no resemblance to those in the portrait), Fine turns from cosmography to the depiction of specific places. He draws a topographical map. Two intersecting lines are traced at a perpendicular angle to each other: the horizontal line, designating latitude, is crossed by its vertical complement, a meridian. From the intersection the topographer marks off equal units, respectively, of minutes and degrees to fill out the spatial plan. Once configured in the form of a trapezoid to respect the curvature of the earth (as Ptolemy had advised), the completed map is 'distinguée par degrez atout Cens, & propre pour deferire le royaume ou prouince dont est question, par le moyen, des longitudes & latitudes des lieux comprins en iceile carte par les distances itineraires d'iceux, lesquelles on doit toujours prendre en la ligne meridionale du mylieu de laditte carte'.[25] He adds that the 'exemple des choses dessusdittes, peut estre prins par la figure qui senfuir, contenant une partie de la Gaule de huit degrez de longitude & cinq degrez de latitude. Les lieux descrits en icelle carte, par forme d'exemple, sont exprimez *par leurs propres noms vulgaires*' (1551, 53v-54r, my emphasis).[26]

[24] 'Et convient noter, que leau ne environne point rondement et entierement toute la terre: ains est respandue par divers bras, traicts, & conduyctz (que nous appelons mers) tant audedans, que autour d'icelle. Car il estoyt nccessaire, que aucunes parties de la dicte terre fussent descouvertes, pour le salut et habitation des vivants et la production de ses fruicts. Ainsi quil a pleu au createur, prevoyant la commodité et incommodité de toutes choses. Desquelz, la disposition est comme il est contenu en ceste figure' (1549, 7v) (It should be noted that water does not in sum surround the entirety of the earth: rather, it is distributed by diverse arms, traits, and conduits [which we call seas] both inside and outside of itself. For it was necessary that some part of the earth be discovered for the salvation of human life and the production of its riches, as it pleased the creator in foreseeing the commodity and incommodity of all things, the disposition of which is shown in this figure).

[25] (distinguished by degrees in every direction, fit to describe [in a geometrical sense] the kingdom or province in question, by means of the latitude and longitude of the places included in the map, and by the distances traveled between them, which must always be taken in respect to the meridian at the middle of the given map).

[26] (example of the things noted here can be understood via the figure that follows, a part of Gaul of eight degrees of longitude and five degrees of latitude … By way of example the places described in this map are noted by their common proper names).

First shown in woodcut in *De sphaera mundi*, the map illustrates how, as an instance of a system or method, it can be applied to any regional space (figure 4).

Figure 4 – Map of Gaul in *L'esphere du mond*e (1549)

Specifically designed to stress the hydrography of southeastern Gaul and northwestern Italy, the area demarcating rivers that flow either to the south or the east is to the immediate right of the intersection of the lines of longitude and latitude at the origin of the map. The River Pau and its tributaries begin at latitude 45 N and longitude 29 N, adjacent to *Briançon,* the toponym to the left, ostensibly a center, origin or umbilicus of the projection. Without being stated as such, the map could also be a sort of *autobiography,* a drawn depiction or inscription at whose center is its author's birthplace. Like a linguistic sign that is both 'arbitrary' and 'motivated', Briançon is merely what it is, Briançon, but it can also be a point of origin correlative to that of the author and of the map in which it figures (figure 5).

Figure 5 – Map of Gaul in *L'esphere du monde* (1549), detail

Following chapter seven, in which Fine explains how a representation of an eighth, fourth or half of the terrestrial globe can take the form of a planisphere (54r-56v), the treatise ends with illustrations and an explication of the design of a compass rose. Drawn both as an abstraction and a practical device, the figure belongs to the worlds of both an armchair cosmographer and a navigator or voyager. 'De la distinction des vents, selon les hydrographes: et de la vraye composition des cartes, que lon appelle marines' (56v-58v),[27] chapter eight situates the sixteen cardinal points that designate the major winds (figure 6).

[27] (On the distinction of the winds according to hydrographers, and on the true composition of charts which are called marine maps).

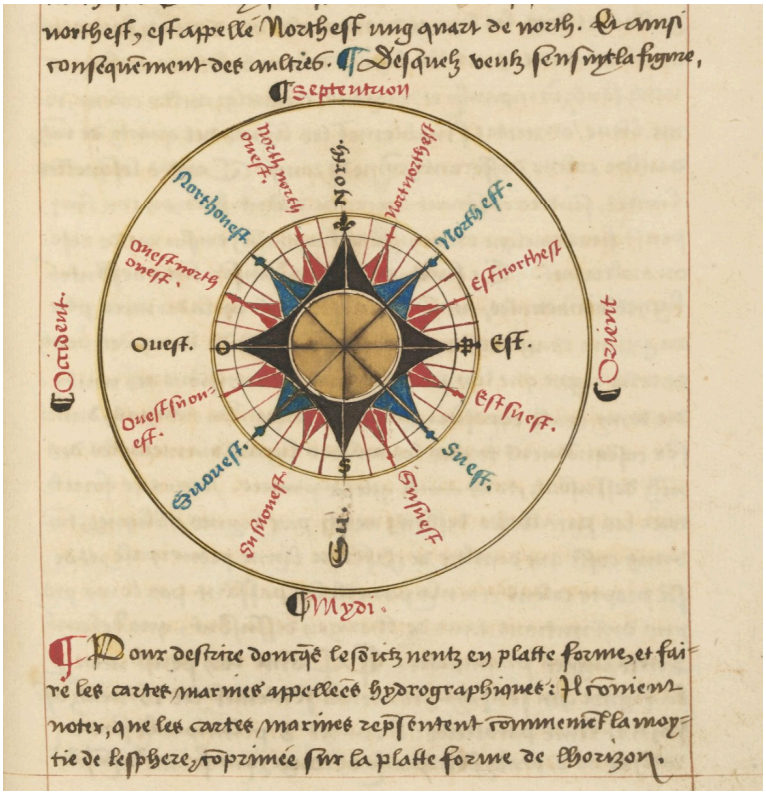

Figure 6 – Origin of map in the region of Briançon, detail of the map of Gaul

The author concludes, '*Finablement* convient noter, que chacun intervalle desdits 16 vents est derechef parti en deux moitiés, qui designent les quarts des vents dessusdits' (57r, my emphasis).[28] Scripting his name into the initial part of the summary, Fine anticipates a second instantiation that goes with a more elaborate wind rose, whose alternating red and black ink lines turn the scientific object into its aesthetic counterpart. Marked on the intrados of the containing circle, a geometrically drawn pattern of six arcs radiating from each of the sixteen wind points (north, north northeast, east north east, east, etc.) calls attention to the material cause and condition of the compass. Belonging to the legacy of a hand drawn manuscript and of maps composed with inks of different colors (including the manuscript of *L'esphere* presented to Henri II in 1549), the illustration invites readers to contemplate a design of sacred latency (reminiscent, perhaps, of the great rose windows dating to the middle of the thirteenth century, e.g., in the south transept of Notre-Dame-de-Paris) and, no less, to consider where the poetics of inspiration and the principles of navigation may be one and the same.[29]

[28] (*Finally* it is worth noting that each interval of the stated 16 winds is once again split into two halves that designate the fourths of the winds).

[29] The mix of art and science puts the work into a creative area that Balzac, three centuries later, locates between inspiration and science, between '*la toise et le vertige*' (measure and vertigo). And how can readers versed in literature fail to recall Paul Valéry's *Le Cimetière marin,* in which the voice finds inspiration, asserting, 'Le vent se lève. Il faut tenter de vivre' (The wind is arising. We must try to live)?

4. *Mapping the World, Mapping the Space*

Below the compass rose, the last words of the treatise suggest that cosmography cannot be dissociated from hands-on survey and calculation. In a curtsey to his name and to what it connotes, he links the final sentences with the project of the mapping of the world, perhaps alluding less to the great world maps of 1531 and 1534 than to the topographies, such as the map of southern France and northeastern Italy or the reticulated map of France, riven with five major rivers and with coastlines looking onto the English Channel, the Bay of Biscay, and the Mediterranean, that would appear in 1553:

Finablement qui voudroit comprendre tout le globe terrestre entierement, il faudroit faire deux figures telles que la precedente [the elaborate compass rose], de sorte que l'horizon de l'une touchast l'horizon de l'autre: & pourtraire les lignes & traits des vents outre, & par dehors lesdits horizons, ou *finir* dedans iceux, ainsi que bon semblera. Puis observer le reste selon l'art & usage hydrographique. (1549, 69r, my emphasis)[30]

In ending by emphasizing the mapping of bodies of water, *L'esphere* moves from reflection on the vastness of the worldly sphere in the heavens to the landscapes and boundaries of *Gallia*. In concert with the title and matter of a telling study by the late and regretted Bruno Latour (Latour 2018), Fine's cosmography has come 'down to earth'. If, in accord with a good deal of late medieval and early modern literature, pages of writing are read both forward and backward, turned left to right and right to left, the final folio of *L'esphere*, in the formula of the existential geographer Yi-fu Tuan, moves between 'cosmos and hearth' (1996).[31] Seen and read from both sides, recto and verso, the final folio makes clear the distinction between cosmography and topography. Printed in red and black ink, the last of the 49 illustrations (1553, 58r) and second of the two compass roses is placed over the *explicit* on the verso side, designed in *cul-de-lampe*, formatted to suggest a receding perspective (figure 7).

[30] (*Finally*, to configure the terrestrial globe in entirety two figures must be drawn, as shown above, to have the horizon of the one touch the horizon of the other and portray the lines and traits of the winds beyond and outside of the noted horizons, or else *finish* within them, as seems appropriate. Then the remainder can be observed in accord with the art and practice of hydrography).

[31] In *Le Masque et la lumière* (1976), a path-finding study of the Grands Rhétoriqueurs (roughly, 1470-1520) Paul Zumthor noted that the poetry was conceived to be read spatially, in different and often contrary directions. On this basis, it can be surmised that the faint imprint of the matter on the opposite or 'other' side of a folio would be of an unspoken but vital presence (see Conley 2017 and 2000).

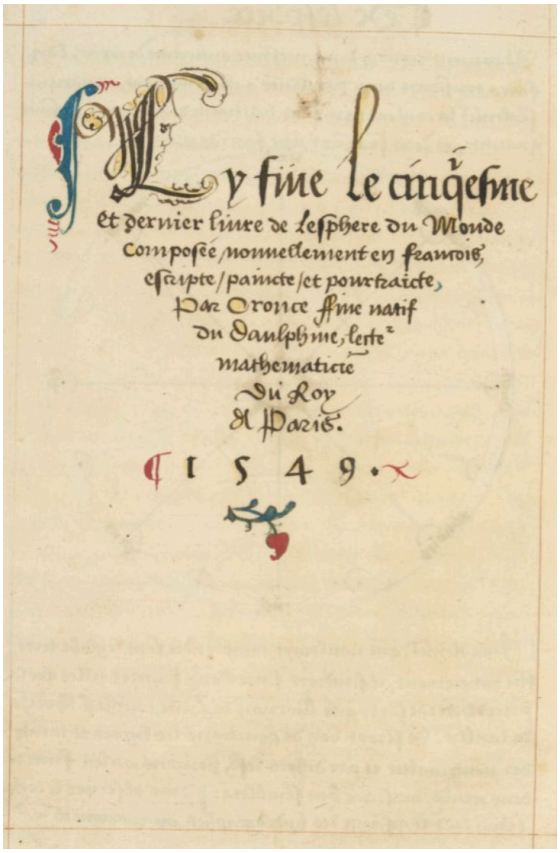

Figure 7 – Compass rose decorated by pilcrows at the cardinal points of the illustration in text of 1551 (57r)

'Here ends', a conventional formula, carries the author's name. The last of four lines of text, places 'A Paris' in the middle or, possibly, at an implicit vanishing point of the design. Around it emerges the faint impression, printed on the other side of the page, of the compass rose the hub of which is adjacent to the origin – in other words, the name of the printer, an indication that the worldly sphere includes the book itself, a mechanically reproduced object. Cosmography cannot be envisaged outside the mechanical means of its graphic representation.

5. *Conclusion*

By way of a conclusion, it is worth recalling the place that Fine occupies in André Thevet's *Vrais portraits des hommes illustres* (1584), an atlas of notable persons of all times and places, including autochtones of the New World (1584, 564r-566v).[32] After a long conceit, calling Fine an 'Archimede Daulphinois', Thevet (or his team of editors) writes of his origins in Briançon, his youth and, after being named professor of mathematics at the University of Paris, of the trials and tribulations of his career. Those who knew him and his creations

[32] For the entry on Fine, see <https://gallica.bnf.fr/ark:/12148/btv1b86246591/f1261.item>, accessed 1 February 2023.

were not wrong when ravished in admiration of our Daulphinois' subtlety. In the space of thirty years and more he was a public reader of mathematics (as he himself attests in the letter he dedicated to the king Henri, second of this name, that prefaces his five books of Cosmography), whose difficulties he cleared up, never being content with his labors, adding to his divine writings that have so much refined these sciences where it was customary to say that mathematics would have been left in an impoverished and pitiful state (and to our marvelous prejudice), if from Dauphiny there had never been a Fine only he could could make them fine. (565r)

In respect to *L'esphere du monde*, Thevet adds that Fine 'composed … the Gallican map …; five books on the Worldly Sphere, that is, Cosmography, with a letter touching on the dignity, perfection, and utility of Mathematical Science; on practical arithmetic, and the first part of Astronomy' (566v).

Compared with Thevet's generally loquacious *Cosmographie universelle*, the terse tenor of praise in the *Portraits* suggests that Fine's mathematical cosmography of the 1530s and 1540s could have been the point from which the genre developed and was soon to circulate and later, with the impact of Copernicus, would reach a moment of stasis. In Fine's world the mathematical treatment of the earth and the heavens proposes judicious calculation of the kind for which *De revolutionibus* would be better known. In every respect, the visual and textual appeal that as artist, typographer and draftsman Fine brings to the genre in manuscript and print sets it apart from Münster's *Cosmographia universalis*, its translations, and imitations. A point of reference in the early chapters of its history, the writings and elegantly drawn (and colored) illustrations show how and why cosmography held strong in the decades prior to the advent of the atlas as it would soon be conceived and realized by Ortelius and Mercator.

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The American *De coelo* Heaven and Earth in the New World's First Printed Work on Natural Philosophy

Edgar Omar Rodríguez Camarena
National Autonomous University of Mexico
(<edgar.rodriguez@ingenieria.unam.edu>)

Abstract

The article analyses Alonso de la Vera Cruz's ideas on cosmography, including both celestial and geographical conceptions, displayed in *De coelo* from his *Physica speculatio* (1557). This book introduced in New Spain the hegemonic natural knowledge of the time as well as alternative ideas. At the same time, living for years in the New World, La Vera Cruz drew on his own experience when discussing the qualities of the Americas and their inhabitants. Unlike the imperial cosmography of the time, he valued not only the natural qualities of those lands but also their inhabitants, which had important social implications. The article also argues that La Vera Cruz reinterpreted European notions to adapt them to the Americas and, at the same time, developed a local perspective that transferred the idea of centrality from Europe to the New World. In doing so, he had to mediate with both local and transatlantic interests and visions. Reissued three more times in Salamanca since the 1569 edition, the *Physica speculatio* included references to the coasts of the American continent, which constitutes an exception to the secret nature of this kind of cosmographical information in the Ibero-American world.

Keywords: *Alonso de la Vera Cruz, American Cosmography, Commentaries on* De caelo*, Ibero-American Science, New World Geography*

1. *Knowledge in Motion: From the School of Salamanca to the New World Controversies*

Alonso Gutiérrez was born in 1507 in the Castilian province of Guadalajara. At that time, new explorations were changing the idea of the world, which, for the first time, could be conceptualised as a unitary whole.[1] Furthermore, early European

[1] This study is part of the UNAM project Critique of Epistemocracy, Pluralism, Epistemic Equity and Democracy.

expansion, led by Portugal and Spain, was bringing about important social changes both in the Old World and in the newly colonised lands. The traditional worldview and ideas about society and humanity were challenged. This transformation was conceptual, political and economic, and it involved lively confrontations between groups with conflicting ideas and interests about the conceptualisation and shaping of that first global world.

Alonso Gutiérrez grew up in this dynamic and conflictive context. He studied at the recently created University of Alcalá, and later at the University of Salamanca. There, he was taught by some of the most prominent members of the so-called *Escuela de Salamanca*, such as Francisco de Vitoria (1483-1546) and Domingo de Soto (1494-1560). After graduating in arts and theology, Alonso began to read courses in the faculty of arts or philosophy, i.e., logic and philosophy, at the University of Salamanca. At the same time, he was also commissioned as a paid tutor of two of the children of the fourth Duke of the Infantado. Alonso's future in Salamanca looked promising (Grijalva 1624, 23r).

However, in 1535 the Augustinian friars convinced him to work as a preceptor of arts and theology in their missions in New Spain. In 1536, Alonso set sail for the New World, along with several Augustinians who on the way persuaded him to join their order. Upon arriving at the port of Veracruz in New Spain, he took the Augustinian habit and changed his name to Alonso de la Vera Cruz (27r). At that time – fifteen years after the fall of Tenochtitlan and only one after the arrival of the first viceroy – the multicultural society of New Spain was in the process of defining itself and finding its place within the new conformation of the world.

The Augustinian order in New Spain established a province with its own government, whose members were elected in provincial chapters (Rubial 2014, 50). In 1540, the provincial chapter agreed to the creation of a College of Higher Studies in Tiripetío in Michoacán, the first of its kind in the Americas, where Alonso was appointed to teach courses on arts and theology. There he learnt the Purépecha language while teaching students such as Antonio Huitziméngari, who was the son of the last Caltzontzin – the indigenous ruler of the region (Basalenque 1673, 22v-23r). The influence of Alonso's teaching persisted in this land through the work of one of his students and co-religionist's: Juan de Medina Plaza, who wrote a *Dialogue on Nature* in Purépecha (2011).

In 1553, La Vera Cruz joined the new University of Mexico as a professor of sacred scripture and theology, even though he continued to work on philosophical topics. In 1554, he published two treatises, *Recognitio summularum* and *Dialectica resolutio*, in which he presents an overview of the logic and epistemology of his time. These texts attempted to contribute to the instruction of students of arts or philosophy at the University of Mexico, to which La Vera Cruz dedicated his treatise on dialectics. Following the example of his Salamanca teachers, he closed his annual courses with a talk or *relectio* on some controversial topics such as marriage or questions triggered by the New World. In 1554, his subject was *Dominio infidelium* (Infidels' domain), and a year later he wrote a *relectio* called *De decimis* (On tithes), where he stated that indigenous peoples should be exempt from this payment. This was a defence not only of the natives, but also of the mendicant orders in the face of the increasing power of the secular clergy; as a result, the archbishop, Alonso de Montúfar, forbade its reading. He continued working on his first *relectio* until he wrote the treatise *De dominio infidelium et iusto bello*, in which he analysed if the war of conquest had been fair.[2] Additionally, in 1556 he published his *Speculum coniugiorum* on indigenous marriage, based on his own observations and direct testimonies. In

[2] The controversial nature of these works prevented their publication until the twentieth century, when Ernst Burrus published them in 1967 and 1968.

all these works, La Vera Cruz reviewed assertions made by Francisco de Vitoria and Domingo de Soto, and enriched them with local controversies and encounters with the Purépecha and Mexican peoples (Cerda 2009).

In general, La Vera Cruz expanded European conceptions to incorporate the particularities of New World societies, for instance, when he defended indigenous marriage (Medina 2009), but his defence of native societies went further. The hegemonic conception of the inhabitants of the New World, developed from the first Caribbean encounters, asserted that they were barbarian peoples lacking intellect and politics (Pagden 1982). In his *relectio De indis*, Francisco de Vitoria proposed that if it was true that the native peoples lacked the capacity for self-government, this would be a justification for Spanish dominion, but he left the question open (1975, 103-104). La Vera Cruz attempted to resolve this controversy based on his experience with Nahua and Purépecha societies, which were more complex than those of the Caribbean peoples of the first encounters. He maintained that the Native Americans were not as stupid as some claimed, but prudent people with their own laws and legitimate dominion and regimes (2004, 329 and 334). In this way, La Vera Cruz questioned the legitimacy of the war of conquest of native American societies. He stated that the indigenous peoples now under Spanish rule had their own governments and laws. To understand Alonso's ideas, it may be useful to take into account Vitoria's distinction between perfect republics – those which are independent – and imperfect ones – part of a larger republic (1975, 116). Thus, despite being part of the Spanish empire, Alonso declared that dominion belongs to the local community. Even if the community decides to transfer dominion to others they must govern for the benefit of the community (Vera Cruz 2004, 117-118 and 168). Similar ideas were developed in the manuscript *Parecer razonado sobre el problema de la Conquista* – attributed to La Vera Cruz – which argues that the only title the Spanish king had over the Indies is that the native peoples had agreed to be his vassals and, therefore, they deserved the same treatment as the Spaniards (Cuevas 1914, 179).

These ideas led Ambrosio Velasco to claim that La Vera Cruz inverts the pyramidal conception of vice-regal power – sustained by the papacy and the emperor – by developing an incipient republicanism, in which dominion rests with the community. Hence, Velasco argues that, since the beginning of the Ibero-American world, there had been a clash between local and humanist claims and imperialist and exploitative interests (2009).[3] Although this confrontation is clearly visible, it is important to recognise that, ultimately, La Vera Cruz accepted the Spanish conquest as a *fait accompli* (Vera Cruz 2004, 379; Heredia 2007, 60-61). This does not mean, however, that he agreed with spoliation practices or with strictly hierarchical and absolutist politics. Quite the opposite – he argued that dominion is rooted in the community itself and that the government, even as part of an empire, must seek the welfare of the community as a whole, including that of the indigenous peoples and settlers (Velasco Gómez 2007, 71; Quijano 2017, 154-156). That is, his republicanism does not refer to a particular form of government, but to the ideal that every form of government should have the community as its beginning and end. But within the new world order, in which the Novo-Hispanic multicultural society was taking shape, conflicts between different interests and ideas – local and transatlantic – were inevitable. The thought of La Vera Cruz must therefore be studied within these complex discussions.

[3] Enrique Dussel has developed similar approaches in the case of Bartolomé de las Casas (2020, 59-78).

2. *On the Heavens in La Vera Cruz's* Physica speculatio

While defending his political ideas, La Vera Cruz finished the edition of his complete course of philosophy with the publication of his *Physica speculatio* in 1557. Like all his other books printed in Mexico during his lifetime, though surely edited, the licences do not appear within the texts – a common feature of printing in the New Spain at that time. In theory, books had to be licensed by the archbishop in order to be published, but it was not until 1558 that approvals were included in texts. The same was true of the instruction that all books had to be reviewed by the Council of the Indies, which did not yet apply to the works of La Vera Cruz (González 1997, 46-47). In his *Physica speculatio*, Alonso claims that 'hanc naturalium rerum considerationem in unum congessimus' (Romero Cora 2015, 100)[4] so, as was usual in his time, he used physics as equivalent to natural philosophy. Hence he included books not only on physics, but also on generation and corruption, meteorology, the soul and the heavens. Accordingly, the *Physica speculatio* was not only the first text on physics, but also on natural philosophy and astronomical subjects printed in the New World. Although Alonso often followed the traditional Aristotelian Thomistic ideas, he also claimed to be 'aliqua nova adducendo … non excogitata neque inventa' (Vera Cruz 1557, Prologue; Romero Cora 2015, 100).[5]

It is mainly in his book *De coelo* (On the Heavens) that La Vera Cruz deals with cosmographical issues, as he presents a general conception of the world that includes both the celestial and terrestrial spheres. Unlike Aristotle's *De caelo,* which comprises four books, Alonso's *De coelo* consists of only one. Alonso explained that this is because Aristotle studied many difficult yet unfruitful issues, whereas he only wants to deal with those of some importance. On the other hand, at the end of this book, he included the treatise *De Sphera* written by Campanus of Novara (a thirteenth-century author) with the intention of offering some elements of astronomy – not considered by Aristotle but usually studied in the treatises on the sphere (Vera Cruz 1557, 361).

As the first American text on natural philosophy, the ideas on heavens and earth developed by La Vera Cruz were largely in line with those asserted by the scholasticism of his day. In that way, Alonso adopted the idea of a geocentric cosmos divided into two main regions: one terrestrial and the other celestial. In the terrestrial realm, bodies are composed of the four elements with opposite qualities, always in constant generation and corruption, while above the moon, the heavens remain incorruptible. But beyond these hegemonic ideas, La Vera Cruz's speculations in his *De coelo* were presented as questions in which different opinions were contrasted. In other words, he mentioned and introduced alternative ideas. For example, he referred to the opinion – without accepting it – that comets are not meteorological but celestial phenomena (244). In the case of the attached treatise on the *Sphaera*, even though Campanus followed traditional conceptions of the cosmos, he mentioned alternative ideas as well. He wrote, for instance, that there are those who think that the celestial spheres do not move, but that it is the Earth that rotates every day. Likewise, Campanus mentioned the so-called Capella system in which Venus and Mercury revolve around the Sun. The process of contrasting different opinions, weighing their respective arguments and authorities, sometimes led Alonso to settle on an alternative idea about the world, as he did, for example, with regard to the controversy over the distinction between terrestrial and celestial matter.

[4] (we gather in one this consideration of natural things).
[5] (presenting something new … not imagined or discovered [by others]).

To resolve the question of whether celestial matter is different from terrestrial matter, Alonso proceeded dialectically by weighing which opinion is more 'probable' on the basis of the authorities and arguments put forward.[6] While acknowledging the idea that the heavens are of a different matter has a certain 'probability', he claimed that it is based on one reason only: there is no corruption in the heavens. But he asserted that 'haec ratio non convincit, nam ratio corruptionis non solum a materia est' (Vera Cruz 1557, 366),[7] but can also be triggered by the presence of opposing agents, by the subject's own disposition, or by reason of its form. He concluded that the opinion attributing the same matter to the celestial and terrestrial realms seemed 'probabilior' (more probable). He supported this with the above arguments and by citing various authorities. He argued that this opinion was widespread before Aristotle, referring mainly to a passage from Plato's *Timaeus* 41a-b. A similar opinion was attributed to 'theologians', probably a reference to some of the early fathers of the Church. Amongst others holding this view he mentions by name Bonaventure, the Augustinian Aegidius Romanus, the nominalist William of Ockham, and the Salamancan teacher Alonso Fernández de Madrigal (Vera Cruz 1557, 366). With this alternative idea, Alonso attempted to harmonise the conceptions of natural philosophy with theological ideas on creation and the end of time. His notion of a single matter in the heavens and on earth can be placed among ideas of his time in which conceptions of the celestial were being renewed before the celestial novelties of the 1570s (Lerner 2008, Ch. 1). In the spirit of Renaissance humanism, these early cosmological changes were influenced by the recovery of alternative traditions such as Platonism and the reinterpretation of biblical exegesis as in the case of La Vera Cruz.

3. *New Worlds and New Centres: The Qualitative Place of New Spain*

The revival of Ptolemy's *Geography* in the early fifteenth century reinforced the idea of *oikoumene* – an inhabited land covering only part of the globe. This known world was limited by oceans and by climatic considerations – that is, it was restricted in the north by the coldness of the Arctic and in the south by the heat of the tropics. This meant the ecumene covered only the temperate zone of the northern hemisphere between the frigid and torrid zones. This idea was revived in the thirteenth century by Johannes of Sacrobosco in his famous treatise *On the Sphere* and prevailed until the age of the great discoveries, as can be seen in Giovanni Leardo's map made in the mid-fifteenth century. Since classical times, it had been believed that even within the known world there were different regions with climatic and social differences. For example, Aristotle and Pliny – following Hippocratic conceptions – argued that the peoples of extreme regions had contrary qualities and while they had some virtues, they lacked others. In cold regions men were brave but not very intelligent, while in hot places (in Asia for Aristotle) men were clever but cowards. Thus, only in the balanced zone – in which Aristotle and Pliny were situated – could men enjoy a climate that combined all the good qualities. According to these ideas, the temperateness of the middle zone allowed the cultivation of any product and, in social terms, it enabled the development of the best political organisation (Pliny 1949, 321-323; Aristotle 1998, 202). Throughout medieval times, these ideas were developed by authors like Albertus Magnus (Wey 2008, 69-70 and 279-282), and they were applied again, albeit not without transformations, by the Europeans at the time of their encounter with the New World to justify their imperialism (Pagden 1982, 66; Gerbi 1985).

[6] The notion of 'probable' based on authorities and argumentation is different from that which emerged in modernity linked to something measurable either statistically or as a degree of belief (see Hacking 2006).

[7] (this reason is not convincing, because corruption is not only caused by matter).

Although the torrid zone was mostly assumed to be uninhabitable due to its extreme heat, some authors held an alternative view. Unlike Sacrobosco, some of his commentators, such as Campanus of Novara and Robertus Anglicus, embraced the possibility posed by Ptolemy that, since days and nights are equal at the equator, this zone could be quite temperate and extremely pleasant to live in. They even speculated that the earthly paradise could be located in the torrid zone (Thorndike 1948, 190-191 and 239-240; Crowther 2020, 170). However, the idea that the terrestrial paradise was situated in the east of the known world, based on *Genesis* 2:8, was more widely accepted; an instance may be seen in the above-mentioned map by Giovanni Leardo. Beyond the classical limits of the ecumene, alternative ideas about the inhabitants of unknown regions of the world, and of a temperate torrid zone, were revived at the end of the fifteenth century to encourage voyages of discovery such as the one undertaken by Columbus (Wey 2008, 232-235).

Figure 1 – Ecumene map limited by the cold areas in the North and by the hot ones in the South and with the earthly paradise in the East. The Giovanni Leardo map, 1452 or 1453.
Courtesy of American Geographical Society Library, University of Wisconsin-Milwaukee Libraries

The coincidence in time of the Renaissance and of the great discoveries allowed sailors' reports to confront the literary culture of humanism, and from the (sometimes conflicting) knowledge generated by both, a new cosmography and worldview was built. Unlike previous authors, the explorers based their ideas not only on speculative arguments, but also on their own experience, soon refuting the opinion that the torrid zone was extremely hot and uninhabitable. They highlighted the temperate nature of the discovered lands while drawing on other ideas to characterise them. On this basis, both Columbus and Vespucci speculated that, because of their agreeable qualities, the earthly paradise might be located in these new lands (Columbus 1847, 135-138; Eden 1885, 278).

At the same time, from the earliest explorers on, the idea of the wealth of the New World was often accompanied by the denigration of its inhabitants as inferior and easy to dominate. Both positions gave rise to imperialism: the exaltation of American nature made these lands attractive to Europeans, while the denigration of their people justified their conquest (Crowther 2020, 175). In other cases, inferiority was attributed not only to the natives but also to the land, since both were conceived as intertwined. In this way, the New World and its population were incorporated into traditional European views, a further instance of the world being ordered from a Eurocentric point of view that claimed to be the qualitative centre of nature, humanity and society. The newly discovered lands, though habitable, were still considered extreme and peripheral – rather hot and not as temperate and benign as in Europe. Similarly, their peoples were considered physically, intellectually and politically inferior.

Although widespread, the idea of the inferiority of the New World was not, however, universally accepted. Bartolomé de las Casas, for instance, known for his defence of the indigenous peoples, also more generally supported the qualities of the New World. Las Casas maintained that these lands were temperate like no other and most suitable for humans. He followed Columbus' conjecture that the earthly paradise could be found there (1957, 377). Las Casas also stated that its inhabitants were not only intelligent but also lively and vigorous, and that they were political peoples with well-ordered 'republics' (1909, 85 and 509). In other words, he attributed to the Americas the natural and social qualities that Europeans claimed for themselves (Wey 2008, 399).

Alonso de la Vera Cruz wrote in this controversial context. In *De coelo*, he discussed climates, questioning whether the whole Earth is inhabitable and whether the location of paradise is truly in the East. Although at some point he affirmed that paradise's location is perhaps indiscernible, in response to the question of the habitability of the world, he took a different approach. Though he affirmed that all regions of the world are habitable, his main interest was, of course, in the torrid zone and the New World. He drew on Campanus' treatise *De Sphaera*, attached to the *Physica speculatio* to support his ideas. Although the appended text was exactly the same as that written by Campanus a few centuries earlier, the notion of an inhabited torrid zone had moved from theory to the concrete reality of a whole new world. At the same time, by changing the place of enunciation to Mexico City, where *De Sphaera* was now printed, the positive qualities that Campanus had attributed to the torrid zone were ascribed to the corresponding regions of the New World. In summary, the new experiences that discoveries allowed and theoretical speculation converged and complemented each other.

On the qualities of the torrid zone and the New World, La Vera Cruz supported his ideas with reference to previous authors and through his own experience. While following Campanus' assertions, he applied them to New Spain, stating that the climate in this region was never too extreme. He argued that this land was a very suitable place, especially under the equinoctial and further likened it to the earthly paradise with perennial harvests and a balanced climate. He

borrowed the story narrated by Robertus Anglicus (without mentioning him) of an enchanter who was promised, by a demon, all year round ripe fruit in a place that was believed to be uninhabited but was most pleasant – the earthly paradise (Thorndike 1948, 191 and 239-240). Alonso claimed that the inhabitants of New Spain could confirm this as they enjoy all kinds of ripe fruits any day of the year – not only from this region but also those brought from Old Spain. Even at Christmas – the coldest time in New Spain – figs, grapes, apples and other ripe fruit can be eaten (Vera Cruz 1557, 370). As can be seen, these products are of European origin, so La Vera Cruz applied classical European ideas to the nature of the New World, reflecting not only a conceptual rethinking but also the production and consumption practices allowed by the less severe American winter in the torrid zone.

La Vera Cruz, as Las Casas before him, challenged the traditional Eurocentric concept of the New World as peripheral and its inhabitants as inferior. Unlike pro-imperial interpretations, he valued these lands and their inhabitants, which had important political implications. As he had done in his more political texts, he re-interpreted European cosmographical notions to adjust them to the Americas. He developed a local perspective that placed the interests of the community above those of the central state and, at the same time, exalted the qualities of the New World. Thus, La Vera Cruz not only inverted the ultimate foundation of government to attribute it to the community, but he also modified the hegemonic image of the world to transfer the central qualities both natural and social to the New World. For him, the American climate was the most temperate while the political agency should be held by local communities including native peoples. Although the Americas were in the process of integration within the new cosmography of the world, La Vera Cruz's vision was not aligned with the European one but was instead situated in the New World.

La Vera Cruz's appraisal of the local environment of Mexico and its government was similar to the interpretation of the city developed, more graphically, by the cartographers of the time. These representations were based on the Nuremberg map in which the central square contains an image of a sacrifice and at the edge a Hapsburg banner. But in later engravings of the city, these elements have disappeared or have been transformed. This is particularly significant in the Venetian landscapes of Tenochtitlan, where a more civic and peaceful city is seen whose order and urbanity are signs of its good government in a similar way to representations of the Republic of Venice. This is the case of Benedetto Bordone's *Isolario* (1528), whose depiction of Tenochtitlan was imitated in many engravings – with slight modifications – in the sixteenth and seventeenth centuries (Horodowich 2018, 182-189). Thus, although the most common allegory of the Americas in cosmographical works was the image of uncivilised cannibals, there was this other more positive representation of their most important cities such, as Mexico (Davies 2016, 228-230), creating a counter-narrative to imperial denigration both in discourse and in graphical depiction.

Figure 2 – *Libro di Benedetto Bordone nel qual si ragiona de tutte l'isole del mondo*. Venice, 1528. Courtesy of the Library of the University of Seville

4. *Knowledge of the New World in the Old World*

In his *De decimis*, La Vera Cruz had opposed the secular clergy obtaining tithes from indigenous peoples. As a consequence, the archbishop prevented its printing and denounced Alonso to the Inquisition and he was summoned to the Metropolis in 1561 (Grijalva 1624, 95v). For his part, Alonso had begun to make arrangements to publish his texts in the Peninsula. Although the publication of his *De decimis* was unsuccessful, his treatise on marriages and his complete course of philosophy – composed of the *Recognitio summularum*, *Dialectica resolutio* and *Physica speculatio* – fared better, as both were approved by the Castilian Council and then printed in Salamanca in 1562. In the case of the *Physica Speculatio*, the new edition is virtually the same as the first, with the exception that Campanus' treatise is omitted.

Apparently, La Vera Cruz's treatise was well received at his *alma mater*, since one more edition was released in 1569. On this occasion, the publication licences were requested by the Augustinian procurator, Vicente de Quintanilla. The Augustinian order not only supported Alonso's work but even agreed to use his texts in the order's art courses (Herrera 1652, 339). This new edition was printed by two of the most important families of printers based in Salamanca who had already published earlier texts of his. It was financed by Simón de Portonariis and printed by Juan Bautista de Terranova, which seems to indicate a larger print run. In this edition, the contents of the *Physica speculatio* were expanded, especially its book *De coelo*, in which Alonso developed in greater detail both his views on celestial and geographical questions.

La Vera Cruz described the number and constitution of the celestial spheres and their movements. He narrated how throughout history different heavens or spheres had been established on the basis of the movements observed and attributed to the stars. He said that to the already defined eight Aristotelian spheres, Hiparcus and Ptolemy introduced another one, but unlike Sacrobosco and Campanus, Alonso included one more sphere, established by Thabit ibn Qurra in the ninth century and preserved at the court of Alfonso the Wise. In this way, La Vera Cruz recognised ten celestial spheres, each one with its own movement. He assumed the idea that planetary spheres are composed of various eccentric orbs and epicycles. Although these mechanisms had already been proposed since Ptolemy and taken up by Sacrobosco, in the second half of the fifteenth century, George Peuerbach offered a more systematic explanation of them in his *Theoricae Novae Planetarum*. Contrary to the interpretation that conceived celestial spheres as instruments to 'save the phenomena', Peuerbach's text contributed to understanding them as real and not just as imaginary devices (Barker and Goldstein 1998; Barker 2011). Following this interpretation, La Vera Cruz believed that celestial spheres, including eccentrics and epicycles, were real (1569, 230). His case proves, contrary to what Gaukroger argues (2006, 120), that not only astronomers but at least a few natural philosophers adopted this realistic approach at the time.

La Vera Cruz also developed in more detail themes on the terrestrial sphere, mainly addressing the contours of both coasts of the American continent. He reviewed several places on the Atlantic coast, from the northern region of Labrador to the Strait of Magellan. Then he examined the South Sea, that is, the Pacific Ocean, referring to various points from the Strait of Magellan to Santa Maria in California, which he said was the end of the discovered land, without speculating on the further shape of the continent. Although it lacks a map, La Vera Cruz's account goes running through the maritime places ('per loca maritima discurrendo') of both American coasts, referring to the latitudes of different sites and the distance between them, providing valuable practical information (1569, 220-225). María Portuondo has characterised this type of data as part of the cosmographical knowledge that the Hispanic empire tried to control and keep secret (2009, 106). How can we explain the fact that there was no problem over including this information in his treatise?

It has been said that it was not until the middle of the sixteenth century that there was a renewal of interest in prose geography (Mayhew 2001, 354). The *Historia General de las Indias* of Francisco López de Gómara, which described the contours of America, was printed in 1552 and, despite being subsequently banned in Spain, it continued to be published abroad. Even though other Hispanic treatises offered some descriptions of the New World, these were rather general, as in the case of the *Fragmentos matemáticos* of Juan Pérez de Moya (1567, 325-328). A more detailed 'description' of the New World is found in Jerónimo Girava's *Cosmographia y Geographia* printed in Venice in 1570 although in Spanish. Despite censorship, there must have been a need for texts on American geography in the Hispanic milieu. For instance, both

Gómara's and Girava's descriptions were incorporated into the 1575 edition of Peter Apiano's famous *Cosmographia*, printed in Spanish in Antwerp. Moreover, the appeal of these accounts is evident from references on title pages. The 1569 edition of the *Physica speculatio*, whose cover announced that the description of the American coasts was desired (*desiderabantur*), is not an exception. That Alonso's treatise was written in Latin might have facilitated its publication since, as José Pardo has pointed out, the approval was based on elitist and discriminatory criteria that often prohibited works in contemporary Romance languages while being more tolerant of those written in Latin (2003, 15).

Alonso's retrieval of other recent geographic reports may also have helped him to circumvent censorship. Among these reports is that of the explorations led by Miguel López de Legazpi in the Philippines, from which Andrés de Urdaneta discovered the route back across the Pacific Ocean. More importantly, La Vera Cruz mentioned the measurements carried out by Urdaneta and Martín de Rada, another Augustinian, for determining the longitude of the Philippines. This was a long controversial issue between the Spanish and Portuguese. At that time, it was discussed at the Madrid court by authors like Alonso de Santa Cruz and Urdaneta, for instance, at a meeting of cosmographers in 1567 at which Alonso was present. In his book, he reminded the reader that his coreligionists had established that the Philippines were, according to the Treaty of Tordesillas, under Spanish jurisdiction. He specifically mentioned the measurements made by Martín de Rada on the Cebu Island using the Alphonsine Tables and, moreover, the Prutenic Tables of Erasmus Reinhold – in accordance with the Neoteric Copericus ('iuxta Neotericum Copernicum', Vera Cruz 1569, 224 and 234). Reinhold belonged to a group of Wittenberg authors who used Copernicus' calculus – because of its greater precision and simplicity – but did not adopt his system. Rada's use of Copernicus, on the other hand, was not only theoretical but also had important practical and political implications. His measurements determining the Spanish jurisdiction over the Philippines were very valuable for the Crown, which most probably welcomed the fact that these ideas were elaborated in Alonso's book.

In addition to the Hispanic expansion in Asia, La Vera Cruz also referred to the situation in North America, more specifically to the expulsion of the French settlers from Florida by Pedro Menéndez (1569, 220-223 and 234). In these cases, unlike his *relectio* on just war, he supported the papal division of the new lands between the Spanish and Portuguese – within the geopolitical chessboard of his time, he was obviously on the Hispanic side. The Metropolitan government was almost certainly interested in spreading the news about the expansion of its empire and the work of La Vera Cruz could serve this end. Although it contained information considered secret, the fact that most of its geographical references were attributed to the Spaniards could be seen as a declaration that these territories belonged to the Crown of Castile. As has previously been pointed out, Alonso was not against Spanish expansion per se, but against its despotic character. Thus, his cosmographical reports were not so far removed from the view of the world that the Metropolis intended to impose.

Another factor that may have helped La Vera Cruz's treatise to be approved is the author's links with writers, such as Bartolomé de las Casas, Luis de León and Jerónimo Román, who had previously crossed the limits of orthodoxy, and with others connected with revising of books, such as Arias Montano and Juan de Ovando, the main promoter of the reforms of the time (Adorno 1993, 277). In fact, the *Physica speculatio* was the first scientific treatise printed in Salamanca to be revised by the Council of Castile, according to the pragmatics of 1558 (Ezquerra 2014, 298). It was also printed at a time when the Crown's need for a better understanding of the Hispanic Indies was evident, but before the reforms established by Juan de Ovando (Portuondo 2009, 115-118). As well as encountering no problems with

publication, the 1569 edition of the *Physica speculatio* probably circulated more widely than the earlier edition due to the lack of geographical information about the Americas in the Hispanic world.

In 1573, La Vera Cruz's complete philosophy course was printed once again in Salamanca. In this new edition, the *Physica speculatio* treatise is practically the same as that of 1569, except for minor additions. Despite being printed in Salamanca three times, we still do not know the impact of Alonso's work on the European intellectual milieu, but we can speculate on its possible influence on the ideas of his time. The theory that celestial matter is not different from terrestrial matter may have influenced some authors who were beginning to break with the sharp division between the two regions, such as the Salamanca professor Jerónimo Muñoz or the Augustinian Diego de Zuñiga. His geographical references may have been useful for practical matters and for the dissemination of Spanish colonisation. Conversely, his positive assessment of the indigenous peoples may have helped to counteract the hegemonic cosmographical view that the natives were inferior to Europeans. For instance, the Augustinian Jerónimo Román, in his *Repúblicas del Mundo*, affirms that the indigenous government in the Americas was 'in no way different from a very good republic' (Vera Cruz 1575, 385v).

5. *Back to a New World Perspective*

During his return to the Iberian Peninsula, La Vera Cruz continued his defence of the indigenous peoples and religious orders. He supported the ideas of Bartolomé de las Casas while defending the indigenous exception to tithes (Quijano 2017, 118). This was related to his opposition to the growing power of the secular clergy in the New World at the expense of the mendicant orders. Although La Vera Cruz recognised Spanish rule, he continued to uphold local governments against centralised powers. This judgement is reflected in his writings, but also in his actions within the different government structures. For example, within the reforms promoted by Juan de Ovando for the government of the Indies, La Vera Cruz was invited to stay in the court as General Commissioner of New Spain, Peru and the Philippines. Yet he declined the offer, as well as offers of a bishopric. Alonso's resistance to these assignments contrasts with his constant participation in the direction of the Augustinian province of New Spain and his role as prior in the convent of San Felipe el Real in Madrid (Basalenque 1673, 38v). This seems to indicate that his opposition was not to the administration's work, but to the government of New Spain, Peru and the Philippines being directed hierarchically and centrally from the Metropolis.

Alonso's preference for locally directed government can be confirmed, paradoxically, by the posts he held when he finally returned to the New World in 1573. He was Augustinian Vicar General of New Spain, Peru and the Philippines, and he was also Visitor – that is, he had the role of carrying out visits to supervise the administrations of those provinces. But La Vera Cruz himself said he accepted this position – which he held until the end of his life – with the intention of never using its prerogatives so that no one else would be able to do so. He took the view that it was conducive to the preservation of these provinces that there should be no visitors (Grijalva 1624, 189r). He believed that a locally run administration without centralised inquisitorial supervision was more desirable, which is consistent with his statement that dominion and government rest ultimately with the community.

When Alonso returned to New Spain, he was accompanied by seventeen friars whose work was that of evangelisation. He also brought with him sixty crates of books, among which was probably the most recent edition of his philosophy course. In 1575, Alonso was elected for the fourth time as Augustinian Provincial and, in the same year, he founded the Augustinian convent

of San Pablo in Mexico City. There, he built a rich library with the books he had brought from the Old World, which he complemented with maps, celestial and terrestrial globes, astrolabes, planispheres and other instruments (Grijalva 1624, 153v-154r). Until the end of his life, while living in Mexico City, La Vera Cruz exchanged letters and ideas with the Augustinian missionaries of the Philippines. One of them was Martín de Rada, with whom he exchanged information on evangelisation and on geographic and social matters in general. In his letters, Alonso asked for Rada's cosmographical texts while Rada requested mathematical books. They also discussed political issues, in the course of which Rada adopted La Vera Cruz's view that although the conquest had been illicit, it was not convenient to abandon the indigenous peoples at that moment (Folch 2021, 175-176 and 200-201). Like Alonso in New Spain, the Augustinians in the Philippines often defended the natives from the settlers' abuses (Li 2016, 244).

In the last years of his life, La Vera Cruz was concerned not only with the affairs of New Spain but also with evangelisation in the Philippines. Thus, the controversies of his first years in the New World were recreated on the other side of the Pacific Ocean. If earlier he had focused on the legitimacy of local indigenous governments, now the central role of New Spain as a link and intermediary between the Metropolis and the Philippines became equally important. Once again, neither the idea of the new world order nor the practical interests of La Vera Cruz coincided with the hegemonic view.

6. *Concluding Remarks*

Throughout this article, we have tried to highlight some of La Vera Cruz's ideas that went beyond the hegemonic thought of his time. Relying on alternative traditions and on his own experience in New Spain, Alonso not only incorporated the new lands into European frameworks, but he also developed a local perspective. He transferred to the New World the natural and social values that Europe claimed for itself, giving a central place to the Americas and their societies. This can be seen in his defence of the qualities of the Americas and their inhabitants as well as in his political ideas, particularly the idea that every government must have the community as its foundation and purpose. He defended both indigenous government and the local administration of his order, promoting the interests of the local communities as a whole, including Europeans and indigenous peoples. Thus, La Vera Cruz developed a counter-narrative to imperial claims and the prevailing cosmography of the time and, in doing so, offered an alternative way of conceiving the emerging new world in which the central and positive qualities are attributed to the New World and its local communities. His thoughts on the Americas and the world were situated in the midst of the disputes between local and Metropolitan visions and interests and in the tensions between them.

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Renaissance Cosmographical Knowledge and Religious Discourse
A 'Disenchantment of the World'?

Étienne Bourdon

Université Grenoble Alpes
(<Etienne.Bourdon@univ-grenoble-alpes.fr>)

Abstract

Sociologists, philosophers and historians (Weber, Blumenberg, Gauchet) have identified a so-called 'disenchantment of the world' which began to be perceptible during the Renaissance. The article discusses the historical relevance of the concept and that of secularization as applied to the history of early modern cosmographical knowledge. I draw a distinction between geography and cosmography in arguing that the process of 'disenchantment' was an uneven and complex process. On the one hand, cartography and geography moved away from biblical and Christian readings of the world. On the other hand, cosmography was seen as enabling a form of knowledge of the Divine describing the entire Creation. At the same time, it will be argued that geography in its mediation of earthly knowledge promoted a resetting and restructuring of a system of re-enchantment. All in all, knowledge, science and rationality contributed to appease a 'panic-stricken Christianity' (Crouzet).

Keywords: *Cosmography, Disenchantment of the World, Geography, Knowledge, Renaissance*

1. *Introduction*

From the second half of the fifteenth century onward, European geographical knowledge greatly expanded thanks to major voyages of discovery to Africa, Asia and America. These discoveries cast doubts on biblical and Christian readings of the world. Sociologists, philosophers and historians have identified a so-called 'disenchantment of the world' related to this period. The aim of this essay is to analyse the circulation and transformation of Renaissance cosmographical knowledge as it confronted religious discourse. It will question the relevance of the concepts of 'disenchantment of the world' and secularization

applied to the geographical field in the history of knowledge in the early modern period. It will endeavour to demonstrate that there was then no such thing as a simple and universal 'disenchantment of the world'. Indeed, the process was complex and uneven. Rather than an overall 'disenchantment of the world', I will argue that there was a resetting: a new composition of the system of enchantment actually took place. The relation between knowledge of the world and the concept of disenchantment needs, therefore, to be analysed on various levels. During the period, a new, more complex and stimulating situation emerged, involving multiple and sometimes contradictory discourses.

Max Weber first developed the concept of 'disenchantment of the world' in his well-known work, *The Protestant Ethic and the Spirit of Capitalism* (1904-1905), and later in *Politics as a Vocation* (1917-1919). Weber's theory does not elaborate specifically on the spatial dimension of the world, yet his central argument is that the place of magic in our understanding of the world gradually shrank. This idea plays a key role in Hans Blumenberg's reflections in his *Legitimacy of the Modern Age* (1966). Marcel Gauchet revisited the concept in two fundamental works, *The Disenchantment of the World, a Political History of Religion* (1985), and a critique and expansion of this study, *Un monde désenchanté?* (2004). These three authors, as well as other contemporary writers, defined the 'disenchantment of the world' as a general process in the decline of religion in early modern times – a process that resulted in a world deprived of spiritual meaning, potentially reducible to material knowledge (Szerszynski 2005, 7). This 'exit from religion', as Marcel Gauchet wrote (1985 and 1998), has been a lengthy process. Spreading over several hundred years, it began in the eleventh century, although it was not manifest until the sixteenth century.

The role of geography in this changing outlook has not been fully addressed. This is a significant omission, for the space or, more precisely, the territory occupied by a community constitutes one of the core elements of societal formation. From a political standpoint, the sixteenth and seventeenth centuries were a time of assertion for various states, not only of their spatial identity, but also in the shaping of their national identity (Bradshaw and Roberts 1998; Hampton 2001; Yardeni 2005; Tallon 2007). From a Christian point of view, describing territory was linked to a religious interpretation of the world (Büttner 1974 and 1979; Park 1994). Moreover, the close connection between knowledge and power, shown by Michel Foucault (1980), appertains to geography, society and politics. Indeed, the question of the 'disenchantment of the world' has been studied by few historians (Brooke 1991; Soergel 1997; Walsham 2008; Balzamo 2010). In the main it has been explored by sociologists, political scientists, philosophers, theologians and epistemologists (Isambert 1986; Cohen 1994; Dews 1995; Monod 2002; Walsham and Ruggiu 2003; Saler 2006; Bergmann 2007; Asprem 2014; Sharpe and Nickelson 2014; Josephson-Storm 2017). Consequently, the debate on disenchantment often lacks a cosmographical or geographical perspective. Geography should be reintroduced into the debate and should be used primarily to question the historical reality of the decrease of religious interpretations in early modern knowledge. Sources considered in this essay are Renaissance cosmographies (Münster 1544; Belleforest 1575; Thevet 1575), brought together with other types of discourse on geographical space, such as travel diaries, cartography and universal histories, mainly published between the mid-fifteenth century and the later part of the seventeenth century. After exploring the gradual disappearance of religious interpretations in cosmography and geography, this article will question the limits of the concept of disenchantment in knowledge before offering a new interpretation of the links between Renaissance, geographical knowledge and the re-enchantment of man.

2. *A Gradual Disappearance of Religious Interpretations*

Religious interpretation indisputably fades away from geographical knowledge. It can be first perceived in encyclopaedias from the thirteenth century (such as the *Speculum maius* by the Dominican friar Vincent de Beauvais, 1263) and then in Renaissance cosmographies as well as atlases such as Abraham Ortelius' *Theatrum orbis terrarum* (1570), the first atlas exclusively made up of modern maps. The evolution of world maps is indicative of a decrease in religious interpretation of the earthly space. The first incunabula of medieval encyclopaedias still contain T and O world maps as can be seen on the first printed world map in the 1472 edition of Isidore of Seville's *Etymologiae* (Etymologies). Such maps are part of a long tradition, earlier illustrated in the *Ymago Mundi* (1410) by theologian Pierre d'Ailly. T and O is the acronym of *Orbis Terrarum*, showing the letter T inside an O. These maps often represent the earth divided into three continents – Europe, Asia and Africa – with a city in its centre. They constitute Christian adaptations of a type of representation found in Greek antiquity in the works of Hecataeus of Miletus (c. 550-480 B.C.), who may have taken it from Anaximander (c. 610-546 B.C.). According to the ancient Greek conception, the world was as round and flat as a shield, and the city in the middle of the map was Delphi, the omphalos (ὀμφαλός), 'the navel of the world'. This illustration of the world prompted a Christian interpretation in the seventh and eighth centuries in the works of Isidore of Seville and (Pseudo) Venerable Bede. T and O maps are also found in universal histories like Jean Mansel's *Fleur des hystoires* (Flower of Histories) around 1459-1463, in which, under the reign of Charles VI, king of France (1380-1422), the historiographer elaborated on human history. In this ambitious history of the world, one map drawn by Simon Marmion is a symbolic fusion between Greek tradition, the geographical representation of the world and its biblical meaning (Ms 9231, 281v). Maps of this kind display Jerusalem, instead of Delphi, in their centre. The two bars of the letter T are represented by two horizontal rivers (the Tanais or Don, and the Nile), and the Mediterranean Sea vertically. The Garden of Eden and its four rivers – unsurprisingly – lie somewhere East. Nearby, the Tree of Knowledge is pictured. In the background stands Mount Ararat where Noah's Ark made landfall, along with three characters representing the sons of Noah, according to Venerable Bede's interpretation. Shem, Noah's eldest son, inherited Asia Minor and the Mediterranean islands. He is considered the ancestor of Abraham and the Hebrews. His youngest son Japheth inherited Europe. Ham is described as the last son who dared to look at Noah drunk and naked and, as a punishment, his own son, Canaan, was cursed and received Africa. The repetition of number 3 on the map clearly refers to the Trinity, a theological concept in conformity with the shape of the world as it was known until the end of the Middle Ages. From the same perspective, the Three Kings in the New Testament symbolize the recognition of Christ as the Messiah by pagan kings, one from each continent. Notably, the skin of one of the kings is coloured in black in order to represent the African continent.

This kind of map is clearly more a theological rendering of the world than a geographical illustration. It displays the shape of the world and the biblical history of its population. From the end of the fifteenth century, we can find only a few examples. The adaptations of Ptolemy's newly printed maps and Ptolemy's planisphere in Hartmann Schedel's *Liber chronicarum* (1493) both display biblical influence. The sons of Noah are represented although only to adorn the map alongside Plinian monsters in the corners. Further, these biblical figures are shown outside the geographical world. Other maps from this period still follow the biblical pattern of the sixteenth century, yet without real geographical purpose. In his *Itinerarum Sacrae Scripturae*, published in 1582, Heinrich Bünting presented a map of the world (4-5), which he called 'a

universal cosmography' illustrating that 'Ut universi orbis terrarum positus, tantò facilius percipi posset, Cosmographiam universalem in forma trifolii, inclytæ urbis Hannoveræ dulcissimæ & dilectissimæ meæ patriæ sigillo proponere volui. Granum sive semen huius trifolii, est ipsius Ecclesiæ domicilium, Judæa videlicet, cum sanctissima urbe Jerosolyma, medium totius orbis terrarum obtinens' (1598, 21).[1] The three continents appear as the petals of a trefoil, 'the seed or the grain of this clover is the house of the holy Church, Judea, with, in the centre, the holiest city of Jerusalem', unsurprisingly since the author was both a minister and a theologian. His book consists of a commentary on 'The travels of the holy Patriarchs, Prophets, Judges, Kings, our Saviour Christ and his Apostles, as they are related in the Old and New Testaments'.[2] This resolutely stylized representation of the world in three petals refers both to the Trinity and to the clover which appears in the coat of arms of Bünting's native and beloved town of Hanover. The arguments are rooted in theology, and they come from the author's very identity rather than from cosmography or geography. When he thinks through a geographical perspective, Bünting makes sure America is included, albeit shown in the bottom left-hand corner of the map, hence clearly giving a message of distantiation from the biblical text. Moreover, at the end of the map commentary, he points out that 'Non tamen ex omni parte vera terrae imago trifolio conformis est. Si quis igitur veram terrae marisque; effigiem habere voluerit, is in subsequenti tabula omnia exactius inveniet expressa & declarata (1598, 25); Declaratio secundæ tabulæ, quæ veram effigiem terræ marisque Representat (25b)'.[3] Most of the seven other maps are, indeed, more realistic. The *Cosmographiam universalem in forma trifolii*'s map is no longer included in subsequent editions, such as the 1598 English version. These representations disappeared at the end of the fifteenth century and were not found in modern cosmographical works. At the same time, more modern representations of the earth appeared, such as Martin Waldseemüller's celebrated world map of 1507, bearing the name 'America', after Amerigo Vespucci, for the first time on a map. From the end of the fifteenth century onwards, the influence of the Bible seldom appeared on maps and in cosmographical texts.

The persistence of the Noachian tradition, however, remains in subtler ways. Faced with increasingly detailed geographical knowledge, some cartographers attempted to provide a synthesis between the knowledge of their time and the tri-continental model. Such a synthesis can be seen in the famous multilingual *Royal Bible* published in Antwerp by Christophe Plantin (1569-1573). This Bible includes a world map that summarizes geographical knowledge of the time and locates Moses' descendants. The Eurasian continent does not end, but collides with the American one. The map also joins the Eurasian and American continents in order to introduce theoretical biblical ancestors to the Amerindian peoples. Another example of the co-existence of biblical and geographical knowledge is found in Jacques Signot's *La Division du Monde* (The

[1] (In order that the whole world might be so much more easily understood, I wanted to present the universal cosmography in the form of a t refoil, the seal of the famous city of Hanover, my sweetest and most beloved country. The grain or seed of this clover is the home of theChurch itself, namey Judea, with the most holy Jerusalem, holding the centre of the whole world). Unless otherwise stated, all translations are mine.

[2] Bünting Heinrich (1682), *Itinerarium totius Sacræ Scripturæ, or, The travels of the holy patriarchs, prophets, judges, kings, our Saviour Christ and his apostles, as they are related in the Old and New Testaments. With a description of the Townes and Places to which they travelled, and how many English miles they stood from Jerusalem. Also a short Treatise of the Weights, Monies, and Measures mentioned in the Scriptures, reduced to our English valuations, quantitie, and weight / Collected out of the Works of Henry Bunting; and done into English by R.B.*, London, T. Basset.

[3] (the image of the clover is not in keeping with each part of the earth. If someone wants true portraits of the lands and the seas, he will find some more precise and clearer' in the following 'tables which are true representations of the earth).

Parts of the World), first published in 1539. The general outline follows a biblical framework. After mentioning the Creation, the Great Flood and the Tower of Babel, Signot organizes the description of the earth according to the continents offered to Noah's sons. The description starts with Shem's Asia, then turns to Japheth's Europe and ends with Ham's Africa. It is significant that while the book was reprinted several times throughout the sixteenth century, the biblical framework was no longer used in the later editions. Only a few religious considerations remain in the foreword of works such as Sebastian Münster's *Cosmographei. Beschreibung aller Lender* (1544) or François de Belleforest's *Cosmographie universelle* (1575), both starting with a narration of the Creation. But André Thevet's *Cosmographie universelle*, published the same year, does not begin with a description of the Creation.

Another manifestation of the decline of biblical and religious history in later years is the disappearance of the systematic and explicit interpretation of the Creation in works of geography. Miracles and divine interventions also gradually disappear from such works in the seventeenth century. Even natural disasters such as the collapse of the Alpine Granier mountain in 1248 are no longer described as divine sanctions but as geological events. The influence of holy texts prevails only in works of geography dedicated to the Eastern Mediterranean regions. The deletion of biblical elements in descriptions and maps of the world is an early sign of disenchantment, conveying the decline of Christian interpretations in the fields of cosmography and geography.

In the wake of the sixteenth- and seventeenth-century religious conflicts, cosmography was potentially a sensitive field of study. Theological controversies linked to the geographical field of knowledge were, however, comparatively rare and when they did occur, debates were without intensity and often limited to personal rivalries. As we have seen, the switch from three to four continents took place without much debate. The same goes for the unavoidable question of Revelation and whether it was received by the newly discovered indigenous peoples. The debate around the humanity of native American and African peoples did not interfere with their exploitation. The medieval quest for the earthly location of Paradise as well as the Kingdom of Prester John were perceived as vain and quite simplistic by cosmographers and geographers.[4] The major theological debate – the question of transubstantiation, or Real Presence of Christ in the Eucharist species, as opposed to consubstantiation, which insists on the symbolic presence only – would not seem to have any consequence for the works of geography. Yet, in 1557 the so-called 'Guanabara polemic' opposed the French Catholic Nicolas Durand de Villegagnon (1561) together with Protestant settlers in Brazil to Pierre Richer, Jean Calvin and his followers. The Calvinists compared the Catholic rite of the Eucharist to the ritual cannibalism of the indigenous people, the Tupinamba (Lestringant 2012, 87-108). The debate spread to Europe (France, the Netherlands, England); François de Belleforest, for example, reported it in his *Cosmographie universelle* (1575) in a polemical way. The statement of French theologian Theodore Bèze during the 1561 Colloquy of Poissy captures the contemporary political, theological and cultural evolutions of the era. Bèze made a crucial point for our purpose: 'Nous disons que son corps est esloigné du pain & du vin, autant que le plus haut ciel est esloigné de la terre' (1580, vol. I, 516).[5] Here is encapsulated a recognition of a sharp separation between two orders of reality, what is divine as opposed to what is earthly. A parallel process can be identified in the dynamics of cosmographic knowledge.

How can we explain that geography, as opposed to astronomy or anatomy, was the target of so few attacks in the midst of profound changes and questionings of ancient and traditional

[4] However, the myth endures in other types of source (see Brewer 2015).

[5] (The body of Christ is as far removed from the bread and wine as the highest heaven is from the earth).

knowledge? Several reasons for this relative tolerance can be offered. Renaissance cosmographers were cautious and tended not to defend theses condemned by the Church. For example, François de Belleforest left astronomy out of his *Cosmographie* and condemned 'Copernicus's fantastical and too audacious opinion' (1575, vol. I, n.p.) regarding the movements of the earth. André Thevet refused to study the eleventh heaven and explicitly left it to theologians. When cosmographers criticized the authority of a saint, they remained circumspect. In 1544, Pierre Apian (Peter Benewitz) contradicted Saint Augustine's denial of a spherical earth, prudently citing the Apostles, and in particular Saint Thomas, who died a martyr in Southern India in A.D. 70. At the same time, geographical knowledge presented in the Scriptures increasingly appeared as imperfect. When Belleforest came to the question of locating Jerusalem in the centre of the world according to the tradition of the Church Fathers, he rebuked Thevet for his criticism of the ancient Fathers and for 'blaming them for having ignored the exact location and description of the world' (1575, vol. II, 1006). Here, Belleforest, as a devout Catholic implicitly, and with finesse, acknowledged that the Church Fathers were wrong. Overall, geo-theological controversies encouraged geographers to adopt a cautious attitude and to ignore religious history and theology so as to focus on geography alone, leading to a separation of knowledge of the world (geography) and of the meaning of the world (theology).

The distance between geography and religion appeared then in a number of ways. Clerics were no longer the main producers and holders of knowledge. In the orientation of maps, Mercatorian Europe and Jerusalem were no longer identified as the centre of the world. Maps, which used to be oriented to the East for religious reasons, were now shifted towards the Septentrion. A process of secularization also appeared in the primacy granted to knowledge of the earthly world rather than of the divine, celestial world. It was also seen in men reading and trusting the astronomical skies, in coordinates (Ptolemy) or in climates (Jean Bodin), and no longer in the divine heavens to describe the world. Moreover, the same process affected the principles of causality (geophysical mechanisms as opposed to divine intervention) and the intentionality presiding over the use of knowledge to serve the prince's glory (the king's, the duke's), and less and less to celebrate the Lord's. Likewise, readers began to accept that geographical descriptions could be unencumbered by biblical history and references. Geographical temporality (the world in the present) must prevail over religious temporality (for example, Creation, Christian ages of humankind) in describing the world (Bourdon 2017). However, while religious interpretations were losing ground, the disenchantment of the world had its limits, even in the field of geography. Raising the question of these limits will be the object of the next section.

3. *The Limits of the Disenchantment of the World*

From the perspective of the history of knowledge, the function of theology was to bestow meaning upon Creation and upon the world God built from the void to highlight his greatness and his might. Most of the fields of knowledge concerning the world, including cosmography, were then subordinated to theology and united in the belief in a universe divinely ordained and, in this sense, enchanted. However, as we have seen, geography gradually ceased to deal with religious and theological issues. Its aim became that of describing the concreteness of the world. Geographical knowledge was founded on spatiality and location. It could be said that, from the sixteenth century onwards, man was able to map, measure, quantify and locate places without any mediation of the divine. We could define this operation as a form of disenchantment. Renaissance contemporaries, however, needed not only a physical description of the world but also spiritual elements to understand it (the

role played by theology). Cosmography and theology shared the same ambition to 'tell the world' (Wolff 1997). In contrast with geography, cosmography remained intimately linked to theology throughout the sixteenth century, sanctioning a Christian reading of the world. As a consequence, cosmography became a way to know the work of God the Creator and his might. In his 1575 *Cosmographie universelle*, André Thevet, from his foreword onwards, presents the reader with this very principle. Talking about cosmography, he writes: 'Je pense qu'il n'y a science, apres la Theologie, qui ayt plus grande vertu de nous faire cognoistre la grandeur & puissance divine, & l'avoir en admiration que celle la [la cosmographie]. Ce que vous cognoistrez est vray, si bien vous considerez, que si nature merite quelque louange, qu'elle ne peut estre attribuee à autre qu'au createur' (1575, vol. I, Preface).[6]

According to Thevet, all believers must contemplate God's power and can do so through cosmography's panoptic virtue. Cosmography enables acquisition of knowledge of the Divine because it claims to describe the entire Creation. There are numerous passages in the Bible or in the Church Fathers' writings inviting the reader to discover God's work in the physical world.[7] Beyond natural theology, revealed theology seeks the knowledge of God through the study of Revelation, namely the way God chose to manifest himself to men historically (as in the history of Israel, and most of all with Christ). As in natural theology, revealed theology also highlights strong links between cosmography and theology as Thevet explains in the foreword to his *Cosmographie universelle*:

> Cette science [la cosmographie] nous induit plus avant au spectacle de nature, elle nous donne aussi plus grande cognoissance de la divine puissance: laquelle le saint Esprit nous voulant faire entendre, nous admonneste & enseigne de regarder la grande magnificence de cest vnivers, lequel encores qu'il soit trouvé admirable, toutesfois il n'est rien au pris de l'aucteur, qui a les mains si grandes, qu'en une il contient tout le mo[n]de, & entre deux ou trois doigts il tourne toute la terre. (1575, vol. I, Preface)[8]

What appears fundamental here is Thevet's insistence on the extra-worldly nature of the Christian God as defined by the theology of Incarnation. The author explains that the earthly and the celestial worlds coexist and have been separated ever since the first day of Creation. The Christian God is remote from men. He predates the world of men. He is exterior and superior to it. There is a hierarchy between the heavens and the earth, between the things of this earthly world and those of the divine. It corresponds to a submission of the visible to the invisible, of the natural to the supernatural (see Gauchet 1984, 155). From this perspective, describing the world also entails describing the work of God as well as approaching and understanding the divine.

Thevet considered cosmography next in dignity to theology. He explained the existence of so-called 'cosmographic meditations', spiritual meditations drawn from the Bible and cosmographical works and described by Gerardus Mercator in his *Atlas sive cosmographicae*

[6] (I think no science, after Theology, is abler to uncover and admire the divine Greatness and Power than [cosmography]. If you reflect carefully, you will know as true that any praise directed to nature can only be owed to the Creator).

[7] See for example the Bible (Sg 7, 17-21) or Bonaventure (Sent. 2, 1, 2, 2 and 1).

[8] (This science [cosmography] is more likely to advance our understanding of the spectacle of Nature; it also enables us to better know the divine power. In order to make us understand the divine, the Holy Spirit exhorts and teaches us to look at the great magnificence of this universe which, however admirable it may be, is nothing compared to that of its Maker whose hands are so great that He contains the entire world in just one, and has the earth spin between two or three fingers).

meditationes commonly known as *Mercator's Atlas* (1595). Cosmographic meditations are viewed as a way of following Augustine's or Calvin's teaching, according to whom God has 'engraved in each one of His works certain signs of His majesty by which he offered Himself to be known by us according to our small capacity' (Calvin 2009, 30).[9] The world could then be 'read' through the four methods of exegetical interpretation: the literal, the allegorical, the topological and the analogical. The same goes for landscapes, read through a religious lens. It is the case, for instance, with seascapes (Cabantous 1990; Bentley, Bridenthal and Wigen 2007) or mountains (Bourdon 2011, IX; Brunet and Martin 2015). While geography may have ceased to integrate theology in its arguments, theology remained intrinsic to cosmography. Geography, as an autonomous discipline, represents only a small proportion of the available discourse about the world in the Renaissance since its scope was limited to the description of the visible world. Geographical works, concerned with the visible world, were mainly known by educated social elites who accounted for only five to ten percent of the population. Cosmography's geographical dimension was confined to the visible world in its materiality, its envelope, detached from the deeper theological or metaphysical meaning of the world. This is precisely expressed in André Thevet's comment on the Church Fathers and their ignorance of the location of Jerusalem, when he concludes: 'On sçait bien qu'és sainctes Lettres il fault plus adviser le sens, esprit & moelle, que s'amuser à la simple escorce, & histoire nue' (1575, 175v).[10]

Geography was not the only way to describe the earth: religious interpretations were offered in certain types of non-geographical works. Descriptions of the earth appeared in religious literature such as the lives of the saints, religious plays, panegyrics and sermons, or else in pilgrims' diaries. All these religious sources contain geographical information that sometimes played a key role in topography. For instance, the Little and the Great Saint Bernard Passes in Switzerland were named after the story of Saint Bernard in the Alps (Lucken 2004). Pilgrims' diaries often describe an experience of the world through a religious lens. In 1582, Abbot Philippe de Caverel thanked God for the beauty of Alpine streams, while in 1591 Jacques de Villamont paid tribute to 'divin peintre & ouvrier de toute la nature' (1595, 1v)[11] in his travel diary. In 1614, Pierre Le Monnier considered that mountains show the 'grands miracles de nature & tres-hauts secrets du haut Dieu' (1614, 45).[12] Other diaries include biblical quotations in their travel accounts (Bourdon 2011, 486-498). The theologian and historian Gilbert Burnet in 1685 compared the chaotic landscape of the Alps to the day after the Great Flood and interpreted the 1618 landslide of Plurs, in the Valtellina region, as a divine punishment for the depravity of the Milanese people. His account re-told the story of Sodom and Gomorrah, in which he replaced the characters of Lot and his wife with rich Milanese merchants (Burnet 1686, 180). Situations with a very strong emotional burden were also conducive to religious interpretations. For instance, in the account of the 1689 Glorious Return, the return of a thousand Waldesian people to their valleys is described as a conflict between the forces of Good and Evil (Arnaud 1710). The description of the geographical space is filled with theological interpretations and can even be read as a spiritual voyage inspired by works on the Waldesian Church by their pastors Jean-Paul Perrin, Pierre

[9] The concept of the sign in protestant theology has been extensively studied by Harrison (1998) and Zachman (2007).

[10] (It is a well-known fact about the Holy Scriptures that we need to search their meaning, spirit and very heart rather than trifle with the mere bark and naked history).

[11] (the divine painter and author of the whole of Nature).

[12] (great miracles of Nature and the greatest secrets of God the highest).

Gilles and Jean Léger, and by Pierre Jurieu's interpretations of prophecies (Bourdon 2009). These various examples show that discourses on space, beyond geography as a science, could still celebrate the Creator.

4. *Geography, Humanism and the Re-Enchantment of Man*

While geography ceased to tackle issues directly related to religion, leaving them to theology, it was to play a role in the resolution of the mediation crisis. With its hope (or aim) of giving a precise description of the world, it mediated between the human and the divine by showing men the world in its spatial materiality. Hans Blumenberg emphasized how 'theological absolutism' (1999, II) of late medieval nominalism defined God and the world as inaccessible to human intellection. The primacy of the arbitrary divine will was incarnated in the Augustinian *quia voluit* (because he wanted it). By rejecting the ancient cosmological conception, theological absolutism denied man the rational understanding of Creation. It thus induced a 'system meant to make man extremely uneasy about the world – with the intention, of course, of making him seek salvation outside the world, driving him to despair of his this-worldly possibilities and thus to the unconditional capitulation of the act of faith' (Blumenberg 1999, 151). Beyond the political and socio-cultural dynamics at stake in sixteenth-century Europe, this 'panic-stricken Christianity', as Denis Crouzet describes it (2008, 43), triggered a terrible eschatological anxiety which stemmed from the failure of theological discourse to address people's need for security (Blumenberg 1999). In this context, scientific discourse, especially geographical knowledge which purposely kept at a distance from theology, was reassuring, for it displayed only the materiality of the world. This concrete approach could correspond, following Blumenberg's reflection, to a reassuring overhaul of benchmarks, a shift towards earthly landmarks and time marks.

Geographical discourse fits into the humanist framework that granted mankind an elevated dignity in the realm of Creation as much as it valued knowledge of the world. It contributed to finding 'the ontological One uniting God with the world' (Gauchet 1999, 53), namely the relationship between the earthly and the divine. At the same time, geography represented a mediation between men and the world, and therefore between men themselves. The humanist vision of human dignity and its ability to gather 'the many fine flowers' of knowledge (Pierre Belon 1555, 3r) in a celebration of the Creator puts the idea of an absolute disenchantment into perspective. Rabelais had already claimed the coming of a 'century so full of light' in 1532 (1872, vol. II, 513). Pierre Galland, in his funeral oration for Francis I in 1547, proclaimed that 'nowadays, we can understand something in all sciences and have truly become human' (1547, 11v) thanks to *studia humanitatis*. Humanists, among them Pico de la Mirandole, Erasmus, Dolet, Budé, Rabelais and Montaigne, demonstrate that knowledge, curiosity and research through experience and reason make man more fully human. This changed relationship to the world, expressed by this new (or sometimes renewed) knowledge, highlights the dignity of man and his life in the present of his terrestrial existence.

This emergent knowledge is embedded in human time, in the earthly world, at the expense of a divine temporality out of time. The development of sciences became another way of rationalizing the world; science became the soothing, modestly human, counterweight to the overwhelming divine presence. It was no longer a question of saying what the world is in its essence and what it has always been, but of describing what it is in the contemporary and provisional present. In leaving the celestial sphere, scientific discourse valued the terrestrial globe, thus dealing with human temporalities and their shifting, unstable and impermanent

nature. Thenceforth, it is human knowledge of the world of men, produced by men themselves, a knowledge in their temporary and limited, finite and imperfect image.

It is not a surprise that Thomas Aquinas, who tried to synthesize Aristotelian philosophy with the principles of Christianity, enhancing the human quest for knowledge, was declared one of the Doctors of the Church in 1567 and that the first edition of his complete works was published in 1569-1571. In Aquinas' theology, the sixteenth century finds a new paradigm organizing more harmoniously Christian belief with the new European aspiration towards knowledge. In contrast, the religious controversies at the turn of the sixteenth century and the wars of religion were marked with the over-enchantment of a theodicy which had become incomprehensible. Thus, eschatological and violent over-enchantment combined with an ontological enchantment that elevated man to the dignity of a rational being, capable of understanding the world he inhabited. Between the 'disenchantment of the world', the re-enchantment of man and the over-enchantment during the wars of religion, we could say that a whole economy of enchantments surged with its transfers, its mutations, its emergences, its extensions and its withdrawals.

The evolution of geographical knowledge showed, in Blumenberg's words (1966), that there was no substantial transference or displacement (*Umsetzung*) from the spiritual world (theology) to the secular world (human), but rather a reinvestment of certain functions, a redistribution (*Umbesetzung*) of questions-and-answers systems leading from theological to scientific discourse. This crucial question was actualized in Montaigne's 'Que sais-je?' (What do I know?). This new questioning required the development of new disciplinary tools. The emergence of cosmography followed by geography fulfilled this function. As Blumenberg has shown with regard to providence and progress, in opposition to Karl Löwith (1949), there was no straightforward secularization. Renaissance geographical discourses on the world brought new descriptions and explanations of old problematic questions already found in classical thought. While the answers are new, addressing reactivated and updated concerns, the questions are old. They are the marks of a 'new metabolism' (Gauchet 2007, 166) of the 'mortgage of prescribed questions' (Blumenberg 1999, 65) that already existed in antiquity and were now seen through the lens of Christianity.

Finally, the disenchantment of the world does not entail a loss of meaning in the relation between man and the world, but rather the transfer from an enchantment of the world to a humanist enchantment of man. It is a transfer from an enchanted world, the essence of which cannot be accounted for other than by theology, to a world where man, who is rational, is inspired by the Creator and seeks to shape forms of knowledge observable from here-below and which could be confirmed through simple experience.

5. *Conclusion*

This article has highlighted different processes in the complex relations between cosmographical and geographical knowledge and the dynamics of disenchantment, re-enchantment and over-enchantment of the world. It has been argued that while, indisputably, there was a disappearance of religious interpretations in Renaissance geography, the consequence was not a profound disenchantment of the world. Geography did bring reflection about the world down to a human scale, leaving the unveiling of the deeper meaning of the world to theology and religion. But, in so doing, it partook of a more general humanist celebration of men by offering them a core place in the world and giving prime importance to their outlook on the world. Humanism and, similarly, Christian theologies, whether Thomist, Calvinist or Lutheran, re-enchanted humankind by granting them again their once lost dignity: this enchantment strongly motivated the geographical exploration of the earth within a Christian frame. Claims for a disenchantment

of the world in the Renaissance or its secularization need, therefore, to be nuanced. As the world transitioned from medieval to early modern, it did not become wholly meaningless or totally disenchanted. Emerging from the heart of cosmographical encyclopaedias, whose ambition was to describe the totality of the Creation as celestial and terrestrial spheres, geography was able to mediate between God and man.

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Getting the Message of Abraham Ortelius' Heart-Shaped Map and Atlas

Stephanie Inverso
Boston University (<sinverso@bu.edu>)

Abstract

In 1564, the celebrated Flemish cartographer Abraham Ortelius published his first cartographic work: a world map in the shape of a heart. This map manifests a spiritual call toward world unity heavily influenced by the heterodox sect known as the Family of Love. Six years later, Ortelius published the first edition of his groundbreaking magnum opus, an atlas entitled *Theatrum Orbis Terrarum*. With this later work, the unorthodox message of his cordiform map was not erased but transmuted into the form of an atlas. Abraham Ortelius' example demonstrates how the ways in which knowledge circulated within humanist networks ensured that spiritual concerns, particularly unorthodox ones, continued to influence European cartography long after the rediscovery and translation of Ptolemy in the early fifteenth century.

Keywords: *Atlas, Cartography, Cordiform, Family of Love, Ortelius*

1. *Introduction*

The Flemish cartographer Abraham Ortelius (1527-1598) published the first edition of his celebrated *Theatrum Orbis Terrarum* in 1570. The *Theatrum* is considered the first atlas, defined as a bound collection of maps guided and shaped by its editor.[1] While Gerard Mercator's *Atlas*, which gave the name to the genre, would follow in 1595, Ortelius' *Theatrum* is the first work that fits this description. The work enjoyed enormous

[1] Unlike a simple collection of maps, the maps in an atlas must be coherent, in the same style, and include guiding text. The uniform structure of Ortelius' atlas meant that updated maps could easily be inserted into subsequent editions. Ortelius allowed for orderly supplementation of updated maps into later editions of his work. As a result, the original 1570 edition contained 53 maps, while the 1598 edition included 119. Beginning in 1579, Ortelius began inserting into editions of his atlas a collection of maps of ancient locations, called the *Parergon* (see Koeman *et al.* 2007, 1318-1320 and also Bagrow and Skelton 2010).

commercial success; it went through forty editions between 1570 and 1641, in Latin, Dutch, French, German, and English (Koeman *et al.* 2007, 1318-1321). An atlas would have been a luxury purchase, and indeed, the *Theatrum* cost the equivalent of a month of a printer's salary in 1570 (1331). Wealthy individuals could commission copies of the *Theatrum*, colored in by hand and specially bound (Van den Broecke *et al.* 1998, 81-82). Among those who could afford it, Ortelius' atlas was an instant success and assured the cartographer's financial security.

The work of Ptolemy, the second-century Egyptian geographer, had always been preserved in the Arab world, even if it had been essentially lost in medieval Europe. The Italian scholar and humanist Jacopo Angelo encountered Ptolemy's *Geographia* and translated it into Latin in 1406. This work laid the foundation for how we understand the creation and function of maps today, introducing the use of latitude and longitude to pinpoint locations and an index of place names to look up their locations quickly. Cartographic history since the nineteenth century has largely followed a positivist tendency: there were the Middle Ages, when monks created world maps with a mixture of guesswork and artistic license, and the Early Modern period, when the rediscovery of Ptolemy's ancient treatise on geography enlightened European mapmakers to techniques of mathematical cartography. Scholars have viewed cordiform, or heart-shaped, maps from the sixteenth century as exceptions that prove the rule, alternatively novelty items and grasping, failed attempts to depict the globe on a flat surface. As scholars such as Patrick Gautier Dalché (2013) have shown, however, one cannot draw a neat line between medieval and 'modern', reality and fantasy, spiritual and scientific. Using Ortelius' atlas as his primary case study, Denis Cosgrove argues against the notion that Renaissance geography was necessarily bound by the state political project, suggesting instead that it also served a moral and philosophical purpose (2003). Cultural critic Giorgio Mangani opened the door to scholarship on the spiritual themes of cordiform maps in particular with his 1998a article, 'Abraham Ortelius and the Hermetic Meaning of the Cordiform Projection'.

Some Ortelius scholars posit that 'Ortelius's atlas was primarily a commercial product' (Koeman *et al.* 2007, 1324). Ortelius' concern for profit, however, did not preclude him from imbuing his cartographic work with spiritual significance. Spirituality and commerce were not as opposed in Ortelius' world as this quotation suggests. Hailed as a watershed moment in the development of cartography, Ortelius' atlas was in fact not so distant from his first publication, a 1564 map of the world in the shape of a heart. This map manifests a spiritual call toward world unity heavily influenced by the heterodox sect known as the Family of Love. In his later work, the unorthodox message of his cordiform map was not erased but transmuted into the form of an atlas.

Ortelius worked in Antwerp during the early days of the Dutch Revolt, which began in the late 1560s and ended with the Netherlands achieving independence from Spain in 1648. Given the historical context, one might expect confessional divisions to have proved a barrier to communication between cosmographers and other intellectuals. Within Ortelius' network, this seems not to have been the case. Ortelius was a member of a religiously diverse network of European humanists. He was friends with Andrew Schotte, a Jesuit priest; Jakob Monau, a leader in the Calvinist church; and Justice Lipsius, who abandoned Catholicism for Calvinism before returning to the Catholic Church. Many of his friends had studied with the Protestant theologian Philip Melanchthon, whose 'philosophy of *pieta eloquens*, a synthesis of ecumenism, private piety, erudition, and observation, resonated in the irenic circle of Ortelius' (Meganck 2017, 22).[2]

[2] Ortelius' copious correspondence was published and translated in the nineteenth century by J.H. Hessels (1887). Given the number of Ortelius' surviving letters and the care he took to list the sources of his maps, it is no surprise that much scholarship on the cartographer has focused on his connections with other intellectuals, including

The idea that Ortelius' atlas was primarily a commercial product requires a narrow focus on the atlas itself. As a good humanist, Ortelius saw textual production as a collaborative effort, as evidenced by the detailed list of his sources that Ortelius included in the introduction to the *Theatrum*. We must situate Ortelius' work in its context in conversation with other texts and ideas in order to comprehend its message. Along with cartographic knowledge, Ortelius invested his work with spiritual meaning that like-minded individuals readily ascertained.

2. *Ortelius' Cordiform Map*

Ortelius' first map was a cordiform, or heart-shaped, map of the world (figure 1). A copper engraving on eight sheets, published by Gerard de Jode in 1564, the world of Ortelius' map somewhat resembles a kidney bean, curving upwards from the bottom and relatively flat on top. The world sits in a soup of winding clouds. A cartouche in the bottom left lists different commodities that one can find in various locales. Ortelius, after all, was a merchant producing maps for a predominantly merchant Dutch audience. On the bottom right, he included small maps of the cities of Tenochtitlan in the Aztec Empire and Cuzco in the Incan Empire, both based on illustrations in Ramusio's *Navigationi et viaggi* (Van den Broecke *et al.* 1998, 98).

Figure 1 – Abraham Ortelius, *Nova Totius Terrarum Iuxta Neotericorum Traditiones Descriptio* (1564), ©British Library Board (Cartographic Items Maps C.2.a.6.)

It will be necessary to explain the origin of cordiform maps to understand the link between this map and a heart. Cordiform maps are based on a cartographic projection described in Ptolemy's *Geographia.* Addressing the problem of how to represent the globe on a flat surface,

the Family of Love. Influential works include Boumans 1954; Koeman 1964a and 1964b; Van den Broecke *et al.* 1998; Karrow 1993 and 1998; Mangani 1998a and 1998b. I discussed the theological implications of Ortelius' cordiform map in depth in Shiflett 2019.

Ptolemy proposed a mathematical projection for a world map that looks something like a horseshoe. It bulges in the middle and curves upward toward the top left and right corners. However, Ptolemy included descriptions of maps and how to make them, but no images of maps themselves. A German mathematician, Johannes Werner, first made explicit the visual link between Ptolemy's second projection and a heart in a 1514 treatise in which he printed blueprints for three different heart-shaped map projections (Kish 1965, 13). Over the next few decades, cartographers would play with these projections, stretching them into, presumably, what they believed were more accurate representations of the globe. By the time that Ortelius published his cordiform map in 1564, he had a range of cordiform cartographers on whom to draw: the German cartographer Martin Waldseemüller; Oronce Fine, mathematician to King Francis I in France;[3] the French cartographer Peter Apian; Apian's Flemish disciple, Gemma Frisius; and Gerard Mercator, a friend of Gemma Frisius as well as of Ortelius.[4] Ortelius utilized a 'truncated' cordiform projection for his 1564 map, a flattened and distorted version of Werner's heart-shaped projection. The truncated cordiform projection represents a middle ground between portraying the world in the distinct form of the heart and trying to portray the spherical earth on a flat plane accurately, a problem that early modern cartographers had been wrestling with since the recovery of Ptolemy's *Geographia*.

Ortelius' connection to the Family of Love helps explain his decision to create a heart-shaped map. The Family of Love originated in Germany with the messianic visions of Hendrik Niclaes (c. 1501-c. 1580), then traveled to the Netherlands and England.[5] The sect rejected mediation by priests in favor of direct contact between the believer and God. The goal was union with Christ, who would come to dwell inside the righteous man, erasing his sins. In a letter, French polymath Guillaume Postel asks Ortelius to give his regards to Christopher Plantin, a key member of the Family of Love, and to assure him that he knows members of the group.[6] This letter is the principal piece of written evidence in support of Ortelius being a member of the Family; it would have been extraordinarily dangerous to write about a heretical sect to someone who was unaware of or unsympathetic to its existence. Unsurprisingly given the political climate in which he lived, Ortelius was discreet about his leanings. In March of 1593, he wrote to his nephew Jacob Cool: 'At in illo tempore sapiens tacebit … Et crinistianismus est non hoc aut illud scire, dicere, vel agere, sed esse' (in Hessels 1887, 549).[7] This conviction may link Ortelius to the Family of Love, who shared a belief that humans' relationships with God were internal and outside of the jurisdiction of worldly institutions. The very appeal of Familism in the Low Countries may have come from its convenient blending of individual spirituality and free trade: Niclaes emphasized that one could outwardly conform to local custom without betraying one's Familist conscience since rites and ceremonies were merely precursors to the real work of becoming united with Christ. He also encouraged his adherents to stay in the Catholic Church while participating in the rites of the Family of Love. This division may

[3] On Oronce Fine, see Tom Conley's article in the present volume.

[4] Werner himself credits Johannes Stabius, his contemporary and a professor at the University of Ingolstadt. For an overview of the cordiform projection and descriptions of these maps, see Kish 1965.

[5] Friedrich Nippold published the seminal work on the Family of Love in 1862, where he discussed Plantin's connection to the sect. A steady stream of scholarship throughout the twentieth century worked to sort Familist beliefs from antagonistic propaganda and illuminate the extent of the group's influence, culminating in Alistair Hamilton's 1993 *The Family of Love* and Christopher Marsh's 1994 *The Family of Love in English Society, 1550-1630.*

[6] The Latin letter and an English synopsis were published in Hessels 1887, 46-49.

[7] (The wise man, in these times, must remain silent … Christianity is not so much knowing, saying or doing this or that, but being). My translation.

have been particularly appealing to Flemish humanists because it allowed them to maintain appearances and thus safety, reputation, and business.[8]

The heart served as the defining symbol of the Familist sect, representing universal love and compassion. It repeatedly appears in the work of its founder, Hendrik Niclaes. One such image, included in Niclaes' apocalyptic work, *The prophetie of the spirit of love* (1574), features a heart in which two hands embrace (figure 2). A label above the hands reads 'L.T.', for 'Love' and 'Truth'. A three-pronged lily fills the heart. A quatrain below the image celebrates the peaceful, loving qualities of a heart in which God dwells. In another image, from his *Exhortatio I* (1574), a heart complete with an aorta showcases a complex allegory of the triumph of Christianity. A lamb representing Christ stands on top of a human skeleton, which in turn rests on a globe in flames. The globe crushes a demonic figure labelled 'Synne'. The image represents the Apocalypse, entailing the end of the world and the victorious return of Jesus (Marsh 1994, 252).

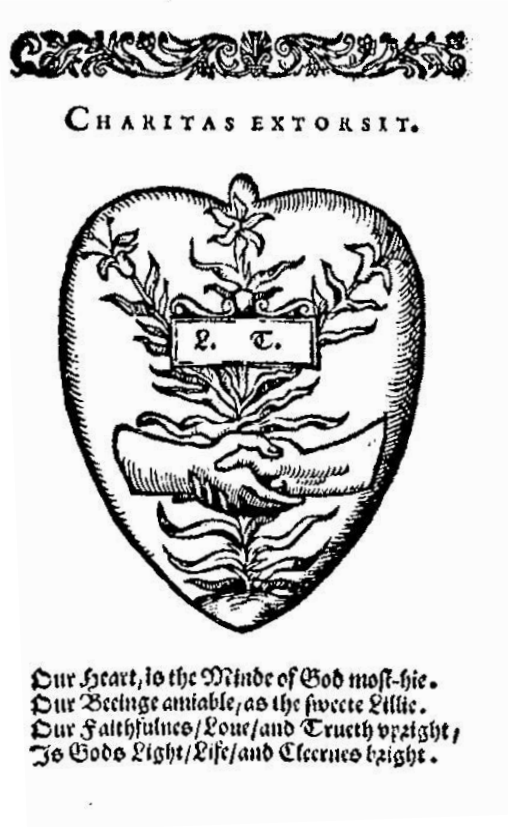

Figure 2 – Hendrik Niclaes (1574), *Hendrik Niclaes, The Prophetie of the Spirit of Loue. Set-fourth by HN: And by Him Perused A-New, and More Distinctlie Declared. Translated out of Base-almayne into English*, RB 62765, The Huntington Library, San Marino, California

[8] Alistair Hamilton suggests that the Family of Love would have appealed to Ortelius because its philosophy would have allowed him to pursue commercial and scholarly interests without the barriers of traditional religious divides (1981, 71). Cultural critic Giorgio Mangani posits that the tremendous commercial success of the *Theatrum* – perhaps surprising given the atlas' exorbitant price – may have been due to Ortelius' network of prosperous Familists (1998b, 126-127).

Similar images appear in a collaborative text known as the *Album Amicorum* (c. 1574-1596). Ortelius circulated this tiny book, measuring just 16x11cm, among his friends in Europe. The basis of the book was a preparatory manuscript for a treatise on numismatics by Hans Vredeman de Vries, a Dutch artist and fellow resident of Antwerp. The manuscript contained circular frames that in the printed version would contain images of coins; Ortelius invited his friends to fill the frames with their own designs (Meganck 2017, 207). One hundred thirty-four authors contributed to the work between 1574 and 1596, filling the pages with textual and visual tributes to their friendships with Ortelius. For his *Album* entry, the burgmeister of Antwerp, Nicolas Rockox, drew two hands in a handshake, surrounded by the motto 'Amor Mutuus' (mutual love) and the Chi-Rho, symbol of Christian peace (1969, 27r). The humanist Adolphe de Meetkercke drew two hands in a handshake – one wearing an armored glove, the other bare – with a third hand gripping them both from above. The inscription around it reads in Greek: 'Being a brother for one's enemy as for one's friend' (31r).[9] While it is impossible to determine the full extent of the Family of Love's membership in the Netherlands, we can see that the iconography of love and friendship that featured prominently in works by the group's leader was current amongst members of Ortelius' network.

How popular was Ortelius' cordiform map? How widely did it circulate? It certainly was not the cause of Ortelius' later fame and fortune. Ortelius' heart-shaped map does reappear later in the century, though. The so-called Fool's Cap Map, published anonymously, probably in Antwerp around 1590, recycles Ortelius' work into an explicit illustration of Neostoic philosophy (figure 3). The artist inserted Ortelius' cordiform map into the belled cap of a jester. The top of the image bears the title, 'Nosce te ipsum' (know thyself). Around the jester's neck, medals bear the phrases: 'O curas hominum', 'O quantum est in rebus inane', 'Stultus factus est omnis homo', and 'Universa vanitas omnis homo'.[10] A quotation from Pliny tops the map: 'Hic est mundi punctus et materia gloriae nostrae, hic sedes, hic honores gerimus, hic exercemus imperia, hic opes cupimus, hic tumultuatur humanum genus, hic instauramus bella, etiam civilia. Plin' translated as: 'This is the place and the nature of our glory, here we have honor, manage power, wish wealth, here the human race riots, here we make wars, even civil ones. Pliny'. At the bottom of the map, one reads: 'Stultorum infinitus est numerus' (the number of fools is infinite). The Fool's Cap Map espouses the Neostoic theme of the vanity of life shared by Ortelius and his circle, which appears again in Ortelius' atlas. For the Neostoics, living in an era of calamity and destruction, humans must submit to God's will with mental fortitude and emotional equilibrium. Those who submit to the rule of emotions – including patriotism – are foolish.[11] The Fool's Cap Map is based on a 1575 work by Jean de Gourmont, a member of Plantin's circle. The two images are remarkably similar: a world map fills the face of a fool, who holds a scepter in one hand, a chain of Neostoic adages draped over one shoulder. The main difference is that while the 1590 map uses Ortelius' cordiform map, the 1575 version uses the world map from the *Theatrum.* Plantin, Gourmont, and Ortelius were part of a close-knit circle that shared philosophical assumptions and circulated Ortelius' work among themselves.

[9] The *Album Amicorum* presents texts in several different languages, primarily Latin and Dutch. For this article, I relied on the Jean de Puraye's 1969 facsimile edition that includes a translation of the entire text into French, which I have here translated into English (Ortelius 1969). Page numbers after quotations refer to de Puraye's edition.

[10] ('Oh human ambitions, Oh how empty is this life, Each man has become stupid, Each man is a whole vanity') translations in Mangani 1998a, 71.

[11] Cartobibliographic information for this map and a discussion of its provenance can be found in Shirley (1983). This map holds an outsized influence among cartographic works on literary scholarship; notably, see Chapple 1993 and Ramachandran 2017.

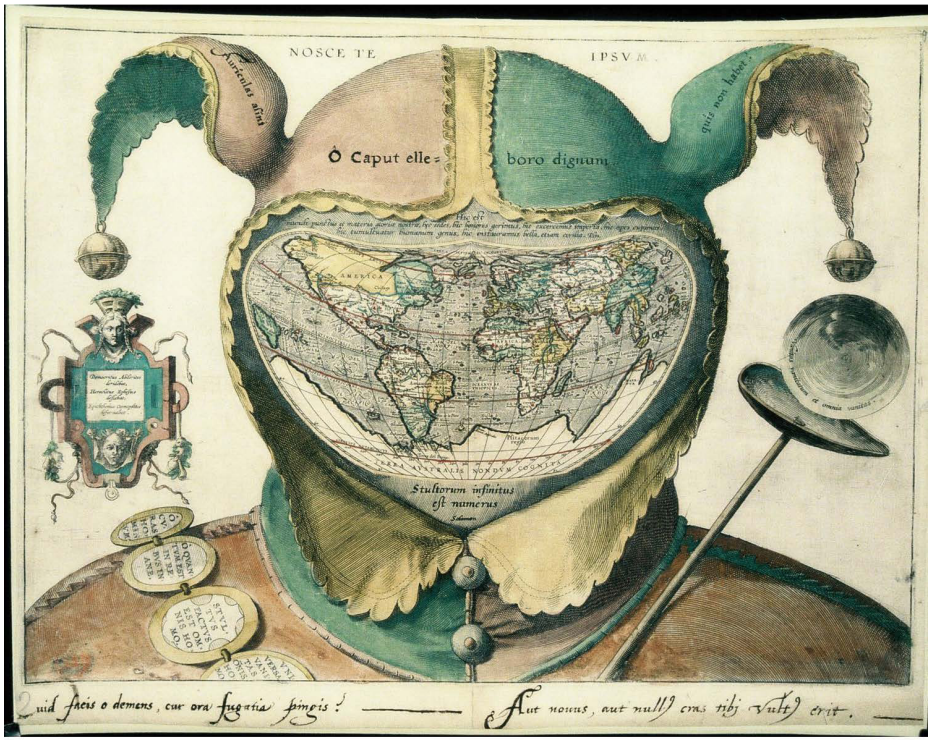

Figure 3 – Fool's Cap Map of the World (c. 1590), Bodleian Library.
Now at the Ashmolean, formerly Douce Portfolio 142(92)

3. *Light as Familist Symbol in Ortelius' Atlas*

It is evident from the Fool's Cap Map that Ortelius' contemporaries read Neostoic messages in his heart-shaped map. Did they also detect his Familist sentiments? Given the lack of recorded responses to Ortelius' heart-shaped map, this is difficult to answer. It is clear, though, as we shall see, that those in Ortelius' circle detected, and probably shared, the Familist leanings in his work as a whole.

The heart-shaped map visually represents what humanists like Ortelius believed would be mankind's ultimate destiny: to be united in Christ's love. The act of uniting the fragmented pieces of the world in between the covers of an atlas points to this same ideal. The French editions of the atlas published by Christopher Plantin alter the original text in subtle ways that highlight the Familist messages in Ortelius' work, as if to make sure they are not lost in translation. Plantin was a key member of the Family of Love.[12] He published fifteen treatises by Niclaes between 1555 and 1565, along with Niclaes' magnum opus, the *Glass of Righteousness*, a 600-page folio volume that Plantin somehow managed to circulate in secret. The French publisher took over publication of Ortelius' atlas from the printer Gillis Coppen van Diesth of Antwerp in 1579.

[12] Plantin's connection to the Family of Love was elaborated upon by Rooses 1896, Verwey 1954, Voet 1982, and others. See especially Hamilton 1981, 65-70.

In French editions of the atlas, Ortelius' introduction reads: 'Et puis, pour fournir à la totale description de tout cest Univers, ou pour le monstrer totalement en ce Theatre, nous y avons adjousté certaines Cartes nouvelles, (selon nostre petite portée) pour approcher aussi pres de la perfection requise, que faire se pouvoit pour le temps present' (1581, 3).[13] Plantin is translating the Latin phrase 'ad seriem nostram aliquo modo complendam' – in my own translation, 'in order to complete our series in some way' – as 'pour approcher aussi près de la perfection requise', or 'to get as close to the required perfection as possible'. His use of the word 'perfection' was a deliberate choice that echoes the rhetoric of the New Testament of the Christian Bible, where 'perfection' is used to mean spiritual completion, that is, union with Christ.[14] This is how Niclaes uses the term in his Familist writings. Plantin implies that the 'required perfection' entails uniting accurate maps of all places in the world between the covers of one book – the atlas. If one replaces 'maps' with 'people', the statement comes to reflect the Familist definition of perfection, in which different people of all religions everywhere in the world would be united in the embrace of Christ's love. The goal of Familism was to lead its disciples toward this perfection. The individual could attain perfection by spiritually uniting with Christ, or in Niclaes' rhetoric, becoming 'Godded with God'. Incidentally, Niclaes' emphasis on perfection, and his assertion that his followers could attain it by becoming 'Godded with God', was a major target of criticism by contemporaries (Moss 1981, 42). The atlas was not simply a collection of maps, but a carefully curated selection of the best maps to create a stylistically unified whole. Ortelius created a book of maps that was not only easy to use but embodied the ideal of a unified world, so dear to the Familists.

In the preface to the original 1570 Latin edition of the *Theatrum*, Ortelius writes that he chose to use the best and most recent maps published – or in his words, 'in lucem editis' (brought to light).[15] In the French edition, Plantin repeated the reference to light, as if to make it stand out: 'Premierement, nous avons deliberé de mettre en cedit Livre, toutes les Cartes Geographiques, qui ont esté imprimées, ou *mises en lumiere* … ' (1581, 2, my emphasis).[16] And repeating in the next sentence: 'Nous avons choisi la meilleure Carte (a nostre advis) qui avoit esté *mise en lumiere* …'[17] (*ibid.*). The Familists thought of God as a form of light, and the goal of the individual was to unite with God's light. In his *Exhortatio I*, Niclaes refers to 'God, a mighty Spirit, a perfect clear Light and a true Being … we become likewise with the clearness of his Godly Light … Godded' (quoted in Moss 1981, 41). Adherents of any religion, anywhere in the world, were invited to participate in this mystical communion, which Familists believed would supersede confessional divisions. Light for the Familists was an important way of thinking about God and about spiritual teleology.

Plantin ranked just below Henrik Jansen van Barrefelt in Familist hierarchy (Moss 1981, 8 and 21). Barrefelt was a Familist who separated from the group to form a more radical and

[13] (And so, to produce the total description of this Universe, or to show it totally in this Theater, we have added certain new maps [according to our limited ability] to approach the required perfection as closely as one can at the present time). Unless otherwise stated, all translations from the the 1581 French edition of Ortelius' *Theatrum Orbis Terrarum* are mine.

[14] For example: 'But when that which is perfect is come, then that which is in part shall be done away' (1 Cor. 13:10).

[15] 'Primo, nobis animus fuit repraesentare tibi, quicquid in ullis Geographicis, aut Chorographicis Chartis hinc inde tam recenter, quam nuperrime multis abhinc annis (quo factum est, ut earum etaim multae nunc inveniri nequeant) *in lucem editis*, unquam habueris …' (Aiiij).

[16] (First, we decided to put in this book all the geographical maps that have been printed, or *put to light* …) (my emphasis).

[17] (We chose the best map [in our opinion] that has been *put to light* …) (my emphasis).

more individualist cult of his own (Mangani 1998a, 73). Calling himself 'Hiël', meaning 'the uniform life of God', Barrefelt eschewed Niclaes' increasing concerns with creating structure and ceremony within the Familist movement, reiterating that the connection between a believer and God was personal and transcended any particular church. He insisted on the importance of the image as an object of contemplation, capable of bringing men's spirits closer to God. The visual representation of the world was thus a means of transmitting a spiritual ideal. On the map of Ortelius' design that opens the *Theatrum*, titled *Typus Orbis Terrarum*, a cylindrically-projected world image rests on a sea of twisting clouds, reminiscent of those that appear on his cordiform map. A cartouche at the bottom of the map bears a quotation from Cicero's *Tuscolanae disputationes*: 'Quid ei potest videri magnum in rebus humanis aeternitas omnis, totiusque mundi nota sit magnitudo?' (IV, 17, 37).[18] When Ortelius had to replace the worn-out plates for this map in 1587, he reinforced its message by adding four additional cartouches, two bearing further quotations from Cicero and two from Seneca, including this quotation from Cicero's *De natura deorum*: 'Equus vehendi causa, arandi bos, venandi et custodiendi canis, homo autem ortus ad mundum contemplandum' (II, 37) (figure 4).[19] For like-minded readers, Ortelius' cartographic work filled the role of visual contemplation of God's creation, lifting the spirit toward the divine. This same quotation from Cicero is repeated at the beginning of French editions of the atlas, published by Plantin beginning in 1579. It replaces the dedication to Philip II of Spain that appears in the Latin editions. It is an open question whether the substitution was Ortelius' idea or Plantin's. It was most likely the result of a careful political calculation as to whether or not Philip II's authority in the Netherlands would survive the Dutch Revolt. Still, it is notable that Ortelius and Plantin thought this quotation worth repeating in the span of a few pages.

[18] (For what can seem of moment in human affairs for him who keeps all eternity before his eyes and knows the scale of the universal world?) (in Nuti 2003, 54)

[19] ('The horse was created for riding, the ox for ploughing, the dog for hunting and keeping guard; man himself, however, came into existence for the purpose of contemplating the world') (53).

Figure 4 – Abraham Ortelius, *Theatrum Orbis Terrarum* (1608), David Rumsey Map Collection, David Rumsey Map Center, Stanford Libraries (Image 10001057.jp2)

The use of emblems to produce and react to cartographic work points to a shared affinity between Ortelius and his circle for visual contemplation as a spiritual exercise. With his contribution to the *Album Amicorum*, the Dutch engraver Philip Galle explains the value of emblems with an emblem of his own. He drew a profile of Christ's head, with this inscription: 'If Christ is the goal towards which our desires strive, what can I give you better than an image of his visage? This is nothing but a shadow, but the immaculate image [that] you love: that is his miraculous life'.[20] The metaphor of the mirror emphasizes the spiritual importance of the representation of the natural world. In a similar vein, Ortelius once wrote a letter in which he praised his friend Peter Brueghel for painting landscapes that were true to observation yet carried layers of meaning (Bakker and Webb 2012, 145). In his *Album Amicorum*, Ortelius himself wrote a text in honor of his late friend, commenting that he sees 'in his paintings not works of art but works of nature and I name him, not the best among painters, but Nature among painters; that is why I judge him worthy of imitation by all others' (1969, 12).[21] Ortelius' letters and cartographic work suggest that he saw nature and its visual representations as equally effective in leading one's mind toward God.

[20] Translated from Dutch in Woodall 2017, 660.
[21] For a discussion of Ortelius' relationship with Peter Brueghel, see Bakker and Webb 2012, 144-146.

4. *Getting the Message: The* Album Amicorum

Did the Familist influence get lost in translation between the cordiform map and the politically palatable atlas? Based on the entries in the *Album Amicorum*, it would appear not.

We have examined the metaphor of light as important to the Familist sect. The metaphor of publishing maps as thrusting them into the light, and of Ortelius as the source of that light, is revealing as to how Ortelius and his contemporaries thought about the dissemination of cosmographical knowledge. Several of the authors in the *Album Amicorum* link Ortelius with the sun god Phœbus, who lights the world. The poet Maximilian de Vriendt writes in his contribution: 'But the favor of Phœbus does not land equally on all heads and there are few birds who can cross all the earth. Alone, Ortelius, through the investigation of his capable mind, traverses it and fills it with things deserving of his adoptive father the god of Claros …' (1969, 39v).[22] The author Jean de Gruytere also portrays Ortelius as the new Phœbus. Referring to the atlas, he writes that '… an instant suffices him to reveal the world to all men's eyes'. This makes Phœbe say: ' "I know, but allow that my name, that of the sun, be given to him that Ortelius may be the True Sun" ' (53v). This last part is a play on Ortelius' name, as Orth-Helios, or True Sun. Likewise, the poet Jean van Leernout writes: 'Ortelius and Phœbus are equal. For one lights the world with his light, the other as well. To tell the truth, the greatest is not Phœbus' (110r).

Shared assumptions between Ortelius and his readers allowed such coded images and emblems to be understood. This helps to explain some of the more bizarre and, to modern readers, indecipherable entries in the *Album.* Zacharias Heyns, Ortelius' secretary and author of a popular book of emblems, contributed a strange drawing of a pyramid topped with the symbol of Christian peace filled with an assortment of objects: an eye, a coffin, two fish, and so on (104v) (figure 5). Heyns' exact intentions are unknown. The symbols and the pyramid probably have some Hermetic meaning, perhaps known only to Ortelius and his circle. Following the Hermetic trend, the Englishman William Camden compares Ortelius to Hermes in his emblem. He sketches the head of Hermes and a symbol for the planet Mercury; around the images, an inscription reads: 'Hermeti sydus sacrum, mihi sydus amicum' (113v).[23] Hermeticism was secretive, saving its wisdom to be passed on orally to only the deserving and initiated, and thus it is unclear to modern scholars what exactly those tendencies were. These entries in the *Album* point to the existence of a shared visual language among Ortelius and his circle that allowed for coded communication.

[22] The 'god of Claros' refers to Apollo.
[23] (Star consecrated to Hermes, star that is dear to me).

Figure 5 – Abraham Ortelius, *Album Amicorum*.
By permission of the Master and Fellows of Pembroke College, Cambridge, reference GBR/1058/ORT/1 [104v]

In a letter to Ortelius in 1567, three years after the publication of the cordiform map, Guillaume Postel praised Ortelius' cartographic work as (along with his own studies) contributing to the advancement of Christianity (in Hessels 1887, 42-46). Later Postel claimed that Ortelius' *Theatrum* was the most important book after the Bible, writing in a 1579 letter: 'Jesus, "qui Lux et Ros et Essentia vitæ nostre et industriæ est, ipse est Ortelius ille vere existens, qui Theatrum totius Galliæ depingi sategit et pro totius generis humani usu et Dei gloria scripsit …' (189).[24] Here, Postel includes Ortelius in what he believed was the destiny of the human race, by which the king of France would pave the way for a universal religion and government. Allegorically linking Christ's blood to dew that lands upon the spirit of all people, Postel interpreted his own name as the Hebrew words 'post al', meaning 'by dew', and transmuted Ortelius' latinized name – Ortelio – into 'lumen roris', or 'light of dew', and pointed to the *Theatrum* as a mechanism by which the dew of Christ was disseminated to all peoples (Mangani 1998b, 261-262). Similarly, Zacharias Heyns portrayed Ortelius as a spiritual leader through a sketch in which three female figures representing Faith, Hope, and Charity gently guiding a nude man toward a symbol of Christian peace, the Chi-Rho, hovering in the sky in a brilliant sun (figure 6). An inscription

[24] (Jesus, our life and the Light … He is Ortelius himself, who sketched the "Theatrum" of all Gaul, and wrote it for the use of the entire human race and the glory of God …) (trans. in Hessels 1887, 186).

below reads: 'As virtue guides us to celestial paradise, so Ortelius guides us in the world' (1969, 105r). Ortelius and his network saw cartography not just as a contribution to human knowledge but as spiritual progress. Contemplating maps, they believed, pushed humanity further toward the inevitable destiny of mankind, in which all the peoples of the world would be united under the Christian God. Light takes on a spiritually symbolic significance here: the maps are thrust into the light of human knowledge, of Truth, and the quality of these maps advances the march toward the enlightenment of the world.

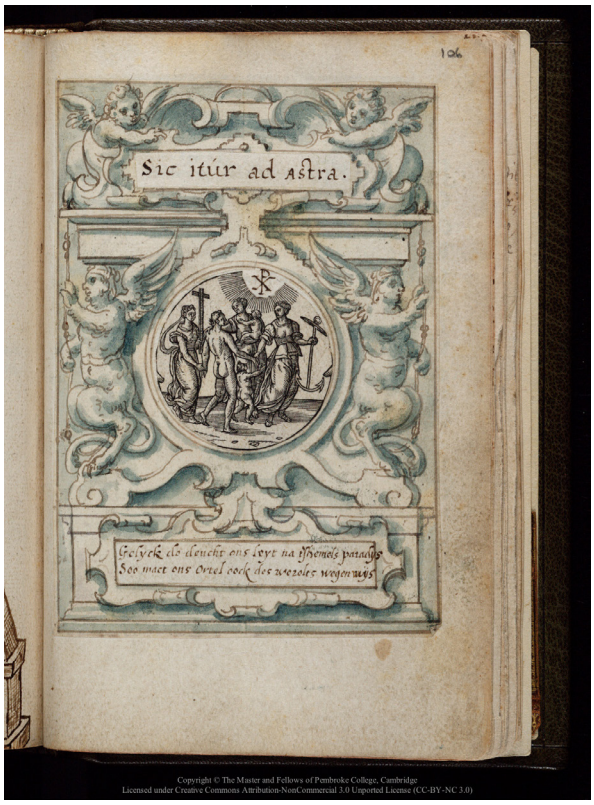

Figure 6 – Abraham Ortelius, *Album Amicorum*.
By permission of the Master and Fellows of Pembroke College, Cambridge, reference GBR/1058/ORT/1 [105r]

6. *Conclusion*

A common relationship to visual images as sources of knowledge was crucial for decoding maps within Ortelius' network. As evidenced by their reactions to Ortelius' work, members within the cartographer's circle saw maps, like emblems, as visual codes, the contemplation of which could lift one's spirit toward God. True to the intellectual networks among which it circulated, Ortelius' cartographic work is not an outright statement of belief. It is not a pamphlet or a tract. It is a veiled message to those pre-attuned to decode it. The Family of Love believed that one's religion was best kept interior, between oneself and God. A visual code such as a map could only be read to its fullest import by those able to do so. Ortelius and his publisher, Christophe Plantin, did not need to express themselves overtly but could rely on readers to pick up on their meanings.

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Politics of Cosmography

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Romance, Cosmography and the Trading Companies *Albions England* and *The Preachers Travels*

Jane Grogan
University College Dublin (<jane.grogan@ucd.ie>)

Abstract

The article examines the circulation of cosmographical knowledge as a result of some of the less prominent, lower-class trading company travellers, often through romance or romance tropes. It focalizes some romance strategies, values and intermediaries – notably Sir John Mandeville, and the figures of the travelling hero – used to convey cosmographical knowledge in narrative form. William Warner's *Albions England* (notably the 1596 edition) and John Cartwright's *The Preachers Travels* (1611) are the main textual focus, each comprising a different kind of approach to cosmography and travel writing, and each, importantly, boasting a connection – personal or professional – to the trading companies. In the case of Cartwright, the article argues that his is a 'romancified' travel text, and the first English first-person account to attend to Shah 'Abbas' major building projects at Isfahan'; in the case of Warner, it shows how Mandevillean figures are engaged to support the project of heroizing English trading company travellers and mariners.

Keywords: *Cosmography, Persia, Romance, Trading Companies, Travel Writing*

1. *Introduction*

When the English translation of Sebastian Münster's hugely popular *Cosmographia* (1544) was published in 1561, it was partial, focussing only on Scandinavia, probably (it has been suggested) because of King Erik XIV of Sweden's recent courtship of Queen Elizabeth I.[1] Its translator, George North, dedicated the work not to Elizabeth (to whom his relation Thomas North would later dedicate his Plutarch translation), nor to a wealthy

[1] Richard Eden had also translated sections from Münster in *A Treatyse of the Newe India* (1553). I owe great thanks to the editors of this issue, and to the two anonymous readers who made especially useful and informed suggestions for revisions.

would-be patron or intellectual mentor, but to the 'English gallant' (Johnson 1612, C5r), Thomas Stukely. Not yet as notorious as he would soon become, Stukely nonetheless already represented a type of English mobility – adventuring travel, but also mobility of identity – that was fast becoming a domestic staple in various genres of romance. Socially, he occupied a middle ground, neither knight nor citizen nor rogue; instead, travel and the gains of travel were his defining attributes. As North writes of Stukely's social and physical mobility, 'Besydes these your liberalities [of friendship], your own trauel in foreyne & straunge nacions wyth the perfect vnderstandyng, & almost natural speakyng of theyr languages: importeth you to be as trym a Courtier, as you are knowen to be a worthy Soldiour' (Münster 1561, Aiiiv). At this point, we should remember, Stukely's soldiering had caused him to fight on several opposing sides (the English, French and the Spanish), as well as being involved in piracy of French ships, but he found himself briefly back in favour in London at the time of the North/Münster publication, where (as a 'trym … Courtier') he had recently been appointed to help with the imminent visit of the Irish 'rebel' chieftain, Shane O'Neill, to an anxious court in late 1561.[2] Stukeley had also, it seems, been planning a colonising trip to Florida for some years, and given the friendship with North, the 'trauel in foreyne & straunge nacions' probably included this ambition too. He was, in other words, an ideal exemplification of that slippery figure, the travelling hero.

To English an extract from this early and important work of cosmography with the help of Stukely as dedicatee was to acknowledge the strong link between early modern cosmography and romance. It also acknowledges the growing popular interest in cosmography, and the appeal of (mostly romance) narrative modes to engage with it. And it reveals one way in which that link operated in narrative practice: focalised through the actions of a travelling hero. In this translation, in fact, North makes short work of the geographical and ethnographic descriptions – 'the situacion of their Countries, the maners of theyr people' (Aiiv) – to speak 'amply' instead of the political history behind the rise of Erik XIV to the Swedish throne. The deliberate centring of a hero in North's translation makes narrative what had been cosmographical description. The same technique would later be used by some of those describing their travels east and west, borrowing romance tropes and centring themselves as a travelling hero, with the added benefit of mediating the novelty of their experiences to domestic readers. But inherited models of chivalric romance, while still current, were not the only model.

Early modern romance, Ladan Niayesh writes, is situated 'Halfway between the nostalgia of medieval chivalry and the enterprising spirit of early modern exploration, piracy and commerce as preludes to a future empire' (2018, 1).[3] Despite the wider decline in the medievalized forms of romance with its aristocratic or royal heroes, early modern romance diversified, and, in many of its late-sixteenth/early seventeenth century incarnations, it proved particularly hospitable to new kinds of local, lower-class heroes, drawn from the world of early modern exploration, piracy and commerce rather than medieval chivalry. It is the cosmographical information disseminated and sometimes elicited by these travelling heroes – in romance but also in travel writing – that this essay seeks to foreground. Perhaps unsurprisingly, the infamous figure of Sir John Mandeville plays a significant role, a protean yet transitional version of the travelling hero as it evolved across multiple genres.

[2] Stukely had fought at the siege of Boulogne (1544), but had also served the king of France in battle and embassy, and fought for the Duke of Savoy (serving Philip of Spain) at Saint-Quentin (1557). A Catholic, Stukely's allegiances were always unclear, and he spent time at the court of the Hapsburg emperor Charles V in Brussels as well as Hapsburg Saint Omer. See North (2018). On Shane O'Neill's visit to the English court, see Ciarán Brady 2015.

[3] 'it is both very old-fashioned and innovatively modern', Niayesh concludes (2018, 1).

It is a large field, though, and in this article I attend to a neglected group: those who travelled as mariners on the ships of the joint-stock trading companies, and whose contributions to English cosmographical as well as literary culture have not yet been fully accounted for. The writings of those directly attached to the companies are important both because of their authors but also their audience, the social and knowledge networks in which they circulated. Romance served 'servants and citizens' (*ibid.*) as well as élites, and it was, therefore, a genre receptive to cosmographical knowledge generated or disseminated by servants and citizens of the joint-stock trading companies. This may well have been particularly true of stage romance, given the many vectors linking the London theatres and companies (especially Bankside) with the merchant communities.[4] But prose and verse romance, and the many romance-flavoured varieties and diversifications of popular prose and translations across the turn of the century are also worth attending to.

The remainder of this essay focuses on two representative examples showing where we might look to identify further such materials: in personal or professional ties, in romance or in romance-flavoured travel writing. The cosmographical quasi-romance writings of William Warner (1558/9-1609), whose father was one of the sailors on the first English ships sent to investigate a north-east passage (and which prompted the establishment of the Muscovy Company) is my first example; the travel writings of John Cartwright (fl. 1600-1611), sometime chaplain on East India Company voyages is my second; each may have had an influence on some of the new genres of travel play such as *The Travailes of the Three English Brothers* (1607) and citizen romance such as Thomas Heywood's *Four Prentises of London* (1615) in early seventeenth-century London. But I begin with an overview of the conceptual links between romance, travel and cosmography in the period.

2. *Romance, Travel and Cosmography*

Early modern cosmography owed much to classical and medieval sources, whether maps or travel narrative, Ptolemy or Mandeville, entwined with the new technologies and conceptual structures of geography, cartography and navigation. But it was also newly indebted to, and enriched by 'the painefull Seaman' of more recent global travels, mercantile and otherwise. 'for by his exceeding great hazzards the forme of the earth, the quantities of Countries, the diuersitie of nations, and the natures of Zones, Climats, countries and people, are apparantly made known vnto vs', as the navigator, John Davis of Sandridge, wrote (1595, ¶3r). But the forms in which that data travelled are varied: from the great collections of Venetian travel accounts compiled by Giovanni Battista Ramusio (*Delle Navigationi et viaggi*, 1550-1559) and emulated by Richard Hakluyt (*Principall Navigations*) in 1589 and 1598-1600 to instructional manuals such as Davis'; from merchants' letters and maps to individual printed accounts of journeys or places, whether original or translated; from the pages and margins of the new atlases to the pages and plots of romance which had often been drawn from, and set in, distant parts of the world.[5]

That romance played a part in the experience, narration and circulation of early modern travels is by now well established. Barbara Fuchs (2001) has shown the influence of the romance

[4] An important recent project on the 'King's Women, 1594-1642' (studying the lives and socio-familial networks of the women associated with Shakespeare's company, the King's Men), and their links to colonial settlement, has been revealing the depth and tightly wound intricacy of those connections.

[5] 'It is in the nature of romance to be made of foreign influences and to be woven out of different kinds of discourses coming from outside a single national culture', Goran Stanivukovic writes (2017, 4).

imagination in the acts and writings of the Spanish in South America. Cyrus Mulready (2013) extends the argument to the early modern stage, arguing that stage romance was a key instrument of the success of early English colonialism and trading voyages, and helped define the English geographical imagination (Relihan 2004; Das 2011; Stanivukovic 2016). Writing of perhaps the best-known (epic) romance of the period, Edmund Spenser's *The Faerie Queene* (1590-1596), Tamsin Badcoe (2019) demonstrates the cosmographical knowledge-making that happens in and through some of its most conspicuously romance-like aspects.[6] Niayesh (2011) has shown the significance of the genre, modes and values of romance to English conceptualizations and representations of the world of the East. (Famously, a copy of Mandeville's *Travels*, already known as more romance than factual travel account, accompanied Martin Frobisher on his 1576 voyage in search of the Northwest passage, *ibid.*).

One alignment of travel, cosmographical knowledge and romance familiar from the genre's roots in crusading and trans-national travel is found in the figure of the gentleman traveller and his writings. This took real as well as figurative forms: for example, Thomas Lodge, who travelled with Thomas Cavendish on the latter's last voyage (1592-1593), wrote a romance (*A Margarite of America*, 1596) while seaboard that drew heavily on his experiences – a markedly dark and violent narrative, as Daniel Vitkus (2011) notes. Sir Kenelm Digby, too, is notorious for having had numerous escapades on the Mediterranean, and subsequently writing a romance about them (Moshenska 2016). Other gentleman travellers (such as Anthony Knyvett) wrote journals or accounts of their travels, though they were not always printed.[7] Key to these, albeit in different ways, was the heroic romance styling of privateering by the likes of Sir Francis Drake and Robert Devereux, second Earl of Essex; certainly in the late years of Elizabeth's reign, their celebrated efforts in raiding and piracy demonstrates the uses of romance models to the nobility. And yet, just as technological advancement diminished the significance of the knight on horseback in the period, the commercial and corporate imperatives of the joint-stock companies also diminished the significance and perhaps prestige of the heroic, aristocratic voyager.

Less often celebrated, but a group who also had a significant role in the making and dissemination of cosmographical knowledge on these voyages, were those who worked the ships on which these gentlemen conducted their exploits. Those who worked on joint-stock company ships – captains, factors, pilots, chaplains, and the general company of mariners – occupied an unstable position, not just in relation to the risks they took, but also in relation to their perceived value by their employers, as Richmond Barbour has pointed out of the East India Company. 'Above all, shareholder profits derived from the return of sufficient cargos, not particular ships or personnel. Their collective buoyancy thus insulated the investors from the total risks suffered by their employees' (2021, 361). The high loss of life in these voyages, and the need to use non-English labour alongside the English seamen created its own kind of risk to capital investment, Barbour points out, as well as a certain suspicion of those who worked the voyages. It resulted in the starker division of seamen from investors, and increased regulation of the commercial opportunities of these voyages such that trading rights and profit accrued only to the Company, commercializing labour both at home and abroad. More significantly, he argues, it 'generated vocabularies of race and station which, being yoked to praxis, inflected

[6] She relates Merlin's magical globe, for example, to 'the figurative language used by cosmographical texts to sound the range of their ambitions and aims', as a kind of multi-modal 'cosmographical glass' (Badcoe 2019, 145).

[7] For biographies of Knyvett (including his ethnographic writings on the coastal Tupi-speaking peoples of Brazil, and a considered range of other English travellers), see Das 2022. For a fascinating study of the writing habits on East India Company ships, see Barbour's introduction to *The Third Voyage Journals* (2009).

the emergence of global capitalism' (361). The tensions on board between gentleman sailors and the seamen, and the ethos of privateering that remained strong in the early years of the seventeenth century, was another familiar formation that probably exacerbated these divisions and the entrenchment of class- and race-based prejudice.[8]

And yet, the companies remained heavily reliant on the verbal and written reports of its agents and seamen – indeed required them, in many cases, as the archives show. Moreover, a small number of those who travelled on the company voyages wrote or published their own private accounts, sharing cosmographic data (whether first-hand or drawn from other authors) in narrative or instructive mode. In this category, for example, we find William Baffin, a pilot and talented draughtsman, who spent years on voyages in the north Atlantic, and later drew the first map of India for Sir Thomas Roe (1619); he lost his life during the East India Company attack on Portuguese Hormuz, in the Persian Gulf in 1622. Following his own involvement in voyages to the north Atlantic with Sir Humphrey Gilbert and Thomas Cavendish, the highly experienced sailor and navigator John Davis of Sandridge published a treatise on navigation, *The Seamans Secrets* (1595); he would die ten years later on Sir Edward Michelborne's East India Company voyage (1604-1606). Another John Davis (of Limehouse, who had sailed with his namesake on the first 1601-1603 East India Company voyage under Sir James Lancaster, and who took over as pilot after Davis' death on that voyage) produced a manuscript rutter (mariner's handbook) on sailing to the East Indies (BL Sloane 3959), which Samuel Purchas published in the important 1625 edition of his *Pilgrimes*.

Merchants such as John Frampton also contributed to English geographical and navigational expertise by translating works from other languages; Frampton's translations include botanical and medical treatises from the Spanish 'new world', as well as the *Geography* of Martín Fernández de Enciso (1578) and Pedro de Medina's *The Art of Navigation* (1581). While many of these texts were instructional, they occasionally made use of romance tropes: the romance quester, for example, moving though marvellous, improbable worlds of prodigy; or thick structures of difficulty and impossibility/impassability. And they certainly helped strengthen the newer, more civic modes of romance, in which heroes were recognisable, lower-class types voyaging from known places, rather than footloose aristocrats in pastoral or chivalric worlds. By the end of the sixteenth century, the knights errant of chivalric romance had become readable in mercantile terms, and merchants and agents readable in chivalric romance terms, whether on stage or in verse, or prose romance. The best example of the former must be Thomas Heywood's stage romance, *Four Prentises of London*, first performed in about 1592, but published in 1615; Warner's account of the Muscovy Company agents in 1596, of which more later, best illustrates the latter. Michael Murrin even argues for the relevance of 'the company model' to Spenser's *The Faerie Queene*, contending that 'the romance of *The Faerie Queene* is a corporate genre, a response to risk, a genre that makes its heroes exemplary also because the example lies at the heart of the early modern corporation' (2014, 196). We witness this kind of imbrication of trade and romance in William Warner's *Albions England* (1586-1612), allied with descriptive travel.

3. *'Fayr Commerce' and Mandevillean Description*

It can be difficult to trace the knowledge transfer achieved by those seamen who returned safely to London, many of whom were less likely to have literacy skills. But one striking potential case

[8] See Jowitt 2017 on these tensions, particularly in relation to the Cavendish voyage.

is that of William Warner, whose father accompanied Richard Chancellor on the first (1553) voyage in search of a north-east passage, which would lead to the establishment of the Muscovy Company and trade with Persia. Not a mariner himself but an author and attorney at the court of common pleas, Warner finds a place for his father, and the merchant adventurers after him who made it to the White Sea, to Moscow, and eventually to Persia, in the astonishing, ever-expanding text that is *Albions England* (1586-1612). Hardly read today, Warner's bizarre – but also highly enjoyable – jumble of texts is an invaluable record of changing literary tastes in prose and poetry across the late sixteenth and early seventeenth centuries, a period more usually examined for its dramatic output. First published in 1586 as a 'Historicall map' of Britain, this edition contained four Books of chronology material, beginning with Noah, alongside an epitome of the *Aeneid*. Each subsequent edition added new chronological material (another two Books in 1589, two more in 1592, ultimately comprising thirteen, in the final, posthumous edition) – as well as more of the 'historicall intermixtures, inuention and varieties' advertised in the opening page of the first edition. The 1596 edition (my focus here) is particularly interesting for its move into describing the reign of Elizabeth, and contemporary materials, and for its responsiveness to the first edition of Spenser's *The Faerie Queene*, the second edition of which was published the same year as well as Books IV-VI.

The romance styling of *Albions England* disguises its own cosmographic innovation, not least in the trans-national terms in which it conceives of the nation described in its title. It would go through five editions during Warner's lifetime, and multiple transformations of genre and interest: from chronicle history to chorography, to romance, to heroic verse. Its epic interests were clear from the inclusion of a short prose epitome of Virgil's *Aeneid* in all editions, and William Scott grants it the title of epic in the strikingly varied list of English heroic writings he provides in his poetic treatise, *The Model of Poesy* (1599). Warner achieved some attention from contemporaries, it seems, and is commended in several literary anthologies or commentaries of the late 1590s, including Robert Allott's *Englands Parnassus* (1600) and Francis Meres' *Palladis Tamia* (1598), which went so far as to deem Warner 'our English Homer' (1598, 281v).[9] But those epic ambitions were always shaped by or in romance terms, and expressed in fragmented, episodic, interlaced forms more evocative of romance. The combination of romance 'gests' with heroic 'actes' of Englishmen comes through nicely in the work's epic opening:

> I tell of things done long agoe, of many things in few:
> And chiefly of this Clime of ours, the Accidents pursue.
> Thou high Director of the same, assist mine artlesse pen,
> To write the gests of *Brutons* stout, and actes of English men (Warner 1569, B1r)

To this established set of terms, a vocabulary of 'mart' (which neatly captures, or even conflates, both the commercial and martial), commerce and even 'fayr commerce' will come to connect and characterize the overlaying of cosmography, romance and English travel that we find in the new Books (9-12) of the crucial 1596 edition.

From the beginning, *Albions England* embraced hybridity and multiplicity, offering as its title notes its 'historicall map' and chronicle history together with 'historicall intermixtures, inuention, and varietie'.[10] My focus here is on the Books added in the 1596 edition and in

[9] Warner's entry by Craik (2004) offers a thorough list of these. Little has been written on Warner's work.

[10] The full title of the first edition (1586) is: *Albions England. Or historicall map of the same island: prosecuted from the liues, actes, and labors of Saturne, Iupiter, Hercules, and Æneas: originalles of the Brutons, and English-men,*

subsequent editions in which Warner fully embraces this 'varietie', building on the occasional interpolated beast fable or classical parable of earlier Books to include ephemera (e.g., a 'Chat passed betwixt two old Widowes, concerning new Fangles now vsed by women'), or indictments of Catholicism, or European political affairs such as the wars in the Low Countries, or the Spanish Inquisition (all of which appear in Book 9). Certainly, Warner treads more dangerous ground here in recording the reign of Elizabeth contemporaneously. Giving rein to the romance proclivities of his text is one reasonable response to that challenge; romance by its nature lends itself to experiment, to hybridity, but is also useful in being conspicuously fictive. Significantly, Warner's depiction of the reign of Elizabeth also comes with a clear expansion of the cosmographical situation of 'England'. If the 'historicall map' of the subtitle of the 1658 edition signalled the geographical or chorographical ambitions of the text, while connecting it with a newly fashionable kind of chronicle history in verse (as exemplified by Samuel Daniel's *Civil Wars*, 1595), from 1596 Warner situates England within ever-widening geographic and geopolitical frames. Thus, articulating the experiences of his father on the earliest trading company voyage, one that ultimately brought about the first direct English trade with Persia, is fully of a piece with Warner's developing ambitions for his 'historicall map' of England. And if, ultimately, the account of the Muscovy travellers offers little *new* by way of geographical description, Warner's innovative interweaving of their travels with a playful Mandevillean romance plot attests to the newly popular intermixed forms in which geographical information could be – was being – disseminated, including by those with direct or indirect connections or experience of the trading company voyages.

The Chancellor voyage comprised three ships, but only one returned safely, the *Edward Bonaventure*. It had a crew of approximately 35 men (and may have included French, Scottish and other non-English crew), and had reached the White Sea, and from there, Moscow, where Chancellor was received at the court of Tsar Ivan IV. Though it was not their object, it quickly became clear that they had identified a viable trading route not just with Moscow but also (subsequently) with Persia, thanks to the Tsar's recent works on the Volga river; the Muscovy Company was formed and a second voyage, under Chancellor, would retrace their route in 1555. The *Edward Bonaventure* returned to London, however, in the summer of 1554.[11] Warner introduces the English travellers and their 'Fresh matter of Discoueries' (T3v) in Book 11, especially the northern voyages, with and the southern voyages described (in much less detail) in Book 12. These Books first appeared in the 1596 edition together with a new Book 9, which replaced the short panegyric to Elizabeth that concluded the 1592 edition to deal primarily with Elizabeth's enemies, looking to European politics and their intersection with English politics (war in the Low Countries, 'sturres in Ireland', the Spanish Armada, etc.), all of which introduce the English travel materials. 'Fresh discoveries' were, of course, partly necessitated by this increasingly hostile context and England's increasing peripherality to European geopolitics.

Warner used two important intertexts for his account of the English travellers: firstly, his source-text, the first edition of Richard Hakluyt's *Principall Navigations* (1589). He seems to have had a copy of the first edition of Hakluyt by his side, from which he borrowed and

and occasion of the Brutons their first aryuall in Albion. Continuing the same historie vnto the tribute to the Romaines, entrie of the Saxones, inuasion by the Danes, and conquest by the Normaines. With historicall intermixtures, inuention, and varietie: proffitably, briefly, and pleasantly, performed in verse and prose by William Warner'.

[11] Although not before an unfortunate incident in which it was attacked and robbed by a convoy of Dutch fishing vessels not far off Scarborough; recent research on Dutch court records has produced important new information about the crew and what it carried (see Sicking and van Rhee 2019).

condensed 'extensively', as R.R. Cawley (1922) has demonstrated. This is no secret: Warner proudly acknowledges Hakluyt several times, in Books 11 and 12: for example, his demurral that 'of [further] Discouerers we purpose not to dwell. / Els would we here reuiue, but that through Hakluits Pen they liue' (V1v), and on another occasion he refers his reader onward to Hakluyt for fuller details.[12] Warner also loosely adheres to the order of material in Hakluyt, though with frequent leaps to other accounts dealing with the same places or events, as Cawley shows. But although Warner twice mentions his father, Cawley's analysis leaves little room for speculating as to his personal contribution, apart from occasional details of local conditions or climate (ice and cold, changing light conditions) which Warner may well have deduced from the accounts in Hakluyt anyway. In considering the reach, impact and influence of Hakluyt's *Principall Navigations* in England, therefore, we should also seek to include analysis of the reach, impact and influence of texts such as Warner's.

His second intertext is more striking, not as a source, but for how it is used as an imaginative prompt – as frame and interlaced narrative to the account of the English travellers. Not only that, but the choice of text also enables an extended shared joke with the reader, building trust and community using romance methods at precisely the point at which Warner provides his Hakluytian narratives of heroic English travellers. That text is the enduringly popular medieval travel text, *The Travels of Sir John Mandeville*, from which Warner adapted and embellished a conspicuously fictional chivalric romance narrative: a comic subplot of a peripatetic quasi-chivalric romance and, tellingly, 'fayr Com[m]erce' between Sir John Mandeville and one Eleanor, 'cousin' of King Edward III (1596, [S6]v). In this narrative, Eleanor falls in love with a 'green knight' (Mandeville in disguise), who wins all before him at a joust. Troubled by the distance between their relative social status, Mandeville in his melancholy does not disclose this disguise but takes himself off travelling, like a catalogue of crusading heroes that 'through the triple Orbs did Armes and Trauels vnder-goe' ([S8]v). But the interventions of his friend Stafford, and Stafford's beloved Dorcas, mean that Eleanor is eventually apprised of the green knight's identity, and the three of them take 'To ship-boord', this time to Rome, where Mandeville had informed his friend he would be, after his travels further east ([V6]r).

The plot now digresses from its chivalric set-up to a more popular register, with Dorcas advising Eleanor against virginity, and reminding her that to 'Increase and Multiply' is God's imperative ([V5]v). Again, Warner makes Eleanor's travel to 'old Rome' ([V7]v) serve his turn, with the narrator praising 'one in loue, not moop't at home, but mapping Lands' ([V6]r). But before Rome, he presents a long-delayed summary of the ancient Britons, Elizabeth's royal forebears, and the quarrel with 'new Rome' ([V7]v) – an oddity reconciled when, soon after, Warner offers a similar genealogy of how Rome 'did rule, was rul'd, and ruin'd at the last' ([V8]r). Further disguises, a long-deferred recognition scene and the eventual reunion of the lovers are conducted in romance terms, but along the way, the narrative again indulges some of the accretive, eclectic aspects of Book 9, whereby Warner includes a potted history of Rome, critiques of Italian courtesy and even a saucy tale of a 'Faire young wife of Lyncolne-Shire' (X2r) and the competition between a 'Northern-man' and 'Southern-man' (X3r) for her. When eventually Mandeville and Eleanor meet again and marry that night in Rome, together with his friends Stafford and Dorcas, Warner abruptly ends with a disavowal: 'Nor creeded be this Loue-Tale of this Ladie and this Knight' ([X6]r).

[12] Elsewhere he refers his interested reader onward, so they may 'at large in Hakluit reade' ([V5]r).

It is worth citing a long passage from the opening of Book 11, to give a sense of the enmeshing of narratives with familiar romance and even epic tropes, alongside Mandeville:

From then, when first my Father, eare my birth, was one of those,
Did, through the Seas of ysie Rocks, the *Muscouites* disclose,
We shal our *English* Voyages, the cheefe at least, digest,
Of which in this her Highnes Raigne haue been perform'd the best,
And here a while let *Mandeuil* and his Beloued rest.
To name the diuers Peoples that in *Europe* be, weare much,
Not but remotest Regions, of our Natiues seene, we touch.
But, Moderns, Yee (of whom are some haue circum-sail'd the Earth)
Here pardon vs your Sailes, and giue your proper Praises bearth.
Infuse yee Penn-life too into ore-taken Fames by death. (T1r)

The apostrophe of 'Moderns', and the declared expectations that some of the English circumnavigators themselves may read this (and Warner must mean the sailors, as well as their famous captains and pilots), invite a sense of great scale as well as complicity, even as they situate the accounts within Warner's own personal sphere. In these Books, *Albions England* positions the sailors of those voyages, who undertook such perils, as part of the intended readership of his work, authenticators of its geographical knowledge, perhaps, but also fellow-mediators of difference (especially foreign difference) in entertaining domestic terms.

In this, we should note that some early modern authors anticipated an overlap of readership for romance and narratives of recent global travel, usually by sea, or at least a concatenation of interests across the two. Thomas Lodge, for instance, closes his euphuistic romance *Rosalynde* (1590) with a signed personal appeal to his readers to draw lessons of filial obedience and fraternal amity from it. But, he continues, 'If you grace me with that fauor, you incorage me to be more froward, and as soon as I haue ouerlookt my labors, expect *The Sailers Kalender*' (now lost, if it ever appeared) ([P4]v). Similarly, Spenser's proem to Book II of *The Faerie Queene* (1590) invited readers to credit his Faerieland on the basis that recent travels they have read of mean that they now know of Peru, or the Amazon 'now found trew' (Proemio, 2), places not known even to the ancients. The pleasures of armchair travel, as Andrew Hadfield (2009) has noted, accounted for a reliable portion of the readership of travel texts, and reading the imaginary travels of romance heroes in the context of the reality of new global travels must have added a frisson. 'The old romance geographies of Fairyland, Arcadia, Cathay, Babylon, and the matters of Rome, France, and Britain were supplemented – and redefined – by the new global geography', as Vitkus writes (2011, 100). On the other hand the new global geography made ample use of romance narratives and tropes to describe both old and new worlds.

Freewheeling as it is, the Mandevillean romance also has direct connections to Hakluyt, Warner's main source for this section. Although already regarded with some scepticism, Mandeville's *Travels* had been included in the first edition of Hakluyt's *Principall Navigations*, but would be dropped from the second edition (1598-1600).[13] The dedication to Edward III that appeared in one cluster of the Mandeville manuscripts – and was included in the 1589

[13] As Marianne O'Doherty (2019) and Maria Shmygol (2020) have both argued, however, the inclusion of the untranslated Latin so-called 'Vulgate' text of Mandeville in Hakluyt's first edition marks a significant shift away from the heavily-illustrated English editions (such as the 1582 edition issued by Thomas East) long circulating. Hakluyt's choice of the Latin text, O'Doherty argues, seems partly motivated by its 'highly unusual, seemingly prescient cosmographical framework … and its presentation of a critical, skeptical narrator' (2019, 320).

Hakluyt – presumably inspired Warner's romance plot of Eleanor and Mandeville – even as Warner playfully engages prevailing scepticism about Mandeville already:

Who reades Sir Iohn de Mandeuil his Trauels, and his Sights
That wonders not? and wonder may, if all be true he wrights,
Yeat rather it beleeue (for most, now, modernly approu'd),
Than this our Storie, whence suppose he was to Trauell mou'd. (1596, [S7]r)[14]

That sly playfulness extends to the interplay between the Mandevillian subplot and Warner's heroic narrative of English travel. For example just as Eleanor discovers (too late!) Mandeville's love for her, as relayed by his letter from Cyprus, Warner interrupts to introduce a catalogue of 'Fresh discoueries' of the English travellers. And what 'She sayd, … else-where shall ensew' – a classic narratological technique of romance entrelacement (T3v).[15] In this way, their toils and sufferings through ice and storms stand in for and emblematize her love-trials, the curious speculation she has that Mandeville might seek her to become 'a trans-Marine' ([T5]v). Elsewhere, Warner follows a long critique of the papacy and the Italian city-states with a return to 'our English Trinitie of Louers' (X2r). Another site visited by the English travellers elicits the narratorial aside, 'Here Mandeuile, perhaps, had bin' ([T7]v).

But the relationship between the Mandevillean romance and the travellers' narratives goes beyond felicities of tone or style, and serves to 'romancify' their tales alongside it. Closely identified with Warner himself (as we saw), the narrator of these Books, we find, is not the apparently distanced, objective narrator more typical of epic, but rather the complicit, involved, playful narrator of romance. And this narrator is unafraid to indulge the speculative romance-like pleasures of reading travel narratives in his account of the Muscovy Company agents, just as much as in the travails of Eleanor and Mandeville: 'Suppose our *Ienkinson* before King *Obdolowcans* Throne', he proposes to the reader, before offering a lush and richly furnished description of 'Pearles and pretious Stones', 'silke and gold imbroyderie' on his tents, 'Carpets rich' and a water fountain. 'Scarce *Cleopatras Anthony* was feasted with more cheere' ([T7]r), he winks. Other reassuring domesticating touches prevail: he emphasises Mandeville's repudiation of temptation by exotic offers, including the daughter of a Muslim prince of Egypt, in favour of his 'home-bred Loue' ([T8]r). There is a compelling fluency and colour to Warner's writing, when now he describes the Rome visited by Eleanor, Stafford and Dorcas: 'Such wonders, couch't in Ruins, as vnseene might seeme vntrew' ([V8]r). On the other hand, Warner also uses his personal connection to highlight the very real perils of these voyages – his father lost his life on a Company ship with Towerson in 1577 – by comparing them to the trials of classical heroes: 'In trewer Perils, and more braue Achieuements, than the Tailes / Of *Iason* and *Vlysses,* of their fabled Sea-toyld Sailes' (T1r-T1v).

In sonnet 15 of his *Amoretti* sonnet sequence (1595), Edmund Spenser had also sought to bridge the gap between trade, travel and desire in terms that Warner may well echo in his praise of English merchant-heroes:

[14] On the dedication to King Edward, see Ormrod 2012.

[15] Warner's habit of leaving one character at rest, as if to bestow additional rest by way of this narrative diversion, when moving back to his other narrative is another classic romance strategy. For example, Jenkinson is left to 'rest at his Iornies end' with 'Obdolowcans Sonne' while Warner returns to Mandeville and Eleanor (T7v).

Ye tradefull Merchants that with weary toyle,
Do seeke most pretious things to make your gain:
And both the Indias of their treasures spoile,
What needeth you to seeke so farre in vaine? (1999, sonnet 15, ll. 1-4)[16]

Spenser, of course, goes on to praise his beloved in a conventional blazon of precious jewels (ruby lips, pearly teeth, golden hair, etc), chiding the 'painfull seamen' (as Davis put it) for their 'weary toyle' and encouraging his readers to look closer to home, to his beloved, for such treasures instead. But in carefully condensing and reporting the details Hakluyt provided of the English trading company travels, and interlacing them with his playful Mandevillean romance, Warner offers a different kind of reading experience altogether, not conventionalized but innovative, not chiding but inclusive – and one that genuinely disseminates geographical information to a wider audience than those who could afford or would consider seeking out Hakluyt's folio(s). Romance fiction proves a much more enabling vehicle than a sonnet, of course: as Vitkus contends, 'By representing the pleasures, profits, and perils of cross-cultural exchange within the erotic, promiscuous matrix of romance fiction … English romance tales offered new ways to understand English culture's entanglement with a global system, and new ways to register the changes and challenges that resulted from that expansion and engagement' (2011, 100). As it develops and transforms across its many editions, but perhaps most signally in the 1596 edition, Warner's *Albions England* makes brilliant use of romance in its hybrid intermixture of forms to reach new audiences for the details of this entanglement and the expanded global imaginary it involved.

4. *A Preacher's Travels*

Where Warner's connection to the merchant adventuring company's travels was familial, John Cartwright's was professional. But first it was speculative – and successfully so. Although we know very little of Cartwright's background beyond what his published writing tells us, we do know that in 1602, he was employed as chaplain to travel with the East India Company voyage, led by George Waymouth, to the north Atlantic, in search of a northwest passage to China. The voyage suffered an early setback when some of the sailors mutinied and sought to return home. Cartwright was accused of having fomented the mutiny, and was certainly involved in the examination; even after the situation was quelled, the allegation followed Cartwright to the extent that when, almost ten years later, he published an account of his travels in Asia, he prefaced it with further denials of the charge ('yet God is my witnesse that my Conscience is cleare, either from wronging the Companie that then was; or any wayes from hindring the full proceeding of that Voyage', 1611, [A3]v). We have no evidence that he was employed by the company after the Waymouth voyage, however. Cartwright was himself (presumably) invested in the success of the voyage, having been contracted to be paid significantly more of a monthly wage in the event of the success of the 'discovery'[17] (the voyage was victualled for sixteen months and tasked with being away for at least a year, but returned, unsuccessful, after less than four months).

[16] I have argued elsewhere that Warner's 1596 edition engages directly with the 1590 edition of *The Faerie Queene*, the second edition of which was also published in 1596 (see Grogan 2022).

[17] Cartwright was to be paid 3 pounds a month if the voyage was successful, but only 30 shillings a month if not, according to the company records for 24 April 1602 (see 'East Indies: April 1602', in *Calendar of State Papers Colonial, East Indies, China and Japan, Volume 2*, 1513-1616, ed. by W.N. Sainsbury, London, 1864, 132-133, *British History Online)*.

Cartwright may well have gotten the post as a result of those previous travels to Aleppo, and then overland to Persia, a year or two previously. It is unlikely that he was employed by the East India Company when he undertook his Asian travels, an account of which is found in his book, *The Preachers Travels* (1611). But the overlap with Company interests, and the framing of this account – albeit retrospectively – to commercial interests is strikingly combined with its geographical and political data, as I will argue. Even its title reflects Cartwright's interests in presenting himself not so much as a man of God as a man of the Company, a 'preacher', the commonly used word for 'chaplain' in company correspondence.[18] His narrative begins not with the journey from London but with an account of arriving safely at Aleppo, 'being some sixe miles before our approch to the Citty, encountred by many of our English Merchants, to giue us the welcome on the Turkish shore' (B2v).[19] Cartwright also recounts a warm welcome by the consul Richard Colthurst, with whom he stays for two months (a typical housing solution for a Company chaplain).[20]

Cartwright may have travelled from London in the company of John Mildenhall (his travel companion for a good part of this trip), and if he did, he left London on the *Hector* in February 1599; as Cartwright opens his narrative at Iskanderun rather than Constantinople (where the *Hector* was bound), he may simply have met Mildenhall at Aleppo, sometime between May and July 1600.[21] From Aleppo, they travelled overland by caravan to some of the key political, historic and trading cities of Persia – Qazvin, Qom, Shamakhi, Kashan among them, aiming for Lahore. They parted ways at Kashan, with Cartwright travelling to the new Safavid capital, Isfahan and returning thence to Aleppo, and eventually London. Mildenhall, by contrast, continued on to India, where he visited the court of Akbar at Agra, eventually securing some trading privileges for the English, even before the East India Company procured such a thing.[22] But it would be Cartwright, and not Mildenhall, who would next be employed by the company: for the 1602 Waymouth voyage.

Although written afterwards, Cartwright's account of his eastern travels is clearly framed at least partly with English trading company interests in mind – but also, it seems, with sharing vital new information about the geography and politics of the Middle East with English readers. Following a dedicatory epistle and an epistle to the readers, a third preface provides his motivations in publishing his 'iournall' so as to provide 'a full description of these parts, as they are at this day' (B1v) as well as comfort to his readers in learning about Persia (and, notably, about Persian opposition to the Turks, 'stirred vp thereunto by two of our Country-men, Sir Anthonie Sherley, and Master Robert Sherley his brother', A2v).[23] Although he boasts of his eye-witness testimony,

[18] MacLean (2004) cites a letter to Cecil in which Biddulph signs himself 'preacher of the gospell', for example, but it was used more widely.

[19] Purchas omits this opening section in his edited version of Cartwright's text.

[20] William Biddulph, however, was serving as chaplain for the Levant Company at that time, and probably sharing quarters with Colthurst too.

[21] On Mildenhall, see Foster 1933, 173-182.

[22] In fact, Mildenhall spent almost ten years in Persia and India, and learned Persian, though was unsuccessful in his attempts to find formal employment with the East India Company upon his return in 1608 or 1609. He had previous connections to the prominent merchant Richard Staper (one of the founders of the Turkey – later Levant – Company as well as the East India Company), and Staper would now employ Mildenhall in a private trading voyage east instead. Mildenhall had a son and daughter in Persia, with an Indian wife, and when he died in 1614, he was the first Englishman to be buried in the Christian graveyard in Agra.

[23] The Sherleys have attracted much attention, most recently by Sanjay Subrahmanyam (2011, 103-142), and Kaya Şahin and Julia Schleck (2016).

Cartwright also uses prior textual sources, silently or otherwise, as part of a text that is geographically detailed, politically informed, and carefully mediated for domestic readership – even as it borrows elements of style and characterization from romance. For our purposes, Cartwright's description of Isfahan, the first English account to record and appreciate the significant architectural, cultural and political redevelopment of Shah 'Abbas' new capital, warrants particular attention.[24]

Intersecting, aligning and sometimes misaligning with the company and its interests, the career as well as travels of figures like Cartwright and Mildenhall can provide useful perspectives on the expansion of the realm of knowledge as experienced and disseminated by those in the employ of the joint-stock trading companies – or, just as significantly, on the margins of them. While we depend on what survives in the archives, of course, the issue of class has obscured how and what we see of the travels of early modern English men and women. Why, for example, have the Sherley brothers (minor gentry) attracted so much scholarly and popular attention for taking themselves off to the court of Shah 'Abbas' ostensibly representing English commercial and political interests, when very similar actions by Mildenhall at the court of the Moghul emperor Akbar just a year or two later have not? The experiences of the ordinary mariners, many of whom came from east London, and were actively distrusted by the merchants and Company investors (as Barbour has argued), are not only a relatively untapped source, but also an undermined one, thanks to the forms and values of the documents in which they appear. The Company merchants 'generated vocabularies of race and station' in their dealings with their labour force on ship and abroad, both domestic and foreign, but some of their voices may still be recovered, as Barbour has shown (2021, 361). A chaplain's role on board ship occupies a different kind of authority and socio-economic profile, usually on the side of the master or captain, and the merchants and investors. In the case of Cartwright, the role of chaplain to the Company was one with which he strongly identified – and which also gave him a financial stake in the success of the discovery voyage, in the case of the 1602 voyage. And yet, the attempted mutiny on that voyage, and his association with it, must hint at a certain sense of fellowship with the mariners rather than the captain class, even if he was to disavow that later on.

Cartwright's 'iournall' joins an understudied sub-field of chaplains' accounts of their postings and travels with the joint-stock trading companies. The best-known is that of William Biddulph, Levant company chaplain in Aleppo (and whom Cartwright probably met while staying with Colthurst), who published a semi-fictionalised account of his travels in 1609.[25] Simon Mills has recently made a persuasive case for an alignment of learning and commerce facilitated by chaplains in the Turkey Company, principally in relation to antiquarian, orientalist and theological learning and the acquisition of books and manuscripts by Company chaplains – a 'commerce of knowledge' closely interwoven with commercial trading routes and trading company infrastructures (Mills 2020). But little has been written on the cosmographical writings of the various Company chaplains, whether established in their post or (like Cartwright in 1602) those sent on 'discovery' voyages.[26] Before the formalizing of the role and its conditions in 1624

[24] Shah 'Abbas' moved his capital from Qazvin to Isfahan, and began a major programme of cultural, architectural and physical redevelopment of the city from about 1598. On the dating of these works, and the earliest references to the Shah's plan, see Melville 2016.

[25] On Biddulph and his fictionalizing strategies, see MacLean 2004, 51-65. Other examples of chaplains' travel narratives include those of Edward Terry (1655) and, later still, William Hallifax (1691). Biddulph was also responding to another recent popular travel text from the east by an English merchant, Henry Timberlake (1603), who styled himself an 'English pilgrim'.

[26] See Mills 2020, 15-70, for a history of chaplains in the Turkey company. Company records for chaplains appointed to the Turkey Company do not survive before 1611, but conditions were formalized in 1624, allocating

by the Levant Company, Mills points out, records of the identity, conditions and activities of earlier chaplains is sparse; the case of Cartwright, however, shows the benefits of casting a wider net, to include those on unsuccessful voyages or who undertook speculative travel with a view to the future commercial benefit of the trading companies. While Biddulph confected a series of distancing devices allowing him to fictionalize the record of his travels (which may have been influenced by the hostilities between himself and a later consul, Thomas Glover [1606-1611]), Cartwright embraces the authority of the role of 'preacher' or Company chaplain. His is less a 'commerce of knowledge' than a knowledge of commerce overlaid onto the geographical and ethnographic descriptions of his journey; a compelling combination of opportunity as well as eye-witness testimony.

Although describing a voyage a decade previously, Cartwright frames his account within the geopolitics of Britain, Europe and the East. The nature, origins and current state of the political and religious hostilities between Persians and Turks occupy a prominent place in his narrative, although most of that information was already known, and was part of the reason for the demise of the Muscovy company trade-route to Persia and the concomitant rise of the Turkey (later Levant) Company trade in the 1580s. The inclusion of a long section of comments on Anthony and Robert Sherley has tended to distract scholars from the much more substantial engagement with the geography and ethnography in the text. But Cartwright commits to describing 'seueral Nations, Situations, Cities, Riuers, Mountaines, and Prouinces, which I haue seene and passed by' (1611, B2r), particularly where those geographies are partly known from classical or biblical history, and even more so, where they proffer potential commercial opportunities to the English trading companies.

Besides his own observations, Cartwright refers to the maps of Ptolemy and, more recently, of Abraham Ortelius (at one point chastising Ortelius for disregarding the commercial and cultural prominence of Kashan) as well as the geopolitical history of Giovanni Tomaso Minadoi, *Historia della Gverra fra Tvrchi, et Persiani* (1587), from which he borrows extensively in the second part of his narrative, that describing the potential for Christians to capitalize on the historic enmity between Ottomans and Persians.[27] The text is rich in details of the contemporary experiences of the traveller, whether the benefits of camels over mules in certain landscapes (D2r), or the challenges of navigation, as he and Mildenhall travel with a large caravan with camels and mules. He provides domesticating detail for English readers (the Euphrates is 'as broade as the *Thames* at *Lambith* … almost as fast as the Riuer of Trent' – the latter a nice touch, recalling the Trent's own tendency to flood and the significance of its 'rising and falling' [C2v]). He shows an interest in the etymology of place-names, one that encompasses and goes beyond provision of ancient and contemporary names, as other travellers of the period offer. He lists an array of informants: Jews, Turks and Armenians among them. Like the Muscovy Company merchants who travelled some of this country before him, he frequently observes signs of ruin and damage from the wars with the Ottomans, as well as local customs 'worthy obseruation' (D1v) (the torture and execution of a petty criminal in one village, the uses of tar-oil in another) or pleasingly risky events and locations for the armchair traveller (e.g. the dramatic source of the Tigris, which with 'the steepnesse of the same, together with the hideous noise,

chaplains (after a formal interview and sermon in London), a 3-5-year term, lodgings and board in the consul's house, an annual salary and allowance towards books, and a charge to 'preach the word of god & administer the sacrament to the English Nation according to the cannons & constitutions of the Church of England' (19).

[27] Minadoi's text was translated into English by Abraham Hartwell, secretary to Archbishop Whitgift, and published as *The History of the Warres betweene the Tvrkes and the Persians* (1595).

and whistling murmuring, we found not so great contenment aboue [it], as we did beneath', D2v). The itinerary-shaped narrative is divided into clearly titled sections describing places, peoples or cities, and sometimes biblical or historical sites (e.g., 'The description of Armenia', 'The description of the Curdes a most theeuish people', 'The description of Van'). But the marginal notes also provide clear directions for commercially-minded readers: 'A trade might be planted by the Muscouian merchants', 'The commodities to be carried from England into Persia', 'The colours of cloath to be sent into Persia' ([H4]r).[28]

In the case of Kashan, 'a principall Citie in *Parthia*, very famous and rich howsoeuer *Ortelius*, and others make no mention of it' (I1v), Cartwright's description is little short of romance-like, so lush and excessive is his praise – especially in commercial terms – for the city: intensely hot though the climate is, 'it wanteth neither fountaines, springs, nor gardens, but aboundeth with all necessaries whatsoeuer: consisting altogether in merchandize, and the best trade of all the land is there, being greatly frequented with all sorts of merchants, especially out of India' (I2r). The giant black scorpions that menace the city only add to its qualities of romance excess, of what Murrin calls 'the marvelous real' (2014, 9), a mode generated from precisely these Eastern settings, and here heavily inflected by fantasies of commercial profit (also Murrin 2014, 9-26).

Cartwright's description of the Shah's garden at Isfahan a few pages later ('a thousand fountaines, and a thousand brookes' [I3]r) also engages in this mode of the 'marvelous real'. Significantly, it is the first English text to describe in any detail the developing new administrative capital city, Isfahan, with its wealth of art, architecture and design, including the Bagh-i Naqsh-i Jahan gardens and palaces, Chahar Bagh gardens and avenue, the new commercial district and covered bazaar, and eventually, the Allahverdi Khan bridge and a series of significant water engineering projects.[29] A major programme of rebuilding and redevelopment had begun just a few years before Cartwright and the Sherleys were there, but unlike the Sherleys, Cartwright shows a strong interest in the city and an appreciation of the significance of this redevelopment, and its implications. Thus, Cartwright highlights the – in Europe unusual – public access to the royal gardens and site of royal exercises at Isfahan: 'neither is this garden so straitly lookt vnto, but that both the kings souldiers and Citizens, may and doe at their pleasures oftentimes on horse backe repaire thither to recreate themselues in the shadowes and walkes of those greenes' (I3r). (For comparison, the key dialogue with the Shah described in Anthony Sherley's own *Relation of his Travels*, 1613, takes place in 'a garden' in Isfahan, but gives little detail of the development of Shah 'Abbas' new capital city, let alone the remarkable gardens and maydan; Sherley also notes in passing that the Shah's entry to Isfahan is simply 'of the same fashion' to that he encountered in Kashan).[30]

In offering his readers a description of a garden fit for romance, with its thousand fountains and brooks and 'thousand sundry kinds of grafts, trees, and sweete smelling plants, among which the Lilly, the Hyacinth, the Gillyflower, the Rose, the Violet, the flower-gentle, and a thousand other odoriferous flowers', Cartwright provides a hospitable resting place for his readers as much as himself, while evoking the astonishing ambition and achievement of Shah 'Abbas' architectural redevelopment of Isfahan, and its exemplification of his sovereignty. Cartwright shows himself

[28] He concludes this section by noting 'I am perswaded that any honest factor residing in Casbin [Qasvin] may vent a thousand cloaths yearly, wherof the Venetians haue good experience' ([H4]r).

[29] On the dating and contemporary Iranian chronicles describing the development of Isfahan and the timeline and key moments of Shah 'Abbas' shift of capital city from Qazvin to Isfahan, see Emami 2016 and Melville 2016. It is likely that Cartwright is describing Chahar Bagh in this passage.

[30] It was 'of the same fashion that it was at *Cassan*; differing onely in this, that for some two English miles, the waies were couered all with Veluet, Sattin, and cloth of Gold, where his horse should passe' (Sherley 1613, [L4]v).

alert to the excellence of the artistry involved, noting that the pargeting and architectural details of the palaces within the gardens 'easier stay, then satisfie the eyes of the wondring beholder' (I3r). Isfahan was, indeed, conceived as an artistic and visual marvel, an expression of royal magnificence as well as (paradoxically) humility, and the redevelopment centred both on the commercial centre with the building of a new covered bazaar, for example and the Chahar Bagh gardens that ran through its centre; in subsequent years, a viewing-tower would be erected at Takht i Sulayman, an elevated site on Mount Soffeh, to offer a prospect on the city itself as a wonder, to residents and visitors alike. 'Romancified' though it is, Cartwright's description pays attention to the urban experience of citizens' lives, and captures something of the scale and ambition of the Shah's works, and its potential to give expression to his rule – even if he later repeats a series of worn tropes about Persian iniquity, largely drawn from Minadoi and others.

The middle section of Cartwright's account switches genre, and moves into an approving account of the arrival of the Sherley brothers to the court of Shah 'Abbas' in 1599, and what ensued of their ostensible project to win him to the Christian cause, including a heavily derivative (of Minadoi) account of the source and history of hostilities, confessional and otherwise, between the Ottomans and Persians. It is for this section that Cartwright's work has received most scholarly attention, at the expense of his geographical and commercially framed descriptions of Ottoman and Persian lands, and indeed his return to this mode in describing his return journey. Cartwright praises both Sherleys, and provides dubious biographical details about Teresia Sherley, whom he describes as a Circassian woman from the Shah's seraglio – but interestingly, he rejects as 'more fitte for a Stage, for the common people to wonder at' (K3v) the plotline of their Christian child, with the Shah standing as godfather, found in the 1607 London play *The Travailes of the Three English Brothers*, which dramatized the adventures of the Sherley brothers as stage romance.

Although Cartwright implicitly aligns his own account with 'any mans priuate studies' ([K4]r), in opposition to this 'common' (K3v) audience of the London stage, it is clear from the prominence of his digression on the Sherleys that the success of that play and the wider interest in the Sherleys to which it and a series of contemporary pamphlets and narratives testify had some part in motivating the writing and publication of Cartwright's *Preachers Travels*.[31] (Not that Cartwright is entirely convinced by them – he describes Anthony as 'a man very wise and valiant, if hee had not beene too prodigall' (L3r) and distances his report of Anthony's embassy and leaves it 'to the world to iudge of' (K3v)). But it also prompts him to lament at some length the success of the Islamic Ottoman empire, and to note the suffering of Christians in the Mediterranean which 'we (thanks be giuen vnto God) in these Northerne parts of the world may behold with safety, but not without pitie' (L1r). Cartwright's narrative is marked by these regular remembrances of the relationship between the reader and the wider world he narrates, a feature of cosmographic knowledge-making as well as community formation.[32] The text closes with an appeal to his fellow-countrymen, those who 'either shall hereafter serue in the warres of *Hongary* against the Turk, or trade in those places', to reject Islam, 'as the only way that treads to death and destruction' (P1r).

The return journey is less engaged, and readers are left to wonder why he did not continue to Lahore with Mildenhall as originally planned and advertised. Cartwright's account of the lands he traversed on his return from Isfahan is heavily indebted to textual sources, several of which he explicitly recommends. He indulges the armchair traveller once again by revisiting the old chestnut of the dating of biblical history, as well as providing descriptions and commentary on the

[31] See the new biography of Teresia Sampsonia Sherley by Stevenson in Das 2022, 177-184.
[32] His epistle to Sir Thomas Hvnt is signed from Southwark, by the river but also the playhouses, of course.

site of Eden, and the ruination of Babylon. He does, once again, digress to strongly recommend Batan, on the Persian gulf: a 'verie profitable trade for the East Indian companie', a site for 'a speedie vent for our broade cloath, Carsies, Tinne and Lead' (M3v), and even, he suggests, a potential reconfiguration of the Persian silk trade with Europe, particularly Portugal. In this, Cartwright shows a strong insight into the specific challenges to the company of establishing the kind of English trade with Persia that his text has been so consistently recommending and seeking to advance: Portuguese domination of European and even Persian interests in the Persian Gulf, a situation that the East India Company would, many years later, eventually confront directly in agreeing to join Shah 'Abbas' in an attack displacing the Portuguese from Hormuz.[33]

As Badcoe writes of Spenser's romance, 'various forms of travel invite the contemplation of different kinds of epistemological horizon, from the historical and the spiritual, to those of conquest, both erotic and territorial' (2019, 4). Cartwright does not write a romance, but his *Preachers Travels* invites the contemplation of different kinds of knowledge of and engagement, primarily by Londoners, with the Ottoman and Persian empires. If the geographical and ethnographic details he disseminates are unstable, even contradictory, his own questing in the realm of the 'marvelous real' using an aspirational commercial frame generates a sense of individual mobility and possibility within these familiar worlds of biblical and classical history. But they are imbued with a sense of urgency within the competitive forms of the global market, no less so its epistemological horizons. Addressing ordinary citizens as well as prospective investors and educated armchair travellers, Cartwright's narrative of cities, markets and trading ports, spliced with appealing accounts of semi-familiar sites of classical and biblical history, draws on romance strategies and styling to convey new data about Persia and to help mediate the distance between it and the lives of his readers. And in his appreciation and dissemination of the sophisticated, progressive ambition of Shah 'Abbas' at Isfahan, Cartwright shows how radical these new geographies, these new epistemological horizons, can be back home.

5. *Conclusion*

The two case studies I have presented here share and bring together an interest in new forms and details of geographical, political, cultural and ethnographic knowledge gleaned from English travels abroad, with the linguistic and conceptual vocabularies of romance, and, perhaps more significantly, the epistemological affordances of the genre. They are distinctive in promoting or foregrounding the significant commercial interests of their subject of travel, travellers and travelling heroes. And they attest to less often examined networks and genres of cosmographical knowledge circulating in the period. Although Cartwright and Warner have quite different life-experiences, and different literary ambitions, their close proximity to the joint-stock trading companies is, for each of them, a significant factor in their writing. It is not quite the same as recovering the voices of the seamen who sailed the ships, very many of whom died in the course of their work and who did not have the university education and writing opportunities enjoyed by Cartwright and Warner. But it is, I hope, a prompt to look more closely at the new kinds of knowledge generated and disseminated by and for those who worked for the trading companies in this 'marvelous' and violent era.

[33] On the events at Hormuz in 1622 and what led to them, see Good 2022, 10-16. See also a forthcoming issue of *Renaissance Studies* on the subject, co-edited by Edmund Herzig and Ladan Niayesh.

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Charting English Global Presence and its Violent Effects in Early Modernity Reading Strategies for an Ambivalent Archive

Sandra Young
University of Cape Town (<sandra.young@uct.ac.za>)

Abstract

The maps tasked with charting English new-found seafaring prowess in the latter half of the sixteenth century constitute an ambivalent archive. They participated in the imaginative work of conceptualising the world as whole and singular, held within a unified cosmos. At the same time, they were distinctly partisan, helping to advance English adventurism and construct an elevated vantage point where, the would-be English colonialist, might imagine traversing oceans to subdue far-flung lands and their peoples. By reading and re-reading Baptista Boazio's beautiful hand-painted map, 'The Famouse Weste Indian Voyadge', a visual account of the voyage Francis Drake undertook in 1585 endorsed by Elizabeth I to make the case for English primacy in the Americas, the essay reflects on the interpretative tool kit that might be helpful in laying bare the racial violence that infused the early period of English expansionism. Reading, as presented here, becomes a matter of excavation. Maps such as Boazio's were tasked with cosmographical import: they participated in the world-making that established a singular world, imagined as a totality, I argue, while simultaneously advancing rival national interests and the forms of dominance that underpinned racial slavery. The interrelated texts that chart the emergence of English aggression on the high seas offer an opportunity, albeit obliquely, to reckon with the history of English enslavement and to consider the ways that early modern knowledge practices are implicated in this history.

Keywords: *Atlantic Slave Trade, Baptista Boazio, Early Modern Cartography, English Adventurism, Francis Drake*

1. *Introduction*

As imaginative and rhetorically inflected works, early modern maps offer glimpses into the contested nature of the imperialist ambition that impelled European 'adventuring' across the seas

and the violence that it generated.[1] Even as they signal their adherence to conventions in representing known landmasses according to the cartographic grid, as though it were a matter of knowledge-building rather than argument, the maps tasked with charting new-found English seafaring prowess, in the latter half of the sixteenth century, are not all they seem. Beneath the beautiful artistry, the reassuring projection of the world as a unitary whole, the demonstration of empirical knowledge practices and the show of triumph, a sceptical reader may decipher an unacknowledged complicity in the violence of colonial dispossession in the race to establish economic and political ascendancy.

What kinds of interpretative tools might be necessary to recognise the changing orientation towards the earth and its peoples in the archive of materials emerging from the period when it becomes possible for the English to imagine participation in the emerging economy of racial slavery? This essay considers some approaches to an archive that conceals as much as it reveals of the racial violence that accompanied what became a lucrative economic system. A range of critical tools are needed to excavate the disturbingly violent history reflected, albeit artfully and indirectly, in the beautiful materials that seek to manifest English presence and participation in a global inhabitance. By reading and re-reading Baptista Boazio's map, 'The Famouse Weste Indian Voyadge', a visual account of the voyage Francis Drake undertook in 1585, I consider the interpretative tool kit that might be helpful in laying bare the racial violence that infused the early period of English expansionism. Appearing as a kind of watermark in these cartographic testimonies to seafaring exploits, as I aim to show, is the haunting presence of slavery, barely legible in the period's map-making practices, though more visible when the maps are read in conjunction with their intertextual accomplices and when the cosmographical impetus to conceptualise the world as a totality is read in conjunction with the emergence of nationalist rivalries in sixteenth-century Europe.

The cartography that attested to the exploits of the early modern expansionist period in Europe performed some of the imaginative work needed to project stability in a time of great flux. It enabled an avid European readership to conceive of a complete and settled world as well as their elevated place within it, at a time of accelerating rivalry in the race to colonise new territories. Ayesha Ramachandran has argued persuasively that the 'idea of "the world" becomes a foundational but fluid and fiercely contested category' in early modern Europe, an idea born of a compelling need to establish an 'intelligible conceptual framework' with which to imagine the world as a coherent totality in the face of the disconcerting pluralities and uncertainties about inherited knowledge systems that accompanied what Europeans thought of as the discovery of the Americas and the proliferating 'fragments' of new knowledge and material objects from previously unknown territories it yielded (2015, 6). The task of creating a sense of synthesis was imaginative, as well as epistemological and conceptual, in nature. Ramachandran calls this imaginative work 'world-making', that is to say, 'a ubiquitous cultural practice in the early modern period' which 'informed the commerce of sailors and merchants, the battles fought across continents for global imperial dominion, the crafting of precision instruments and the printing of books in the workshops of European capitals' (7). By the end of the sixteenth century, however, the emergence of nationalist rivalries in Europe complicated this task. The interplay between the sense of the world as a totality in early modernity and the increasingly nationalist lens through which early modern Europeans conceptualised their place in that world, can be traced in the encyclopaedic compilations of

[1] I am grateful to the two anonymous peer reviewers, to the editors of the issue, Sophie Chiari Lasserre and Janet Clare, and to Elleke Boehmer, for a wealth of helpful feedback to an earlier version of this essay.

geographical and navigational accounts in the period, as I have explored at length elsewhere.[2] This current essay calls attention to the interrelation of these two impulses, that is to say, the projection of the world as a singular, coherent whole and the accelerating nationalism that emerged during a period of rivalrous globalisation in Europe. Imagined as an all-encompassing totality, the 'whole world' provided a seemingly worthy object of attention and a legitimising discourse that shielded from view more partisan and less noble impulses. For a figure like Francis Drake, already a celebrated circumnavigator of the world at the time of his 1585 voyage, there was much to be gained in reinforcing his hard-won association with the idea of the world envisaged in the singular, as a globe. In a discussion of the tremendous significance attached to successful circumnavigation of the earth as an accomplishment that provided 'evidence of humanity's direct, tangible connection to something usually perceived in the abstract, the whole Earth', Joyce Chaplin points out the extraordinary cultural capital Drake was able to secure from the feat of circumnavigation: 'Drake himself inaugurated a tradition of being portrayed with a globe, a remarkable claim to the whole world in an era when orbs and globes were the distinctive possession of monarchs and of Jesus Christ, savior of the world' (2013, 3 and 9). Early modern book history bears this out: the image of Drake, his arm proprietorially resting on a globe, appeared as a frontispiece as early as 1589, in a Latin edition of an account of the expedition by Drake and John Norris to Portugal, *Ephemeris expeditionis Norreysij & Draki in Lusitaniam*. This image was re-used repeatedly. For example, the same portrait of Drake, his arm resting on a globe, appears as the frontispiece of Drake's account of his circumnavigation, as compiled by Francis Fletcher, *The World Encompassed by Francis Drake* (1628), as seen in figure 1, below. The full title of this compilation points to the partisan, nationalistic impulse infusing this display of cosmographical accomplishment, in a work that is acknowledged as being 'offered now … for the stirring vp of heroic spirits, to benefit their countrie': *The VVorld Encompassed by Sir Francis Drake … Offered now at last to publique view, both for the honour of the actor, but especially for the stirring vp of heroick spirits, to benefit their Countrie, and eternize their names by like noble attempts*.

The early materials testifying to England's participation in the advancement of cosmographical knowledge have a rhetorical force. Despite the seemingly disinterested representation of the world as a totality and the confident depiction of land masses known to Europe and navigable oceans, the partisanship infusing early English maps is legible to a discerning reader. In order to recognise the jingoism and the war-mongering quietly legitimated by these works of representation, the work of reading becomes a matter of excavation.

[2] I have argued elsewhere that during the second half of the sixteenth century, the shift from the idea of England as a feudal 'realm' to the more modern sense of England as a 'nation' was facilitated by the circulation of 'voyages', particularly in the multi-volume, encyclopaedic compilations published by Richard Hakluyt and others after him, which projected 'a vision of England as politically coherent within its borders and as ascendant beyond them' (Young 2018, 1058).

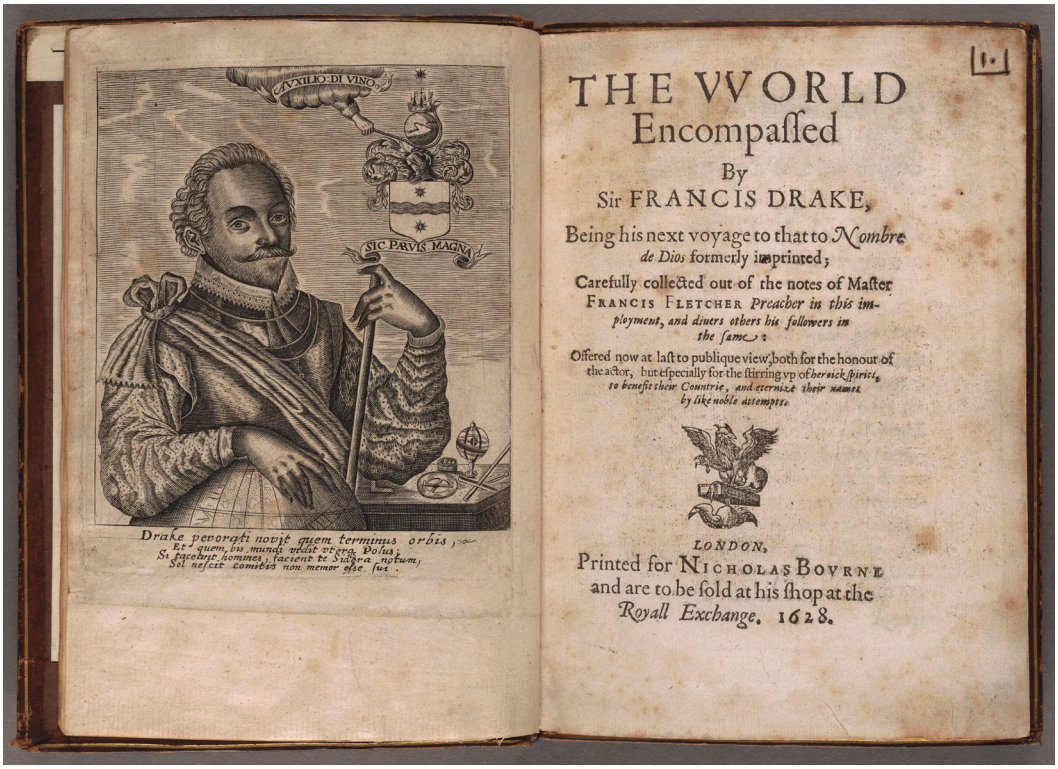

Figure 1 – The image of Drake, his arm proprietorially resting on a globe, appeared as a frontispiece in Drake's account of his circumnavigation, as compiled by Francis Fletcher, *The World Encompassed by Sir Francis Drake*, London, Nicholas Bourne, 1628. Courtesy of the Huntington Library

2. *Reading as Excavation: Recognising Racial Violence in Early Modern Archives*

For what is not immediately visible in Boazio's celebratory, beautifully painted map, are the captives, some of whom Drake and his fleet captured in a raid on the town of Cidade Velha on the island of Santiago in the Cape Verde archipelago, others of whom were captured in Cartegena.[3] One might ask how the presence of the captives might be legible in the map

[3] The precise number of captives is not known, and their fate remains a matter of speculation. David Quinn quotes a Spanish source, that is, the 'summary of a deposition made at Havana, 26 June 1586, by Pedro Sanchez', suggesting that Drake 'carried off the Moors from the galleys at Cartagena and at Santo Domingo, about 200, whom he promised to send to their own country … [and] he carried off 150 negroes and negresses from Santo Domingo and Cape Verde – more from Santo Domingo' (Sanchez in Wright 2010, 212). This practice of capturing (sometimes characterised as liberating) captives continued once across the Atlantic: as Quinn reports, 'a Spanish prisoner, released by the English in Cuba' (98), stated that Drake 'took 300 Indians from Cartegena, mostly women, [as well as] 200 negroes, Turks and Moors, who do menial service, and he carries them along, though they are not useful to his country' (Alonso Suarez de Toledo to the Crown, Havana, 27 June 1586, in Wright 2010, 173) (Sanchez and De Toledo are quoted in Quinn 1982, 98). The captives carried off by Drake's fleet included a range of people and circumstances, including Africans from a variety of origins (variously described as 'Turks', 'Moors', and 'Negroes'), along with some indigenous Americans who were 'rescued' from the Spanish, if this source is to be believed: as Quinn puts it, 'a very mixed bag of rescued persons' (*ibid.*). The ideological spin to which reports at the time were

itself. How might a scholar concerned with historical injustice read such a calamity in a text such as this one? Saidiya Hartman reflects on the challenge of working with archives that offer a (limited) record of slavery, in which enslaved people figure as banal numbers or, what is worse, in hateful prose, what Rosanne Kennedy has called '*perverse* archives' in her scholarly reflections on contemporary activist artists' engagement with the colonial archive that recorded transactions involving Australia's stolen generations.[4] For Hartman the 'difficult task is to exhume the lives buried under this prose' and to 'liberate them from the obscene descriptions that first introduced them to us' (2008, 6). A similar challenge confronts scholars faced with an archive that would seem on first glance to have little to say about the historical violence of enslavement. It is a challenge that has been made all the more urgent at a time when social justice movements around the world are calling for a proper reckoning with this history. The schema of intelligibility fostered by early modern cosmography and knowledge practices helped to establish the habits of thought and the systems of domination that persist as racial injustice to this day.

To fathom the conditions – discursive, political, material and epistemic – that sanctioned the violence of slavery requires more careful excavation of these texts and a willingness to see beyond the gloss of triumphalism that infuses early modern knowledge practices. The maps tasked with charting English success on the high seas participated in a conceptual re-orientation that helped to establish a proprietorial relationship to the earth and its peoples and a secure vantage point for the would-be colonist. Baptista Boazio's series of maps, which marked the occasion of Francis Drake's successful 1585 voyage to the West Indies, forms the basis of this inquiry into the cosmographical implications of England's use of cartography to bolster its global interests in the late sixteenth century. Under particular focus is the primary map of the voyage, 'The Famouse West Indian Voyadge', an English-language map, hand-painted, and endorsed by Elizabeth I to make the case for English primacy in the Americas. The map participates in the projection of seafaring mastery, made manifest on the page on behalf of the emergent nation. It alerts us to the role of early modern cartography as a mode of knowledge production through which expansionist England was able to project mastery and legitimacy, despite its involvement in war-mongering. The work of cartography in the period went beyond tracking and asserting English global incursions. It enabled a shift in cosmographical consciousness, as I argue below, allowing the English not only to reimagine their place in the order of nations, but also to establish a proprietorial relationship to the earth itself and to its oceans.

Cartography helped to shape the message, but there were conflicting obligations for mapmakers to attend to, as well as implicit pressures that would not necessarily register as clearly legible strokes of the brush. The ocean figures as a space of unbounded and unforeseeable peril and, at the same time, enticing possibility, once mastered, in offering passage to lands hitherto unknown to Europeans and, with that, opportunities for trade and conquest.

subject (was it 'rescue' from the Spanish or 'capture'?) and the uncertainty surrounding the treatment of the captives and their eventual fate, necessarily hampers any discussion of these events, but it does not remove the obligation to examine the record and reflect on its legacy.

[4] Acknowledging that 'Often, the only records of an individual's removal and fate are those preserved by government bureaucrats who perpetuated elimination', Kennedy argues that the 'challenge is to use such records – what I am calling *perverse* archives – to create an Indigenous cultural memory of dehumanization and survival' (2011, 90).

3. *Charting Aggression on the High Seas: Drake's Voyage and the Map that Sought to Settle Things*

Reliant on a careful visual lexicon, the English marked their passage towards successful 'adventuring', 'planting' and 'trafficking', albeit belatedly and obliquely, in maps that appeared to celebrate English seafaring victories in the sixteenth century. By comparison, they were latecomers to this game: European expansionism was already well underway in this period, given the long-established seafaring of the Portuguese, driven by the agenda of Prince Henry 'the Navigator', and the Spanish, authorised and enabled by Ferdinand and Isabella. However, the English adventurers who moved into this sphere learned quickly from their Iberian rivals and by the second half of the sixteenth century their seafaring ambitions were unambiguous. They were also well supported by the emerging knowledge practices evolving with colonialist modernity, practices that obscured aggression on the high seas beneath cartographic interest or treated it as the legitimate advance of national interest. It was within this context of rivalrous 'adventuring' that the English enslavement practices began to take hold: not as purchase but as plunder, celebrated as a matter of advancing English colonial ambitions in the cartographic and historiographic texts of the late sixteenth century.

The cartography that celebrates the occasion of Drake's westward exploits hints at unnamed incursions, evident upon closer examination of Baptista Boazio's map, 'The Famouse Weste Indian Voyadge' (figure 2). Tasked with commemorating the voyages of Francis Drake to Cartagena in the West Indies (off the coast of modern-day Colombia) and the English victory over Spanish territories, Boazio's map hints at the dangers not so much of seafaring itself but of colonial aggression. The map seeks to represent the full voyage, at least as initially planned, and therefore tracks the fleet's voyage from Plymouth, southwards, around the coast of Spain and Portugal, down the west coast of Africa through the adjacent archipelagos of the Canary Islands and, further south, Cape Verde, as far as the town named Santiago, which we learn was the site of a raid, before heading due west across the Atlantic (see figure 2). In Boazio's map, the only named promontories along the coast of Africa are 'Cape Verde', the primary site of the Portuguese trade in enslaved people for much of the sixteenth century (as seen in the Emory University database of slave voyages), and 'Cape Blanck', north of Senegambia, an occasional point of departure in the Spanish slave trade in the period, according to the Emory database, and the site of the Portuguese Prince Henry's 1441 landfall and initial enslavement of 'Moores', as described in Antonio Galvano's chronicle, *The Discoveries of the World from their first originall vnto the yeere of our Lord*.[5] In an ominous fashion, Galvano deploys the word 'coast' as a verb to describe the predatory work of Portuguese fleets in the previous century, when 'certaine ships, which went coasting til they came to the Islands of *Garze*, where they tooke two hundred slaues: which were the first that were brought from thence to *Portugall*' (1601, 25). The line that traces the passage of Drake's fleet along the coast of Africa points to a similar modus operandi, but one has to search more widely for clues of the violent effects of his voyage and draw on a number of reading strategies, as I seek to demonstrate below.

[5] Galvano's account gives prominence to the 'Moores which they brought from hence' as a source of both legitimacy and of bartering power, as in 1443, 'Don *Henry* commanded *Antonie Gonsales* to carrie backe the slaues which he had brought, and to ransome them in their countrey: Which he did' (1601, 24).

Original in the John Carter Brown Library at Brown University

Figure 2 – Baptista Boazio's main map (1589), 'The Famouse West Indian Voyadge Made by the Englishe Fleete of 23 Shippes and Barkes Wherin Weare Gotten the Townes of St. Iago, Sto. Domingo, Cartagena and St. Augustines', London. Courtesy of the John Carter Brown Library at Brown University

The map itself attests to the passage of the fleet around the west coast of Africa, showing its incursions into the islands in the Cape Verde archipelago that offer opportunity of plunder, across the Atlantic to the 'West Indies', including the island of Hispaniola, and down to Cartagena (modern-day Colombia), before charting a course northwards to Cuba, Florida and Virginia, and from there back across the Atlantic ('the waye homewarde', as it appears on the map) to England. The points of combat are marked on the map in red paint, and national flags signal territorial possession. The map's full title offers only an oblique acknowledgement of the expedition's violent objective: 'The Famouse West Indian Voyadge Made by the Englishe Fleete of 23 Shippes and Barkes Wherin Weare Gotten the Townes of St. Iago: Sto. Domingo, Cartagena and St. Augustines … Newlie Come Forth by Baptista B'. The passive voice and rather bland verb choice, referring to the voyage 'wherin weare gotten' four Spanish settlements in the West Indies, mutes the aggression and the political offence involved in these acts of plunder and conquest.

In truth the voyage was an outrageous act of war-mongering:

> Twenty-five vessels made up Drake's fleet, each carrying about one hundred men, including twelve companies of soldiers. After stopping in northwest Spain and burning the town of Vigo, the expedition proceeded to [the island of] Santiago in the Cape Verde Islands and took this outpost in November 1585. Although Santiago was very poor, yielding little plunder, the English troops burned it to the ground. (Nebenzahl 1990, 140)

These incursions on foreign territories continued once the fleet had crossed the Atlantic Ocean, and after capturing the town of Santo Domingo in Hispaniola (the island shared by modern-day Haiti and the Dominican Republic, then a Spanish settlement), they raided Cartagena, leaving two months later 'with 100,000 ducats and 200 slaves' (*ibid.*). The main map that tracks the full voyage as it is described in the written account would seem to register the passage of time through its representation of the fleet's passage as clear strokes of the pen, as discussed below. The map also marks (in red) the sites where the fleet made landfall, that is to say, the sites of the raids on foreign territories. These include the sites of Drake's raids on Portuguese settlements along the west coast of Africa, the town of Cidade Velha on the island of Santiago in the Cape Verde archipelago, which had been a significant site of the Portuguese slave trade in the region.

A tracing of the map's intertextual linkages points to the self-serving hermeneutics of these representational endeavours, as English political machinations become transformed into 'knowledge', their partisan beginnings no longer legible as such, as the following discussion of reading strategies seeks to demonstrate.

4. *Reading Intertextually: Walter Bigges'* Summarie *and the Reveal of the Map's Text Boxes*

The documents attesting to the voyage were not an afterthought; their conditions of production appear to have been intertwined with the event of the voyage itself. In all likelihood the Boazio maps were the product of eye-witness observation: Mary Frear Keeler, editor of the Hakluyt Society anthology of *Accounts of Sir Francis Drake's West Indian Voyage, 1585-1586*, finds evidence to conclude that Baptista Boazio was aboard the vessel, most likely serving as 'page' to the Lieutenant General, or commander, Christopher Carleill, and that 'the maps were made from his first-hand observation' (1978, 77). Keeler argues that Boazio had a hand in completing the account of the 1585 voyage begun by Walter Bigges, captain of one of the fleet's vessels who perished on the return journey.[6] Excerpts from this account, published in 1589 as *A Svmmarie and Trve Discovrse of Sir Frances Drakes VVest Indian Voyage. Wherein were taken, the Townes of Saint Jago, Sancto Domingo, Cartagena & Saint Augustine*, were published as broadsides to accompany each of the five Boazio maps, in the form of explanatory and illustrative text boxes in three languages.[7] The foregrounding of the narrative provided by the maps' text boxes points to the need for an interpretative strategy that can attend to the intertextual elements associated with the maps.

[6] In his Dedication 'To the Right Honorable Robert d'Evrevx', Thomas Cates ascribes authorship of the narrative to 'Captaine Bigges, vvho ended his life in the said voyage after our departure from Cartagena' (Bigges 1589, n.p.).

[7] Mary Frear Keeler edited the Hakluyt Society's publication of the *Summarie*, along with commentary on the maps' text boxes, in *Accounts of Sir Francis Drake's West Indian Voyage, 1585-1586* (1981, 241-270). Keeler argues that the 'engraved maps, printed with texts in three languages to correspond with the editions of the *Summarie*, are clearly associated with the publication of that narrative, and are referred to on the title page of the Ward edition' of the *Summarie*, published in 1589 (71). Keeler compares the text that accompanied the map and the full version of the *Summarie* and reflects on drawing attention to the ideological commitments legible within the editorial process, but her attention is almost exclusively on the texts' representation of the events in the Americas, largely ignoring the events off the west coast of Africa. In this sense it participates in a silence surrounding English aggression in Africa, and the impact of Drake's skirmishes off Cape Verde.

The extended narrative of the Bigges *Summarie* offers very little in the way of tracking the voyage itself: almost all the detail is focused on what transpires on land. Though the map would seem to be focused on the oceanic voyage, it nonetheless highlights key sections of the Bigges narrative, affirming the inter-relationship of the two documents and establishing an interpretative lens that forestalls any critique of the English incursions. The map illustrates and reinforces the Bigges narrative, though the events as they appear on the maps register as settled history, attested to after the fact: by contrast, in the narrative's unfolding the reader is privy to the strategies of war-making that in the map are transformed into a 'triumph'. These two acts of representation (narrative and visual) mutually reinscribe and reinforce each other, alerting us to the texts' rhetorical import. The map is in step with the Bigges narrative and its persuasive objective, on behalf of the Drake expedition.

The conflictual nature of the expedition is not entirely invisible on the map: points of combat are marked on the map in red paint, and national flags signal territorial possession, but the explanatory text boxes beneath the maps remove from view the skirmishes and position the invaded territories as natural-historical objects. The selection of extracts for the narrative boxes points to their rhetorical function: adopting the style of natural history, the text places an emphasis on the 'very pleasant fruicts' and the fertility of the soil which yields delicious commodities and supports the 'infinite numbers' of lifestock. The valley of St. Iago, we are told, 'is wholie conuerted into gardens and orchards well replenished with diuers sorts of fruicts, herbes and trees' (Bigges 1589, 14). In relation to the West Indies, for example, map readers are told of the large (and edible) tortoises: 'The 20. of Aprill ve fell with two Ilands called Caimanes, vhere we refreshed our selues with many Allagartas and greate Turtoises, being very vgly and fearefull beasts to behold, but were made good meate to eate' (Keeler 1981, 68). The narrative here adopts the register of natural history, and the unfolding of contestation, reported as event, recedes from view. The distinct modes of reportage can be traced in the use of verbs: the verb tense positions the 'natural' condition of the island in the unchanging present.[8] This is the discursive mode of the text boxes that accompany the maps. But it is instructive to compare the excerpted text in the map's text box to its position within the Bigges narrative: in the longer narrative, this section appears after an account of the newly arrived English troops setting off to conquer the island, muskets in hand; when they find no 'enemie' to resist them, they nonetheless discharge their weapons in honour of the Queen's coronation day and to mark her dominion in that place.[9] The present-tense natural historical mode gives way to a tale, recounted in the past tense, of their encounter with a Portuguese man in a narrative that would seem to demonstrate peaceful surrender and the conclusion of their conquest, on behalf of 'our Noble and merciful Gouernor Sir Frances Drake' (1589, 15). Readers are also told of the events that 'chanced' to occur, when 'the Generall sent on his message to the Spaniardes a negro boy with a flagge of white', signalling 'truce', was 'vnhappily' killed with a stave by Spanish officers (24).[10] The

[8] This section of the narrative is replete with verbs in the simple present tense: 'In the middest of the valley cometh downe a riueret, rill, or brooke of fresh water, which hard by the sea side maketh a pond or poole' and the 'valley is wholie conuerted into gardens and orchards well replenished with diuers sorts of fruicts, herbes & trees' (Bigges 1589, 13 and 15).

[9] 'Order was giuen that all the ordinance througout the towne and vpon all the platformes, which was aboue fifty peeces all ready charged, should be shot of in honor of the Queenes Maiesties coronation day, being the seuententh of Nouember, after the yearly custome of England' (9).

[10] The narrative recounts how 'amongest other thinges it chaunced that the Generall sent on his message to the Spaniardes a negro boy with a flagge of white, signifying truce as is the Spaniards ordinarie maner to do there, when they approch to speake with vs, which boy vnhappily was first met withal, by some of those who had bene

child's presence is treated as a matter of happenstance, and his murder a matter of misfortune and Spanish cruelty, without any explanation for how Drake's army has come to have a Black child in its service. A closer reading of the map offers something of an explanation.

5. *Reading the Visual Rhetoric: Historical Time and the Strokes of the Pen*

Boazio's map traces the passage of Drake's fleet in a series of assertive, legible brush strokes, showing that the voyage passes right through the Cape Verde archipelago and makes landfall at St. Domingo, which had been the centre of the Portuguese slave trade off the west coast of Africa since the fifteenth century. The map registers the historical event of the raid that takes place here: the site is marked in colour, with a visible red spot, the surface area of the red paint disproportionally large enough to suggest that it marks not so much the circumference of the settlement but the historical event of the conflict. To access a (partisan) account of the raid on St. Domingo, one has to turn to the accompanying Bigges narrative, discussed above, a narrative that presents the events in terms of legitimate warfare with an identifiable 'enemie' (as Bigges puts it frequently in his narrative).

The visual rhetoric of the map recasts the oceans themselves as available to be harnessed in service of English expansionist ambitions: the progress of the expedition is marked clearly by a trail of short, decisive pen strokes and by the rhetorically powerful presence of the large English fleet, both on the outward journey as well as on the journey 'homewarde'. Territorial sovereignties are signalled with identifiable national flags and colourful outlines. The map itself is visually beautiful, combining cartographic rigour with the painterly sensibilities of a work of art: images of imagined sea life populate the ocean spaces, most strikingly the exquisite image of a large fish that appears in the bottom left-hand corner, drawing the eye with its beautiful blues and extended, tendril-like fins. The fish is a replica of a watercolour by the renowned artist, John White, whose paintings of the English colony in Virginia were later reproduced as engravings in Theodor de Bry's celebratory volume, *America*, a beautiful (and expensive) folio edition of Thomas Hariot's *A briefe and true report of the new found land of Virginia*. In that volume, De Bry's impressive framing turns Hariot's modest narrative into an encyclopedia of sorts, with the inclusion of indices and tables. In the De Bry volume, the visually arresting engravings of John White's watercolours help to celebrate the English colonial enterprise as a manifest destiny and render the indigenous Americans ethnographic objects, removed from the contestations that were playing out in real time.[11] The effect here works similarly: Boazio's map is as splendid as it is rhetorically effective. The vast Atlantic is rendered eminently traversable, its land masses appear as available to be vanquished by proud, victorious English fleets. The Africans captured in acts of aggression are not visible at all.

Though the narrative makes it clear that the English exploits constitute incursions on foreign settlements, the capture of a significant number of Africans is not acknowledged. As an act of plunder (rather than 'purchase') Drake's raid on St. Domingo does not appear in

belonging as officers for the king in the Spanish … who without all order or reason, & contrary to that good vsage wherewith we had entertained their messengers, furiouslie stroke the poore boy through the body with one of their horsemens staues' (24-25).

[11] I have analysed the effects of textual form on the degree to which the violence of the colonial encounter is visible in these two distinct editions of Hariot's narrative in detail elsewhere, arguing that Hariot's disquiet about the catastrophic effects of the colonial encounter is muted in the pages of De Bry's beautiful compilation, *America*, whereas it appears in sharp relief in the earlier edition of Hariot's narrative, *A briefe and true report of the new found land of Virginia*, which was reproduced in quarto as a simple pamphlet without the distracting aesthetic effects of the magnificent folio volume (see Young 2010).

the detailed Emory University database of enslavement history, which marks the 'principal place of purchase', the 'principal date of purchase' and the 'principal place of landing', along with the 'ship's name'. John Hawkins' 1562-1563 voyage is there, however, predating Drake's raids. When enslaved people are captured as the so-called spoils of war, there is no question of 'purchase', and there can be no historical accounting.[12] The practice of slavery thus remains all but invisible on these maps, in the face of triumphalist projection of seafaring dominance on behalf of the nation. However, the map's mechanism of highlighting the sites of the fleet's violent incursions at sites, associated with the slave trade, registers something of the effects of Drake's expedition and its involvement in the practice of slavery.

6. *Reading Biography and Historical Context: Bringing the Backstory into Play*

This 1585 expedition was not the first of its kind, in Drake's experience. Historian Kris Lane places the young Francis Drake as a crew member of the second voyage (in 1564-1565) of the renowned English seafaring merchant and notorious slave trader, Drake's cousin, John Hawkins; a few years later (in 1567) Drake was commander of one of the vessels of Hawkins' 'third slaving and contraband mission' to the West Indies (Lane 2015, xxii). Drake thus witnessed first-hand the bounty yielded by the Hawkins version of 'trade', and its methods. In his first voyage (in 1562-1563), Hawkins lay siege to Portuguese slave ships off the coast of Sierra Leone and transported the enslaved Africans to Hispaniola in the West Indies.[13] The second voyage in 1564 was more purposeful: Hawkins sailed to the coast of Africa and ransacked an African village, taking captives who were 'sold in Spanish ports of the mainland Caribbean shore' (Sauer 1971, 235). The English Crown was not only implicated in these acts of plunder, but it also actively supported and financed them: when Hawkins next ventured forth to the coast of Africa with a fleet of ships in 1567, two of the six vessels were provided by Queen Elizabeth. Carl Ortwin Sauer describes the Hawkins modus operandi in this way:

> Again an African town was taken and burned, Portuguese ships were plundered, and the black cargo was disposed of on the Spanish Main. As he had done before, he claimed duress of storm when he entered Spanish ports and did so when he came to Vera Cruz (September 16, 1568) … In the fight that followed the English ships were taken, except the two smallest. Hawkins escaped in one, Drake in the other. (*Ibid.*)

Such is the early training in the slave trade and plunder that Drake received at the hands of his infamous elder cousin, activities that, in helping England to break into a world long dominated by the Portuguese and Spanish, were fully supported by his Queen. Barely a decade later, in 1581, Drake received his knighthood in acknowledgement of his success in advancing English interests on the high seas, that is to say, well before his role in helping to thwart the Spanish Armada in 1588. But the mission recounted in Boazio's map was little short of piracy: Drake and his band operated as 'crown-sanctioned mercenaries' as Kris Lane puts it (2015, 5). The seafaring prowess and commercial success that led to Drake's knighthood were enabled by the basest forms of violence, aggression and greed, violence with which the English Crown colluded.

[12] See Brycchan Carey's 'Slavery Timeline', which marks Drake's subsequent raids on St. Domingo and Cartagena as significant events, following the introduction of enslavement by Hawkins in 1562: 'John Hawkins of Plymouth becomes the first English sailor that we know about to have obtained African slaves – approximately 300 of them in Sierra Leone – for sale in the West Indies' (1996-on going).

[13] The island shared by present-day Haiti and the Dominican Republic. For an account of Hawkins' exploits, see Sauer 1971, 235. Ruth Worthy Miles estimates the number of captives as 'more than 300' (1946, 187).

Drake thus ranks as one of the early English slave traders, along with Hawkins, whose methods depended on plunder, in the manner of the early Portuguese traders. The Portuguese had been actively capturing and enslaving Africans since the mid-fifteenth century, under Prince Henry the Navigator, whose personal interest in the slave trade points to the chilling connection between navigation and enslavement in early modernity, all of it legitimated as advancing the interests of Christendom.[14] In 1444 the Lagos Company held the first slave market in Europe, dividing into five lots the 235 captives that had been captured in the Bight of Arguin (a bay along the coast of modern day Mauritania). When these captives were brought to the first 'African' market in the southern Portuguese port city of Lagos, Prince Henry himself showed up to witness it, 'mounted upon a powerful horse and accompanied by his retinue, distributing his favours like a man who sought only to gain a small profit from his share', as his chronicler Gomes Eanes de Zurara put it (in Newitt 2010, 151).[15] In describing the scene of this market, Zurara's generally hagiographic account of the Prince and his dealings famously gives way to a moment of moral anxiety, as he recognises the agonies and the undeniable 'humanity' of the captives, which 'makes me to weep in pity for their sufferings' (149). Zurara's moral wrestling in relation to the 'brute animals' (*ibid.*) is shot through with the discourse of supposed African 'beastliness'[16] though it leaves him all the more burdened to act with humanity, from his position of supposed elevation: addressing his divine creator he asks, 'if the brute animals, with their bestial feelings, understand the sufferings of their own kind through natural instinct, what wouldst Thou have my human nature to do when I see before my eyes that miserable company and remember that they too are of the generation of the sons of Adam?' (149-150). However, Zurara then finds reason to imagine the captives' 'consolation' in the opportunity to 'turn Christian' and his master's 'great pleasure at the salvation of those souls that otherwise would have been lost' (150-151), rehearsing a line of argument that would be used to give a semblance of mitigating the violence of slavery for centuries.

The Catholic Church provided the legitimising rationale for any violence involved in the conquest and transport of African captives, explicitly: 'When the first captives arrived in Portugal, the pope, who had been informed of the good news, gave the Portuguese Order of Christ the right to make war against these Moors and other enemies of the faith' (Da Costa 1985, 45). But in 1448, a few short years later, Henry forbad the violent 'raiding approach to capturing slaves' in favour of an approach based on the identification of mutual interest and ideas of diplomacy, in which African leaders were to be treated as sovereigns and trading partners, and violent battles were to be avoided (French 2021, 72). This shift in strategy did not lead to the slowing down of the trade in enslaved people for the Portuguese, as the statistics attest;[17] rather, it depended upon more subtle methods and the manipulation of discourses of so-called civility in which enslaved Africans became subject to racist and classist discourses that distinguished between categories of persons.

[14] See Beazley for an account of the entanglement between the Portuguese commercial interests along the coast of Africa and the task of containing the spread of Islam: Portuguese supremacy along the coast of Africa was thought of as a 'victory for Christendom' (1910, 13 and 15-16).

[15] Despite Zurara's account of Henry's apparent disinterest and largesse, for historian Peter Russell the spectacle of Henry's presence was a deliberate exercise in marketing on behalf of the slave trade itself (2000, 241).

[16] I discuss elsewhere the early modern association of Africa and Africans with the quality of beastliness (see Young 2015, 181).

[17] For a remarkably detailed set of statistics reflecting the astonishing acceleration of the slave trade (by Portugal and other nations) from the fifteenth century to its peak in the early nineteenth century, see the Trans-Atlantic Slave Trade Database, Emory University.

7. *Reading Racial Slavery Alongside Emergent National Consciousness and Xenophobia*

Any reckoning with English 'adventuring' thus needs to recognise the larger historical and discursive context within which these activities were taking place. To the extent that early English capture of enslaved people resulted from the work of plunder in private commercial ventures such as the early Hawkins and Drake expeditions, the English Crown could maintain the fiction of uninvolvement, without needing to establish an official position on the practice of enslavement. In truth, the acts of aggression and plunder against Spanish and Portuguese ships were committed by fleets that were financed in part by the Crown, during voyages that were later represented on maps commissioned by the Crown and marked by Elizabeth's insignia.[18] Elizabeth issued 'letters of reprisal' to English seamen who had suffered losses in skirmishes with Spanish vessels, sanctioning acts of retaliation, but in practice there was not much to distinguish these acts of retaliation from the basest form of piracy (Meyer 2017, 3). The entanglement of private and public actions had ramifications for the English body politic, at a time of emerging 'national' consciousness and growing conflict with Spain, in the years leading up to the Spanish Armada. This state-sanctioned conflict between ostensibly private vessels was a form of unofficial warfare, as Kenneth Andrews has argued (1975, 206; Meyer 2017, 3). More significant for the purposes of this essay is the impact of these skirmishes on incipient English enslavement practices: the arrival of the first enslaved Africans for sale in Virginia in 1619 was the result of precisely this kind of privateering, sanctioned by a letter of reprisal.[19] In bolstering English seafaring and commercial successes in the Atlantic, these conflicts strengthened the English economy and steered the English into the slave trade, albeit unofficially: the seizing of Spanish goods included human beings, thought of as cargo, gotten from the long-established relations between the Europeans and African traders along the west coast of Africa. The successful capture of slaves was a key aspect of the recognition Hawkins received: the coat of arms he was granted in 1565 prominently features a bound African slave, placed at the top and centre. As Urvashi Chakravarty insists, 'this "badge of slavery", far from condemning these connections, instead secured Hawkins' entry to an upper echelon of English aristocratic status by celebrating them, once again signalling the foundations of racialized slavery … [and] situating slavery at the heart of "Englishness" ' (2022, 67).

So, although the English trade in enslaved peoples was not yet fully established in the latter half of the sixteenth century, it was already part of public culture at the time and of an imagined future economy. There had been several other attempts by English 'adventurers' to initiate a trade in African captives: Brycchan Carey reports that in July 1555 'a small group of Africans from Shama (modern Ghana) described as slaves [were] brought to London by John Lok, a London merchant hoping to break into the African trade' (1996-on going). But this was not yet established practice, and the English could maintain the fiction that there was no English slave trade: as Imtiaz Habib has shown, English court rulings of 1569 and 1587

[18] Drake's West Indian voyage, under focus in this essay, was a case in point: the voyage itself was jointly 'sponsored by the Queen, members of her court, and London merchants' and the 'Queen's patronage is indicated on the [Boazio] map by her coat-of-arms in the compass rose' (Nebenzahl 1990, 140).

[19] This early history of enslavement in what became the United States of America has recently been recounted and analysed in 'The 1619 Project', which proposes 1619, the date of the arrival of the *White Lion* and its human cargo, as the 'true birth date' of the United States, 'the moment that its defining contradictions first came into the world'. As envisioned by Nikole Hannah-Jones, then a staff writer at *The New York Times* and recipient of a 2017 MacArthur Award, now a professor at Howard University, 'The 1619 Project' is a work of public historiography that seeks to 'place the consequences of slavery and the contributions of black Americans at the very center of the story we tell ourselves about who we are as a country'. See the inaugural issue in *The New York Times Magazine* (2019, 4 and 5).

disavowed slavery entirely. Even as late as 1616, a few short years before the arrival of enslaved people in Virginia in 1619, Sir Thomas Roe was able to claim that 'in England we had no slaues' and again, in 1617, 'I could not buy men as Slaues, as others did, and so had profit for their money', when turning down an offer (as cited in Habib 2016, 4). And yet, as Habib's scrupulous research has shown, there were already significant numbers of African people living and working in London in this period, though they did not constitute a category that could be tallied in official records 'since a reformist English Protestantism disavows slavery publicly even as it advocates its expedient usage' (Habib 2016, 5). Within a few short decades all this had changed, as Howard French reports: 'by 1660 England emerged as the largest shipper of slaves across the Atlantic, and by 1700 would by itself account for nearly half of the entire Atlantic traffic slaves' (2021, 149).

English ambivalence about their reliance on African labour creates a strange invisibility, as Habib has argued: Black Londoners did not constitute an acknowledged demographic that could 'appear in contemporary accounts of the land and its peoples as a distinct, considerable population', that is to say, as citizens. It was a question of 'exclusion from civic sight' (Habib 2016, 5 and 7). It is precisely this exclusion of African people from the European body politic that Olivette Otele addresses when insisting on what she calls the 'provocation' of the term 'African Europeans' in her study of African life in Europe (2021, 8): in her scholarship she seeks to move 'beyond a mapping of black *presence* in Europe' in order to recognise Africans as political *subjects* of Europe (*ibid.*, my emphasis). It is thus not a contradiction for Habib to argue that, even as Black Londoners were ignored as subjects, they were made *hypervisible* at a time of increased English awareness of the complicating presence of those who were considered to be foreigners: Sukhdev Sandhu argues that by 'the 1570s black people were being brought to England fairly regularly', largely for the purposes of domestic work, and that their 'visibility far exceeded their numerical presence' (2004, xiv), so much so that Elizabeth is said to have declared 'the great annoyance' of her people at the 'great numbers' of 'Blackamoores' within 'this realm' in her notorious proclamations of 1596 and 1601 (as quoted in Sandhu 2004, xv).[20] The 1596 document (an 'open warrant' to the Lord Mayor of London) aims to encourage the voluntary relinquishing of 'Blackamoor' servants, who should be sent to Spain or Portugal without compensation given to Masters: the document intimates that English masters, who as 'Christians' would prefer 'to be served by their owne contrymen then with those kynde of people', will therefore 'yilde those in their possession to him'.[21] The language betrays two glaring assumptions. First, it is assumed that the distinction between 'Christians' and 'those kynde of people' would be self-evident to employers because their alterity is clearly legible and, second, the document recognises that it would require an act of *manumission* on the part of the employers, even although there is no reference to enslavement in the document: to bring an end to this form of servitude employers will need to '*yilde* those in their *possession*' (my emphasis). A few years later in her proclamation of 1601, the Queen casts xenophobic aspersions on the

[20] The proclamations were made in Queen Elizabeth's name but were issued by her Privy Council and it 'is unclear whether Queen Elizabeth ever authorized the 1601 draft', as historian Miranda Kaufmann has cautioned (2008, 369). See also Emily Weissbourd (2015) for a carefully argued explanation about the provenance of what Weissbourd calls Queen Elizabeth's 'Edicts of Expulsion'. For an explanation about the workings of the Privy Council in the sixteenth century and its relationship to the monarchy and its system of governance, see Crankshaw 2009.

[21] These documents are archived as manuscripts: the 'open warrant' of 1596 is preserved in the scribal record of the Privy Council and the 'proclamation' of 1601 is in the British Library's manuscript archive. The 1596 'open warrant' is included in volume 26 of the *Acts of the Privy Council* (Dasent 1902, 16-17. *British History Online*, <http://www.british-history.ac.uk/acts-privy-council/vol26/pp1-25> accessed 1 February 2023).

'infidels' who 'are crept into this realm since the troubles between Her Highness and the King of Spain', with no acknowledgement of the nature of these 'troubles' or how they resulted in an influx of North African workers into England in this period (*ibid.*). There is a link to be drawn between English seafaring incursions (including Drake's aggressions against Spanish and Portuguese vessels in the Atlantic and his raids on Spanish and Portuguese settlements in the West Indies and along the North African coast) and the seemingly unsettling presence of Africans in England at this time.

8. *Reading Through the Lens of Cosmography: Imaginative Tools for Projecting Mastery*

The maps which legitimised the seafaring 'adventures' of figures such as Hawkins and Drake participated in the early modern construction of the earth and its people as conquerable, if only for those who were able to identify with the vantage point of detachment and mastery. Maps were tasked with cosmographical import: they helped to establish a new conception of the world, as a singular entity that was available to be known and traversed with the help of the new 'artes' that gave representational shape to the world, imagined as a whole and as eminently knowable and navigable. To that extent, early modern cartography was an *imaginative* exercise, carried out on behalf of expansionist European nations. As a work of cosmography, it had disastrous implications for the southern parts of the world, which were racialised and positioned outside of modernity, as I have argued at length elsewhere (Young 2015). The knowledge practices and representational systems used to map the world in the age of European expansionism created a racial hierarchy on a global scale, where geographical terms were invoked to establish the supposed superiority of the 'northern peoples', in what Mary Floyd-Wilson terms the 'geohumoralism' of the period (2003, 2).[22] Supported by cartography's unchanging coordinates, early modern epistemologies had devastating implications for the global south which seemed to almost 'invite' exploitation under the guise of commercial and epistemological progress.

A crucial component of this strategy of dominance emerges from the vantage point set up in cosmographical texts: the ability imaginatively to grasp the whole world as a single, integrated entity through the visual effects of the globe, as represented on the page, helped to establish an orientation of mastery, through the imagined 'bird's eye' view of the Creator.[23] What Denis Cosgrove calls the 'Apollonian eye, the viewpoint above the earth' provided the model for the imagined view aboard ship, at least as reproduced in the charts that attested after the fact to the navigational feats on which European expansionism relied (2001, x). Boazio's map, with its oversized images of Drake's fleet, sailing forth and returning across the Atlantic, and its regularized short strokes of the pen as if in the form of a log, place the ships themselves in an elevated position, projecting mastery over the unpredictable surges of the ocean itself. For the reader of the map the vantage point is at an even greater remove. The ability to view the earth in its entirety was to adopt the eyes of the Creator, and with it an unimpeachable authority

[22] For example, the seventeenth-century English cartographer Richard Blome sets up a distinction between the 'Southern Nations' of the world and the 'Northern People' in 'The Preface to the Reader' for his 1682 edition of Bernhardus Varenius' *Geographia*, titled *Cosmography and Geography*. Blome invokes the familiar conviction that body and mind are shaped by climate in terms that establish a geographical divide to affirm the unquestionable superiority of the 'Northern People' of the globe: 'The *Septentrional* or *Northern People* being remote from the *Sun*, and by consequence inhabiting in cold Countries; are *Sanguine, Robust*, full of *Valour* and *Animosity*; hence they have alwaies been Victorious and predominant over the *Meridional* or *Southern* Nations' (1682, a2r).

[23] I have developed this argument more fully in Young 2019.

and imagined omniscience. However, the detachment wrought by these scopic technologies proved invidious because it engendered the fiction of uninhabited lands that were available to be claimed, and extended the proprietorial relationship to the earth, as set up in the Genesis myth.[24]

The new methodologies for describing and measuring the earth in the period went some way towards producing a world that could be seen in one glance, as it were, and grasped as a totality. But early modern maps were not uniform or fixed; to the extent that they were imagined as reflecting the navigational accomplishments of European nations in real time, they reflect a world that was undergoing profound conceptual and political change in the face of accelerating national rivalries and adventurism. The maps themselves provided a site for the development of the tools needed to navigate these shifts cognitively. They reflect a shift in orientation towards a cosmographical practice that was demonstrably grounded in experience rather than ideas about the world that were inherited from the ancients. However, as a result, the outline of shorelines they sketch, replete with identifiable ports and illustrations that signal the presence of European ships as well as named coastal regions, disclose something of the violent encounters that are scripted into the maps' reproduction of cartographic knowledge. Furthermore, they establish for English public culture an orientation of mastery in which the earth itself, its moving oceans and rugged shorelines, might be traversed and conquered, along with its more vulnerable inhabitants who disappear from view, at least as embodied human subjects, in the detachment of the bird's eye view. Early modern knowledge production, with its assured lexicon, bold representational truth claims, and (partisan) archival impulses, is implicated in habits of thought that made it possible to conceive of subjugation as prowess.

The moral scruples that break through the smooth surface of Zurara's narrative when he describes witnessing the captives' unutterable misery at being treated like chattels and denied human connection, as I discussed above, point to the difficulty associated with a narrated encounter, a difficulty that the detachment of the map's vantage-point manages to avoid. A representational form that privileges the totalising view from above is able to envision lands hitherto unknown to Europeans as uninhabited, and it offers the European adventurer, as well as a wider public of readers, a position of mastery with which to view the world. The vantage point established in the form itself makes it difficult for readers to recognise the humanity of the targets of racial violence in early modernity.

9. *In Conclusion: Excavating the Effects of Early Modern Worldmaking*

The maps that chart early modern expansionism constitute an ambivalent archive. As works of cosmographical import, they helped to facilitate the re-imagining of planetary habitation by establishing an elevated position where the would-be colonialists (and those who identified with them) might imagine traversing oceans to subjugate far-flung lands and their peoples. Boazio's map trades in the period's reassuringly settled cartographic language, with its clear axes demarcating north and south, east and west, and the carefully traced outlines of continents already familiar to his readership.

The visual lexicon that celebrated seafaring adventurousness was evolving in the period, spurred on by the race to colonise the southern parts of the world. While the disciplinary practices of an emergent geography seemed to settle the period's contestations into something that could

[24] See, for example, Gen. 2:15, in which God confers the land to the man's keeping, and Gen. 2:19, in which God brings the creatures to the man and invites him to name them as he sees fit, authorising a relationship of dominance over the earth and its living creatures.

be received as 'knowledge', traces of the murderous aggression of the commercial and political agents advancing partisan causes, and of the associated anxieties, are legible in the maps tasked with charting this dominance. But these traces are only barely discernible, and only when viewed askance. As archives of a shameful history these works are evasive, misleading and incomplete. And yet they offer an opportunity, however obliquely, to confront the history of English involvement in the slave trade. While there can be no chance to 'exhume the lives' of those lost in its wake, as Hartman has lamented (2008, 6), the interrelated texts that chart the emergence of English aggression on the high seas allow the critical reader to recognise some of the ways that early modern knowledge practices are implicated in this history and in the shaping of the record.

At a time when social justice movements demand a more thorough reckoning with histories of racial violence, it has become more possible, and necessary, to attend to the violent effects of a cosmography that bestowed the sense of mastery that undergirded European expansionism. The world-making accomplished in the maps charting early modern seafaring prowess has had a persistent and disturbing afterlife. It requires a range of interpretative tools to uncover the history of racial violence and to expose the fallacies and discursive strategies that enabled its perpetuation.

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spirits, to benefit their Countrie, and eternize their names by like noble attempts. Whereunto is added the third voyage made by Sr. Francis Drake to the West Indies, in which he tooke Nombre de Dios, with 52 others in his company, London, Nicholas Bourne.

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Double Dutch
The Boate Brothers and Colonial Cosmography

Willy Maley
University of Glasgow (<willy.maley@glasgow.ac.uk>)

Abstract

The article focuses on two Dutch doctors – the Boate brothers, Arnold (1606-1653) and Gerard (1604-1650) – medical graduates of Leiden University who moved to London in 1630 to work as practising physicians. The brothers contributed to diverse forms of knowledge as part of the new science, including agriculture, anatomy, entomology, geography, industrial history, medicine, metallurgy, mineralogy and theology, but are known primarily for Gerard's posthumously published ground-breaking book, *Irelands Naturall History* (1652) for which Arnold did the spadework. The Boates collaborated on some of the most important intellectual enterprises of the seventeenth century, and worked alongside the leading intellectuals of the period, including innovative Irish thinkers James Ussher and Robert Boyle, and Samuel Hartlib, mainspring of a major knowledge network. The Boates' activities in Leiden, London, Dublin and Paris furnish a prototype for interdisciplinary engagement. The brothers were key members of multiple interlocking extra-institutional groupings. Active as part of a Baconian Office of Address and engaged both in the Hartlib Circle and the more shadowy Invisible College, they laboured in the seedbed of what would later become the Royal Society and the Dublin Philosophical Society. *Irelands Naturall History* is a model of the regional history that Francis Bacon saw as a vital branch of cosmography.

Keywords: *Arnold and Gerard Boate, Colonialism, Ireland's Naturall History, New Science, Research Networks*

1. *Introduction: The Small World of the Boate Brothers*

My title suggests a difficulty, one rooted in language and culture. The OED dates the phrase 'double Dutch' to C.H. Wall's 1876 translation of Molière's *Lovers' Quarrels* (1656):

> My father was a very clear-headed man, but he never taught me anything but my prayers, and though I have said them daily now these fifty years, they are still double Dutch to me. (I, 116)

The phrase plays on an established view, evidenced in the Earl of Dorset's epistle to Edward Howard: 'thy Plays are such, I'd swear they were Translated out of Dutch' (Dryden 1727, 69).

The Dutch duo who are the subject of this essay present all kinds of difficulty. We know so little about the Boate brothers, Arnold and Gerard, because there is so much to know, and that comes down to the sheer range of their interests and activities. Discussing the versatility of a 'generall Artist', Thomas Fuller states: 'He is also acquainted with Cosmography, treating of the world in whole joynts; with Chorography, shredding it into countries; and with Topography, mincing it into particular places' (1642, 74-75). The Boates, as adept in dealing with whole joints as they were in shredding and mincing, were embedded in continental and archipelagic research networks during a period of cultural and political transformation, when inward examination, outward discovery and historical recovery mapped onto one another.

The obscurity of the Boates is bound up with language, publishing history, interdisciplinarity and collaborative research. 'Boot' is pronounced 'Boate' in Dutch and the brothers adopted the English spelling of the Dutch pronunciation upon arrival in London, but their surname is variously rendered Boodt, Boot, Boote, Boet, Boetius, Botius, de Boot and so on, making it difficult to keep track of their work. The Boates wrote and published in Dutch, English and Latin. Much of their work remains untranslated, and the nature of these texts – medical, philosophical and theological – means that their critical reception has taken different paths. The key text in English, and the chief subject of this essay, is *Irelands Naturall History*, posthumously credited to Gerard but clearly a collaborative effort. Single authorship remains the default understanding of a period marked by co-authorship and composite texts, making this Dutch double act appear more eccentric than they are. The Boates' work reveals the extent of Dutch and more broadly European input into ostensibly 'English' intellectual networks, which, considering the nationalities of their key collaborators – James Ussher (Irish), Robert Boyle (Anglo-Irish) and Samuel Hartlib (Anglo-Prussian/Polish), look increasingly archipelagic and continental.

My subtitle – 'Colonial Cosmography' – is a reminder that cosmography emerged as a way of describing empire and claiming territory. Mapping the cosmos and mapping colonies were related projects. Far from revealing the harmony of the universe, cosmography was the cue for the most brutal colonial activities. Humanists and new scientists – often the same people – led the line in the pursuit of conquest. This was early modern globalisation. Colonisation offered earning and learning opportunities for intellectuals and professionals at every level. Biblical and classical sources were plundered for precedents. What does it mean to speak of the world 'as a whole' in the early modern period? How did emerging colonial powers view non-European peoples and those who inhabited the borders or supposed backwoods of their own countries? The translation of Ptolemy's *Geographia* as *Cosmographia* coincided with a revival of interest in Empire. The reconstitution of knowledge across Europe triggered overseas expansion. Nationally orientated cosmographies were geared towards exploration and exploitation of the so-called 'New World', which, like the 'known world' is a colonial concept. Its inhabitants were to be exploited alongside those parts of the 'Old World' deemed barbarous. A preoccupation with the so-called 'New World' overlooks the fact that new knowledge networks were also engrossed with the 'Old World': 'Why did England, on the verge of an Atlantic empire … turn so resolutely toward both the East and the past during these early modern centuries?' (Archer 2001, 3). There is a reason why Sebastian Münster's 1540 edition of Ptolemy's *Geographia* bears the title *Geographia universalis, vetus et nova* (Universal Geography, Old and New). As well as foreign enterprises, the accumulation of knowledge focused renewed attention on familiar territories, including allegedly uncivilised 'interiors' like the Marches of Wales; the Scottish Borders, Highlands and Islands; and the English Pale in Ireland. Ulster, long a target of English expansion, was settled under a joint Anglo-Scottish enterprise in 1609.

While its origins lie in geography – human, political and earth science – and in the dialectic of global and local knowledge, the colonialism of cosmography has not been sufficiently examined. The age of 'discovery' was an age of invasion and occupation, but also resource extraction. Together with this fascination with the old went a focus on the world within, the world of mind and body. Thomas Browne speaks of 'the Cosmography of my selfe' because 'wee carry with us the wonders we seeke without us' (1643, 31-32). This sense of cosmography as bound up with everything under the heavens is not a diffusion; it is precisely what gave rise to its prominence in a period when global knowledge on a macro and micro level was being sought. Cosmography thus operated at the intersection of cartography and anatomy, geography and medicine, astronomy and mineralogy, chorography and philosophy. It explored the ground beneath as well as the sky above, mapped the mind as well as the land. It could be deployed as a way of understanding migration and the spread of Christianity, hence Noah's 'purpose to shew unto his children the devision of the world, and Cosmographically to instruct them in the situation of each severall countrey, as they stood and were inhabited before the floud' was the prelude to parcelling out land and was bound up with debates around titles and entitlement in early modern colonial enterprises (Nanni 1601, F4r). The earliest gloss on cosmography given by Thomas Elyot in 1538 is 'the descriptiõ of the world', and a cosmographer is 'he that discribith the world' (26v). The Boate brothers were world-describers to their boots, and they covered a lot of ground.

If for the Boates the inner and outer worlds were thoroughly enmeshed then they owed a debt to their alma mater, Leiden University, which was from its inception geared towards exactly such innovative and interdisciplinary research, making it an attractive proposition for international students as well as a fruitful producer of cross-disciplinary scholars (Prögler 2016). Some of the best minds of the Boates' generation studied at Leiden, and more importantly networked there, including Thomas Browne and William Petty (McCormick 2006, 299-300; Barbour 2008; Beukers 2008). Universities were not uniform across Europe in their response to the new knowledge. Leiden, founded in 1575 in the wake of the lifting of the Spanish siege on that town, was a notable exception to broader institutional conservatism, an early nucleus for oriental studies and global colonial projects (Storms 2018). Dutch physician Willem Piso and German naturalist Georg Marcgraf, co-authors of *Historia naturalis* (1648), were Leiden alumni, and their fieldwork in Brazil in the 1640s foreshadows that of Arnold Boate in Ireland (Mendyk 1985, 5). The pattern established in Dutch Brazil of bringing in a team of interdisciplinary researchers provided the template for later English efforts in Ireland:

> Dutch Brazil was governed from 1637 to 1644 by Count Johan Maurits of Nassau-Siegen, who assembled a group of scholars and painters to depict the local geography, biodiversity, indigenous population, tropical diseases, and traditional medicine. (Alcantara-Rodriguez, Françozo and van Andel 2019, 391)

Like the Boates, Piso and Marcgraf covered a series of disciplinary fields themselves, including astronomy, botany, cartography, medicine, ornithology and zoology. These Leiden graduates blazed a trail in establishing a colonial knowledge economy along the lines envisaged by Francis Bacon (Brienen 2001). Leiden emerged early on as a hub for Bacon studies, so much so that Bacon's works 'had more editions in the Netherlands than in England' (Strazzoni 2012, 251). Leiden's reputation as a crucible of the new science placed it in the frontline of European institutions engaged in internationalization (de Clercq 1997; Wiesenfeldt 2008). It also laid it open to satire. Dolores Palomo suggests that Swift's model for the Academy of Lagado in Book III of *Gullivers Travels* was based on the Dutch institution (1977, 27).

Brazil was the blueprint, Leiden the locus of learning, natural history the nexus of knowledge, but in order to understand how cosmography, guided by colonialism and commerce, actually operated 'on the ground' in the period, we need to look to Ireland, where Ussher, in one of his earliest contributions to learning, *A Discourse of the Religion Anciently Professed by the Irish and Brittish* (1631), draws on Book 2 of Sebastian Münster's *Cosmographia* (1544) in order to challenge Roman and papal claims to Ireland and assert English sovereignty (Ussher 1631, 122). Münster treats Ireland in a familiar fashion: good climate, pity about the people (McLean 2007, 219 and 260). In *The Advancement of Learning* (1605) Bacon declared the Book of Job to be 'pregnant, and swelling with … Cosmographie, and the roundnesse of the world', and he linked 'the history of cosmography' (I, H2v) to 'Naturall History in respect of the Regions themselues' (II, Dd3r). A year later, in his essay on Irish colonisation on the eve of the Ulster Plantation, Bacon spoke of the 'Confluence of Commodities' such settlement afforded, which relied on 'the Information of Persons expert, and industrious [who] know the *Region*' (1657, 258).

The links between geography, cosmography and regional history have been obscured, but for historical geographer Frank Emery, Boate brought 'the classical viewpoint of natural history – personified by Pliny – to bear upon regional description' (1958, 265). Bacon's own writings on empire, plantation and Ireland opened the door to a way of thinking about settlement as not merely a displacement of social tensions or a means of accommodating the landless younger sons of the lesser gentry but as a laboratory of learning. Regional history, informed by fieldwork, was the kind of engaged enquiry those 'shvt up in the Cells of Monasteries and Colledges' spinning 'Copwebs of learning' could never achieve (Bacon 1605, I, E4v and F1r). Bacon's allusion to Job reminds us that divinity was at the heart of reflections on the nature of the world. In the first such use of the word 'global', speaking of 'the comminge of the sonne of man … out of the East in respect of *England*', William Prynne refers to 'the worlde beinge plainely *Circular*, & *globall*, havinge no angles nor squares, & so no East, West, North, or South if simplie considered in it selfe' (1637, 36-37). What does it matter which way you face in a global world?

As a measure of the disorientation that accompanied discovery, witness the fourteenth-century cartographic error that led to the mapping of a mythical island called Brasil 'upon the Coast of *Ulster*', giving rise to colonial fantasies throughout the period which came to a head in the seventeenth century when Dutch activities in Brazil conjured up a whole world of commercial possibilities that English writers looked upon with envy (Head 1675, 4; Freitag 2015). The short-lived experiment of the Dutch West India Company took on a mythical aspect of its own, leaving 'a legacy of financial failure and a nostalgia for … missed opportunities' (Pijning 2002, 120). The English experiment in Ireland was to prove more sustainable, if no less problematic.

2. *The Boates as Knowledge Networkers*

Charles Webster calls the Boates 'obvious candidates for the Invisible College' (1974, 31). In London, Gerard served as physician to the Boyles, a prominent planter family, whose leading lights included Robert Boyle, who became a hugely influential figure in science. The 'Invisible College' was first mentioned by 19-year-old Robert Boyle in a letter from London dated 22 October 1646 (Birch 1744, 66). Less noted is the fact that this letter is largely about Irish affairs – in the context of the civil wars – and that Boyle mentions James Ussher, likening him to Augustine of Canterbury: 'I was yesterday in company with our Irish St. *Austin*, the archbishop of Armagh' (64). This contradicts claims that 'Boyle's commentaries provide no

evidence as to membership' (Kassell 2010). Boyle later distinguished between cosmography as an overarching universal scheme and more manageable and practical knowledge of the kind that preoccupied the Boates:

> To discern particular Truths is one thing, and to be able to discover the Intercourse and Harmony between all Truths, is … a far more difficult one; as a Traveller may upon the English Shoar know that he sees the Ocean, and upon the Coast of *Affrick* be made to do the like, and at the *East Indies* also he may know that he sees the Ocean; and yet not know how those so distant Seas communicate with each other, tho that may be manifest enough to a Cosmographer. (1681, 89)

Boyle goes on to imply that God is the one true cosmographer.

Dissenting groups who functioned outside of official institutions were at the heart of the new all-encompassing cosmography. Discussing the 'Office of Address' in 1647, Hartlib envisages 'a Certaine Place … whereunto all Men might freely come to give Information of the Commodities which they have to be imparted unto others', commodities here being all kinds of useful knowledge (1647, 37). The Boates were hard-wired into exactly such knowledge exchange, and they remind us that early modern culture was marked by groupwork, something the ODNB is recognizing with new entries on the Invisible College and the Royal Society (Hunter 2006; Kassell 2010). Anglocentric frameworks are being extended through a growing realization that 'English' thinkers moved in Archipelagic, Atlantic, European and international milieux, while disciplinary boundaries are being called into question by an increasing acceptance that early modern knowledge exchange cuts across modern institutional borders.

Evan Bourke locates and dates the Hartlib circle to London in 1641, but its origins can be traced back to the correspondence between Arnold Boate and James Ussher established in the 1630s and overseen by Samuel Hartlib (2017, 1). Using network analysis on the Hartlib papers, Bourke affirms the peripheral status of Arnold and Ussher (11-12). Yet as Bourke notes, 'the vast majority of the network was on the periphery' (12). The Boates may be outliers according to Bourke's analysis of its 766 members but quality counts and in the nexus of knowledge and know-how they proved integral to this versatile transnational epistolary coterie. Innovative, collaborative and interdisciplinary, they turned their hands to a panoply of challenges, from the global trade in precious stones to the mapping of coastlines, drainage of bogs and economic analysis of ironworks and timber mills in Ireland. Arnold's advice on beekeeping recorded by Hartlib (1655b, 3) and Gerard's treatment of kidney stones noted by Boyle (1663, II, 78-79) are not sidelines – they are the very stuff of cosmography, which entailed knowledge of everything under the sun, of a verifiable sort, fully informed and evidenced.

The Hartlib hivemind never stopped pollinating. Pathways to impact embraced engagement, examination, experiment and exploration, leading to what Comenius called 'pansophy', the cosmography of knowledge, a word that, like cosmography, had a short lifespan. Comenius piloted the term in *Pansophiæ prodromu*s (1639), prefaced by Hartlib. It resurfaced in English three years later in a work published by Hartlib, where Comenius declared it to be 'nothing but the glasse or mirrour of the Universe' (1642, 18). Pansophy, as Comenius conceives it, 'takes all things in generall into its consideration' (1651, 16). This philosophy of everything called for collaborative networks of diverse talents, and as Mark Greengrass observes: 'This vision of a "Universal Learned Corresponding Intelligency" preoccupied Hartlib and his circle of associates until the end of his life' (1993, 47). The Boates' contribution to cosmography was part of 'pansophy', and in this respect, their myriad interests cohered into a single aim: the advancement of knowledge on all fronts. Their diverse works and multiplicity of interests offer exemplary instances of the circulation of knowledge.

3. *Forms of Knowledge and Knowledge of Forms*

The Boates were as curious about forms of knowledge as they were about knowledge of forms. *Philosophia naturalis reformata*, their co-authored critique of Aristotelian philosophy dedicated to Robert Sidney and James Ussher appeared in Dublin in July 1641. Written in Latin, it remains untranslated. Ian Campbell calls it 'surely the strangest book ever dedicated to James Ussher', proposing 'a complete refutation of Aristotelian philosophy' (2013, 166). Roger Ariew places the Boates among those 'writers who helped to shatter the traditional reliance on form as an explanatory concept' (2011, 141). The brothers' joint study of Aristotle is 'the one book to champion the new learning published in Dublin before the civil war' (Barnard 1972, 133). Clearly impactful, it has been overlooked, perhaps because a Latin work by Dutch siblings published in Ireland proved too much for parochial sensibilities. So-called 'regional publication' challenged a London monopoly. That the Boates published in Leiden, Dublin and Paris as well as London indicates their determination to reach different audiences and constituencies.

It is easy to see why scholars get lost in a warren of works and fail to make connections. Medical historians refer to Arnold's pioneering observations on rickets in his Latin text of 1649 but overlook the section on that subject in *Irelands Naturall History*. Irish historians discuss the treatment of Charles Coote's industrial entrepreneurship in *Irelands Naturall History* without mentioning Arnold's earlier letter from Dublin to his brother detailing the death of Coote, whom he accompanied on his Irish expeditions (Boate 1642, A4v; Barnard 1994, 283). Michael Hunter upbraids Charles Webster for treating Arnold 'as if his interests were exclusively medical and technological, whereas in fact his priorities seem to have been primarily concerned with scriptural learning' (1995, 101 n. 137). In the same vein, E.C. Van Leersum sees Arnold caught between specialisms: 'Though by profession he was a physician and an excellent one too, his heart inclined to the classical and oriental languages of which he is said to have known Hebrew, Chaldee and Syrian to perfection' (1927, 483). This is what happens to interdisciplinary scholars – they get claimed by competing disciplines even as they huddle under a multidisciplinary umbrella.

4. *Arnold Boate's Correspondence with James Ussher*

Arnold was the smarter younger brother. A prolific polymath, his pattern of publications, including those co-authored with Gerard, testifies to his wide-ranging interests and expertise, and to 'the vital role that he played in the consolidation of an Irish wing of the Hartlib circle' (Boran 2004). From the mid-1630s Arnold began a long correspondence with James Ussher, providing texts and translations for the latter's major publishing projects around biblical and church history, and procuring, lending, translating and gifting books and manuscripts. The background to this was Ussher's appeal for assistance in the major work of theology he had in hand. According to Stephen Clucas:

> As early as 1634 Hartlib notes "An Invitation or tendry for the perfecting of the Worke of Protestant Divinity by Usher" … Usher is noted as a source of manuscripts, but also as a target. (Clucas 1991, 39, citing Samuel Hartlib, *Ephemerides* 1635. The Hartlib Papers, Sheffield University Library, 50H. 29/3/11B, 1634, 29/2/198)

Ussher was not only an author but an enabler of others' work, since he 'provided the financial aid to enable Hartlib to publish' the Boates, among others (Clarke 1973, 289). Ussher left Ireland for good in 1640 and was resident thereafter in London. Arnold was briefly back in

England in 1644 before moving to France, so his letters to Ussher are dated variously from Dublin and later Paris.

Anthony Turner, discussing Hartlib's interest in Théophraste Renaudot's *Bureau d'adresse* states that 'efforts to get more information were successful in 1647 or 1648 when Gerard Boate supplied copies of some of Renaudot's printed pamphlets about the Bureau' (2017, 140). We know from a letter of Arnold's to Ussher from Paris in April 1648 that Gerard acted as a pick-up point for their post, so both brothers were involved in this cross-channel traffic in texts (Parr 1686, 533). The Arnold-Ussher correspondence is a model of collaborative research, networking and knowledge exchange. Arnold was part of a European research network processing bibliographical queries and translation requests. He read Greek and Hebrew, and where he lacked a language he outsourced or subcontracted Ussher's requests to another contact. This was not a book trade, a book borrowing and consulting industry, or a scholarly lending library. It was rather an extensive informal research institute. William O'Sullivan calls Arnold 'Ussher's Paris agent' while acknowledging Arnold's own expertise as a Hebrew scholar (1956, 50). O'Sullivan demonstrates that Arnold's role as translator, retriever and interpreter of texts exceeded that of other Ussher correspondents (51-52). What has been said of Ussher's correspondence with Gaelic scholar Conall Mageoghegan applies to Arnold Boate: 'Their relationship was not a financial one but rather they were bound together by exchanges of information and manuscripts' (Cunningham and Gillespie 2004/2005, 99).

5. Irelands Naturall History: *The Jewel in the Colonial Commonwealth*

Irelands Naturall History, hatched in Ireland, written and published in London, is a product of Leiden, a nursery for natural history in the period and a magnet for mavericks (the full title captures the scope and ambition of the book).[1] It is a landmark publication, one with a complicated genealogy, having been researched by Arnold, composed during conversations between the two brothers, and published under Gerard's name after his death. Arnold supplied a preface explaining the attribution and the odd genesis of the book, based as it was on several months of conversations the two brothers conducted in London in 1644 between Arnold's return from Ireland and his departure for France. Arnold acknowledges that the scientific method may appear compromised by the fact that Gerard wrote the book before going to Ireland: '*You say you wonder, & others may justly concurre with you in that your wonderment, how a Countrie could bee so accurately described by one, who never was in it*' (Boate 1652, A6v). To add another layer of complexity to the volume's authorship, the dedication to Cromwell and Fleetwood in Hartlib's name was penned by John Durie (Fradkin 2017, 282 n. 31).

Arnold lived in a royalist household in Paris with his Irish wife Margaret Dungan, whose brother died fighting for Charles I. It was perhaps convenient that his late brother's name be attached to a text licensed by the English commonwealth. What was originally a royalist

[1] *Irelands Naturall History. Being a True and Ample Description of its Situation, Greatness, Shape, and Nature; Of its Hills, Woods, Heaths, Bogs; Of its Fruit- Full Parts and Profitable Grounds, With the Severall Ways of Manuring and Improving the Same: With its Heads or Promontories, Harbours, Roads and Bays; Of its Springs and Fountains, Brooks, Rivers, Loghs; Of its Metalls, Mineralls, Freestone, Marble, Sea-coal, Turf, and Other Things That Are Taken Out of the Ground. And Lastly, of the Nature and Temperature of its Air and Season, and What Diseases It Is Free From, or Subject Unto. Conducing to the Advancement of Navigation, Husbandry, and Other Profitable Arts and Professions. Written by Gerard Boate, Late Doctor of Physick to the State in Ireland. And Now Published By Samuell Hartlib, Esq; For the Common Good of Ireland, and More Especially, For the Benefit of the Adventurers and Planters Therein.*

enterprise had become a gift to the new republic. The dedication was a political necessity that perhaps made it awkward for Arnold to take fuller credit. At the bottom of the titlepage is the line: 'For the Common Good of Ireland, and more especially, for the benefit of the Adventurers and Planters therein' (Baigent 2004). Gerard's English widow, Katherine Menning, inherited an Irish estate in Tipperary, so the benefit was real (*ibid.*). Cromwell's name may have kept the book out of circulation after the Restoration. Reprinted twice in Dublin in 1726, shorn of its prefatory material, it re-entered Irish bibliography under a different guise, and Arnold's name slipped into oblivion (Forbes 1932, 18).

The classical view of Ireland as the edge of the known world exemplified by Strabo, Pliny and Ptolemy has been well-documented (Tierney 1976). *Irelands Naturall History* is aware of its ambiguous status as a study of the old world through exploration and explanation enabled by the new science. The aim throughout is to situate Ireland within a larger frame, so that 'it is to be reckoned among the chief Ilands of the whole World' (Boate 1652, 4); its havens 'are so many in number, and … so fair and large, that … hardly any land in the whole World may be compared with this' (10); 'The Sea which invironeth Ireland, is as free from Shelves, Sands, or Grounds, as any in all the world' (40); 'No country in the world is fuller of Brooks' (57); and it is 'among the fruitfullest countries of the world' (87).

According to Malcolm Oster, 'the regional economic survey of Ireland by Boate' encapsulates 'the broader direction of scientific research of the Invisible College' (1992, 263). Emblematic of the Boates' scientific approach is a passage on St Patrick's Purgatory, 'one of the few places in Ireland to regularly appear on medieval world maps' (Byrne 2016, 73). The cave entrance at Lough Derg is famously the only Irish landmark of note – the 'Fégefeuer' – on German cosmographer Martin Behaim's 1492 terrestrial globe or 'earthapple' (*Erdapfel*). The Boates were determined to undermine what they saw as mere superstition. Richard Boyle, earl of Cork, father of the dynasty that powered the key intellectual developments of the period, is credited with debunking the myth of what was 'nothing els but a little cell, digged or hewen out of the Rockie ground, without any windowes or holes, so as the doore beeing shut one could not see a jot within it' (Boate 1652, 74). Upon further examination, visionary experiences are attributed to sensory deprivation, exploited by 'those kind of men that knew how to abuse the blind devotion of ignorant and superstitious people to their own profit and filthy lucre' (78, pagination irregular). By contrast, the kind of excavation undertaken by Richard Boyle and his fellow industrial entrepreneurs is both scientific and profitable. Discussing Richard Boyle's investment in mining elsewhere in Ireland, Boate declares that this planter-patriarch 'hath profited above one hundred thousand pounds clear gain by his said Iron-works' (137).

J.H. Andrews noted that the records of colonial activities, though 'fragmentary … deserve attention: they reveal a thriving industry of the seventeenth and eighteenth centuries, linked by an interesting commercial relationship with its English counterpart, and controlled by location factors somewhat different from those familiar in the larger island' (1956, 139). According to Andrews: 'Most of the characteristic features of the historical geography of the Irish iron industry derive from the commercial immaturity of plantation Ireland' (*ibid.*). Ireland's status as a site of settlement and resource extraction proved key to its comparative industrial development and exploitation: 'Most symptomatic of the "colonial" character of Ireland's economy was the abundance of natural woodland and the speed with which its resources were exhausted' (*ibid.*). *Irelands Naturall History* is concerned with sustainability. In a section entitled 'Diminishing of the Woods during the last Peace', the third of a chapter headed 'Of the Woods in Ireland', Boate offers an account of deforestation for the varied purposes of security – depriving the Irish of hiding places; industry – supplying charcoal for the mines; and merchandise – 'whole

ship-loads sent into forrein countries yearly' (Boate 1652, 120-121). A little further on, in a passage alluding to Richard Boyle, Boate remarks: 'In Munster where the English, especially the Earl of Cork, have made great havock of the Woods during the last Peace, there be still sundry great Forests remaining in the Counties of Kerry, and of Tipperary; and even in the County of Cork, where the greatest destruction therof hath bin made, some great Woods are yet remaining, there being also store of scattered Woods both in that County, and all the Province over' (124). Bacon remarked on the quality of Irish wood for 'Ship Timber' in his own *Naturall historie* (1627, 164).

Attention to detail is a strength of the Boates. They excelled in topography and small-scale geography. Geologist John de Witt Hinch pondered the depth and detail of data displayed in *Irelands Naturall History*, speculating that Boate's 'knowledge of the Irish coastline was the harvest of friendly intercourse with [Dutch mariners] rather than a bookish acquaintance with charts and pilot books' (1928, 43). Hinch's surmise is borne out by several Dutch references in the text: 'On both sides of the Old-head of Kinsale, by the Dutch Mariners called Cape Velho, ships may Anchor as deep or shallow as they will' (Boate 1652, 32); 'Betwixt Wexford and Dublin there bee five Heads: That of Glascarick, which the Dutch Mariners call the Blew-point' (37); 'the point at the North-side of the Haven of Strangford, which the Dutch Mariners by a notable mistake call the point of Arglas' (38). Indeed, Boate's allusion to his countrymen's knowledge of Ireland's coasts is a reminder that they were part of the plantation process – Dutch workers are among the labour pool of Tipperary's silver and lead mines (144). For Hinch a notable feature of Boate's book was 'the very excellent English in which it is written … an English which may have been produced because the author was a foreigner, and would either avoid, or be unable to write the cumbrous, involved English so popular with many of the native writers of the period' (1928, 54). Hinch praises the book's positive attitude to the Irish language, and its 'modern and objective outlook … for we are spared both the geography of Ptolemy and the history of Egypt' (55).

Frank Emery sees *Irelands Naturall History* as a breakthrough book, 'a parting of ways not only for Irish geography but for a wider field in Britain and the rest of Europe' (1958, 264-265), and he attributes Boate's clarity and rigour to his medical training at Leyden, and to comparative work in the Dutch equatorial colonies, particularly Brazil: 'though on a smaller scale, Boate's survey of Ireland was of the same type and quality' (*ibid.*). Stan Mendyk sees Boate's book as 'amongst the first to exclude accounts of local marvels, colourful digressions, supernatural occurrences and citations from classical authors in regional study' (1985, 5). Boate's book was shorn of the adornments of his English contemporaries: 'Genealogy and heraldry had virtually no place here' (Mendyk 1985, 6). Mendyk calls Boate 'a pioneer observer of the face of the earth long before studies in earth-sculpture – or geomorphology, as the science is today known – became common in regional description' (7). What preoccupied the Boates were issues like climate and resources. According to Brant Vogel, *Irelands Naturall History* 'celebrated the elimination of bogs and reduction of rains' and was 'essentially a manual for colonial management' (2011, 127).

Irelands Naturall History has attracted a range of opinion, mostly favourable. Nicholas Canny was an early advocate of the Boates as historians recording the recent past rather than projectors promoting a future vision of plantation: '*Ireland's Natural History* … accepted by historians as the classic exposition of the new science, devoted much attention to describing the exemplary measures taken by the pre-1641 planters to exploit Ireland's natural resources' (1982, 146). According to Charles Webster:

Boate's success was due to various factors, including a Baconian orientation, acquaintance with recent Dutch descriptions of the natural history of Brazil, practical involvement in Irish resettlement, and the selection of a region small enough for comprehensive investigation. Thus he was induced to break with the miscellaneous, antiquarian and anecdotal chorographical tradition, to produce a well-ordered preliminary survey of the economic geography of Ireland. (1974, 35)

K. Theodore Hoppen considers it 'the only scientific book in the modern manner relating to Ireland, written before the restoration' (1964, 100). For Toby Barnard it is 'the first accurate and unsensational enquiry into Irish resources and potential' (1994, 282). Roy Foster acknowledges that it 'had its own proselytizing motivation – to attract settlers – but it was an exacting and distinguished intellectual achievement' (1988, 106). Patricia Coughlan, a dissenting voice, detects a familiar subtext beneath the apparent objectivity, arguing that 'the informative descriptions of physical features and material conditions are everywhere shot through with vituperative condemnations of Irish behaviour' (1994, 305).

6. *Planting the Seeds of the New Science*

Ireland doubled as a testing-ground and a fruitful source of funding for the new science. Thus *Irelands Naturall History* was both a blueprint for plantation and a scientific examination of Irish land and resources. This 'Baconian natural history of Ireland … was destined to act as a major stimulus to the Cromwellian settlement and exploitation of the country by English newcomers in the later part of the decade' (Elmer 2019, 87). The complex political history of early modern Ireland can be summed up briefly: the descendants of the 'Old English' twelfth-century settlement, largely Catholic and thoroughly intermarried with the native Irish, were gradually displaced by 'New English' post-Reformation Protestant planters many of whom were committed to the new science. But this is too neat; the boundaries were blurred. Ussher was from a prominent Old English family while Boyle belonged to a formidable New English dynasty. What they shared was a commitment to the reformed religion and the pursuit of learning. The Boates' interest in Ireland both mirrors their countrymen's preoccupation with other colonies like Brazil and cements their relations with key intellectuals of the same faith whose fortunes were bound up with England's first colony. Ussher and Boyle were heavily invested in Ireland through appointments, property and family connections, while Irish plantation was viewed as one way to fund the experimental work of Samuel Hartlib. As Jeremy Fradkin observes, the Boate book was part meticulous report, part modest proposal:

Historians have treated *Irelands naturall history* as both a major development in Baconian economic geography and as a manifesto for the Anglo-Irish Protestant lobby in London … The text appealed especially to the many social, intellectual, and scientific reformers in the Hartlib circle, centered in London, who regarded Ireland as a country to be remade. (2017, 282)

Hartlib had Irish interests of his own, and his circle saw plantation as a form of external grant capture. Roy Foster notes that Hartlib's 'admirers and disciples wanted him to be supported by a grant of Irish lands' (1988, 106). According to Patrick McCabe, Hartlib 'was the author of an unfulfilled project for settling members of the Czech Brethren branch of Protestantism in Ireland' (2003, 74). J.J. O'Brien furnishes valuable information on moves made by Hartlib's son, also called Samuel, to secure land for intellectual and cultural advancement rather than agricultural improvement. O'Brien points to a petition of 11 December 1655 which proposed that a group of interested entrepreneurs 'be allowed to buy up certain debentures, to the value

of ten or twelve thousand pounds … issued to cover back-pay due to soldiers back from active service in Ireland in 1649' (1968, 36):

> The debentures were to be used to purchase undisposed forfeited land and houses in certain parts of Ireland … and the profits from the transactions were to be placed in the hands of trustees appointed by Oliver Cromwell. These were to appoint an agent, to correspond abroad with men interested in the advancement of learning, and also one or more Latin translators. Rewards were to be given to learned correspondents in foreign countries, and men were to be encouraged to experiment and invent. (*ibid.*)

In October 1657 Robert Boyle wrote to Henry Oldenburg, future secretary of the Royal Society, about this scheme:

> I am hugely pleased, that the council hath granted your desires for the promotion of knowledge; which I suppose to be those that were couched in a certain petition you were pleased to impart unto me at *Oxford*; wherein, if I remember well, a matter of twelve thousand pounds sterling was offered to purchase confiscated lands and houses with in *Ireland,* and to commit the profit thereof into the hands of certain trustees, for to employ it in the entertainment of an agent, secretary, translators, for keeping intelligence, distributing rewards, &c. in order to the end aforesaid. (quoted in O'Brien 1968, 37)

Toby Barnard sees the Boates as instrumental in shaping Hartlib's interest in and understanding of Ireland:

> The Boates's work had turned Hartlib's attention to Ireland, and it was Hartlib who presided over and co-ordinated his friends' activities in Ireland during the interregnum … Hartlib's interest stimulated science in mid-seventeenth century Ireland. There were … other factors to cause an upsurge of scientific activity … The war and subsequent resettlement of Ireland acted as a forcing-bed for scientific talents, and gave opportunities for English scientists to test their techniques and theories in useful and profitable enterprises. (1974, 60)

It could be said that Ussher turned Hartlib's attention to Ireland, but Barnard makes a strong case for seeing the Hartlib Circle as organically linked to the germinal Dublin Philosophical Society by drawing attention to the planter roots of the Boyles (70-71). What can be said with certainty is that colonial culture fostered the cultivation of learning as well as land. As Alexandra Walsham remarks: 'In Ireland, the endeavours of the [Boates] laid the foundations for the Dublin Philosophical Society ... officially founded in 1683' (2011, 359-360). Founding figures of the emerging learned societies of the time including – Robert Boyle, Robert Child, John Durie, Myles Symner, William Petty, Robert Wood and Benjamin Worsley – were forged in the crucible of Ireland and profoundly influenced by the Boates. What Michael Hunter says of the Royal Society applies to the activities of the Hartlib Circle: 'From the outset it aspired to combine the role of research institute with that of a clearing house and repository of knowledge' (2006). The discussion of industrial activity in *Irelands Naturall History* is focused on export and the profit accruing therefrom. The larger point is that Irish resources fueled the scientific advances of the Boyles, and vice versa. The foundry was a funding body.

7. *Conclusion*

This contribution has demonstrated why we know so little about the Boates and why we should know much more. The brothers exemplify the new scientific emphasis on eye-witness experience, practical knowledge and the systematic extraction of raw materials. Their work on

scriptural sources and authority coupled with their labours on natural history demonstrate the fusion of supposedly separate discourses. But it is their work on Ireland as an exemplar of the new regional history that marks them out as key cosmographical innovators. The Boates were engaged in learning, thinking and conceptualizing *terra incognita*, and, crucially, in reconfiguring and reorienting what was considered familiar ground. Their horizons were pan-European, and their Irish focus drew on continental and intercontinental models of knowledge exchange.

Discussing settled wealth versus aspiration, Jeremy Collier draws on Francis Bacon's *Novum organum*:

> So that what my Lord *Bacon* mentions in reference to Notions and Inventions, may be sometimes applicable to Families; where he tells us, that Time is like a River, in which Metals and solid Substances are sunk, while Chaff and Straws swim upon the Surface. (1689, 58-59)

This metaphor fits the Boates in a double sense, first because they made a substantial contribution to Baconian improvement that has yet to be taken fully on board, and second because Arnold's light has been hidden under his brother's book, which he had ghost-written. Arnold's spectral presence hangs over the finest intellectual achievements of the mid-century. In their fusion of medicine, philosophy, natural history, poetry, agriculture, theology and translation, the Boate brothers, nimble polymaths engaged in practical knowledge on several fronts, afford us new ways of thinking about the latticework of synergies that hummed and sparked throughout the seventeenth century, lacing together the medical humanities with colonial ecology. Yet they exist mainly in fragments and fissures, disappearing into the cracks of intellectual and cultural history.

In *Irelands Naturall History* Gerard recalls a story 'related to my Brother' of Irish ingenuity in crossing the swollen River Lagan:

> a country fellow … that … stayed three days in hope that the water would fall, and seeing that the rain continued … resolved to pass the Brook whatever the danger was; but to doe it with the less peril, and the more steadiness, he took a great heavy stone upon his shoulders, whose weight giving him some firmness against the violence of the water, he passed the same without harm, and came safe to the other side, to the wonderment of many people, who had been looking on, and given him all for a lost person. (1652, 59)

This 'country fellow', a latter-day Atlas worth his weight in ingenuity, knew when ballast mattered more than buoyancy. Knowledge, including global knowledge, is accessed locally, and sometimes the heavy stuff keeps us afloat. Practical wisdom is often submerged beneath dogma. In the field of universal knowledge, the Boates – advanced practitioners, interdisciplinary scholars, collaborative innovators – deserve to be double-weighted.

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Afterword
Theatrum vitae humanae
Shakespeare's Cosmographic Imagination[1]

François Laroque
Sorbonne Nouvelle-Paris 3 (<flaroque@orange.fr>)

Abstract

The article argues that maps and woodcuts in the numerous cosmographic works published in the course of the sixteenth century were an important source of inspiration for Shakespeare. The Globe playhouse, erected in Southwark in 1599, was the equivalent of a *theatrum mundi* where 'men and women [were] only players' (*As You Like It*). In its own way, it allowed the groundlings to be exposed and to understand something of the many cosmographic books that then circulated amongst a restricted élite. On the other hand, these texts and their superb illustrations gave an idea of yet unknown countries and people and stimulated the playwright's as well as the spectators' imagination. The metaphoric links established between the human body and cartography, as in Münster's representation of Europe in his *Cosmographia universalis*, provided an intriguing extension of the then fashionable art of blazoning and counter-blazoning. Finally, map and globe became structurally related to each other, the word 'globe' serving to designate both head and skull, thus allowing painters like Holbein or the anonymous author of the Fool's Cap Map to illustrate this idea in a compressed, small-scale and fairly cryptic representation of the links between macro and microcosm.

Keywords: *Apian, Globe, Münster, Shakespeare, Vexierbild*

> The undiscovered country from
> whose bourn / No traveller returns.
> (*Hamlet*, 3.1.79-80)

1. *Introduction: Compilers of 'Singularities'*

In Europe, the sixteenth century was certainly the century of cosmography given the extraordinary vogue of those encyclopaedias of the world going through numerous editions successively revising and completing the previous recorded

[1] This Afterword is based on Laroque 2005.

knowledge with a description of the new discoveries. As noted by Janet Clare in her 'Introduction' to this volume, the mathematician and astronomer Peter Bennewitz, better known as Apianus or Peter Apian, published in 1524 a *Cosmographicus liber* which became a sort of European best-seller as it went through sixty different editions. One of his books of arithmetic lies on the lower shelf represented on *The Ambassadors* (1533),[2] Hans Holbein's famous *Vexierbild* with what looks like the painter's signature, the hollow bone at the feet of the two sitters, a sort of anamorphic map as on the Fool's Cap Map of the world (c. 1580) based on Ortelius' *Typus orbis terrarum*.[3] As a matter of fact, both works are vanities apparently praising science and the arts (in the presence of musical and navigation instruments in Holbein's painting and in the map replacing the face of the jester). In the first picture, one becomes aware of the anamorphosis in its oblique perspective and realises that it is in fact a triumph of death, while, in the second, the various mottoes on the shoulder belt medallions and on the fool's bauble ('vanitas vanitatum') deliver a similar message of the vanity of all things. All the apparent symbols of worldly power (*trivium* and *quadrivium* symbols in Holbein, the world's map replacing the fool's face in the Fool's Cap Map) simply vanish out of sight.

Münster's *Cosmographia universalis*, the first German depiction of the world, came out in 1552, being then constantly reprinted until 1628 and translated into several languages, Italian, French, English and even Czech. Its success, which made it the second most read book after the Bible and which led to the flourishing of the cosmographical genre and to the circulation of this type of book on the continent as well as in England, must have been partly due to the number and quality of engravings and woodcuts by such renowned artists as Urs Graf, Hans Manuel Deutsch or Hans Holbein the Younger. It also contained representations of faraway lands like America and Asia. Indeed, the word 'cosmos' in cosmography also referred to an ornament and revealed the humanist cosmographers' concern with a desire to invite readers to look at the sphere of the world with a sense of pleasure and wonder. As Frank Lestringant puts it:

> Restituer dans le désordre apparent de l'exposé l'euphorique diversité du "théâtre de la nature universelle", tel est le projet avoué des compilateurs de "singularités". Comme elle prend pour modèle cette ornementation maniériste, parure ou jardin, qu'est d'emblée le monde, et qu'elle entend répéter par là le miracle de la pédagogie divine, une telle littérature se réclame tout naturellement d'une esthétique de la bigarrure et de l'entrelacs. (1991, 51)[4]

Cosmography was thus regarded as a delightful as well as a profitable occupation, as Sophie Chiari also suggests in her Editorial to this volume.

In 1570, Ortelius' *Theatrum orbis terrarum*, published in Latin and translated into English in 1606, was quickly followed by Mercator's *Atlas* (also published in Latin in 1595) and this new geography represented the last flowering of the 'old cosmography' because Ortelius and Mercator conceived of geography in cosmographic terms, something which lasted until about 1613, the date of Galileo's *Sidereus nuncius*.

[2] See the online illustration: <https://www.flickr.com/photos/profzucker/48433143377>, accessed 1 February 2023.

[3] See the online illustration: <https://www.rmg.co.uk/collections/objects/rmgc-object-206385>, accessed 1 February 2023.

[4] (To retrace in the apparent disorder of discourse the exhilarating diversity of 'the theatre of universal nature', such is the avowed project of those compilers of 'singularities'. As it takes as a model this mannerist ornamenting, either as finery or garden arrangement, which the world immediately looks like, and thereby intends to repeat the miracle of divine pedagogy, such literature claims to take its sources in an aesthetics of variegation and knotwork). Unless otherwise stated all translations are mine.

This afterword takes up on Jane Grogan's study of the influence of cosmographic literature on a number of popular romances and travel narratives so as to try and complement what has already been written on the topic. I have chosen to focus on what the theatre, and Shakespeare in particular, brought in order to enrich the cosmographic production while being influenced by it. As far as literature is concerned, cosmography in the sixteenth century indirectly inspired such humanist pioneering productions as Thomas More's *Utopia* and Rabelais' fourth and fifth books of *Gargantua* telling of the peregrinations and circumnavigations of Pantagruel. Grogan calls attention to romances such as Thomas Lodge's *A Margarite of America* and William Warner's *Albions England*. In the context of drama, theatre and cosmography were obviously interrelated. The theatre was cosmographic and, to an extent, geographic, and Shakespeare's Globe, erected in Southwark in 1599, is a relevant example, while cosmography itself was then thought of as 'theatrical' in the sense that 'theatrum', or 'theatre', is a recurrent image to designate the sphere of the world or *orbis terrarum*. As Frances Yates puts it:

> The Globe theatre was a magical theatre … designed to give fullest support to the voices and the gestures of the players as they enacted the drama of the life of man within the Theatre of the World … His theatre would have been for Shakespeare the pattern of the universe, the idea of the Macrocosm, the world stage on which the Macrocosm acted his parts. All the world's a stage. The words are in a real sense the clue to the Globe Theatre. (1969, 189)

Of course, Shakespeare's career did not begin with the creation of the Globe playhouse: earlier plays contain many allusions to maps, to the earthly sphere and to globes of various sorts.[5] But from then on, his theatrical production became, as it were, more cartographically conscious, more concerned with faraway countries, with real as well as with never-never lands. *The Tempest*, his last single-authored play, was written at a time when many sharers of the Globe and of the King's Men theatrical company also became investors in the Virginia Company. Such a collaboration between the world of the theatre and the world of travelling and navigation may have been one of the results of the circulation of all those cosmographical treatises.

2. *Shakespeare's Imaginary Geography*

Quoting Lucien Febvre and Georges Gusdorf, Numa Broc sees in such imaginary representations or inventions, in their hybridity and multiplicity, a step towards 'real' geography:

> La géographie de la Renaissance demeure une science conjecturale qui, comme les autres disciplines de l'époque, baigne dans un monde de "fantaisie, d'imprécision, d'incertitude". Comment dans cette atmosphère de "temps flottant et d'espace encore mal ordonné", la géographie pourrait-elle échapper au flou, l'imaginaire, au merveilleux? Aussi, ne nous étonnons pas devoir des savants distingués mettre autant d'acharnement, disserter sur des terres inexistantes qu'à étudier les terres réelles. Il ne faut pas négliger cette géographie imaginaire, "fausse géographie en attendant la vraie, projection de l'espace mental dans le videgéographique", comme l'écrit G. Gusdorf. (1986, 166)[6]

[5] On this, see Sophie Chiari's definition in her 'globe' entry: 'This word symbolizes the thriving conquests and travels of the early modern age as well as its new ordering of the world in opposition to the medieval period when a majority of people were unaware of the earth's shape and geography, even though England lagged behind its European neighbours as regards mapmaking' (2022, 144).

[6] (Renaissance geography remains a conjectural science which, like all other disciplines of the time, bathes in a world of 'fantasy, imprecision, uncertainty'. In this atmosphere of 'floating time and badly ordered space', how could geography escape fuzzy, imaginary and marvellous visions? So we should not be surprised to see reputed scholars be

Shakespeare's plays constantly refer to maps, to the lie of the land, to forests, seas, cities as well as to various aspects of the countryside, even though the playwright never uses the words 'cosmography' or 'geography'. His plays often foreground the place of the action, both as real location and imaginary configuration ('the baseless fabric of this vision', *The Tempest*, 4.1.151), as elements of decor and decorum. In fact, geography, maps, places and details that serve to characterise and particularise the plot are necessary elements in the theatre to allow the spectator to 'suspend disbelief' and use his/her imagination to people the empty stage as in the first 'Prologue' of *Henry V*:

> Can this cockpit hold
> The vasty fields of France? Or may we cram
> Within this wooden O the very casques
> That did affright the air at Agincourt?
> O, pardon: since a crooked figure may
> Attest in little place a million,
> And let us, ciphers to this great account,
> On your imaginary forces work.
> Suppose within the girdle of these walls
> Are now confined two mighty monarchies,
> …
> Piece out our imperfections with your thoughts.
> Into a thousand parts divide one man,
> And make imaginary puissance. (Prologue, ll. 11-25)

At the end of *A Midsummer Night's Dream*, the poet's pen becomes a means to scan space and occupy the void thanks to the invention of *topoï* and shapes that give an identity and a visage to the empty spaces of the *terrae incognitae* on the *mappa mundi*:

> The poet's eye, in a fine frenzy rolling,
> Doth glance from heaven to earth, from earth to heaven,
> And as imagination bodies forth
> The forms of things unknown, the poet's pen
> Turns them to shapes, and gives to airy nothing
> A local habitation and a name. (5.1.12-17)

Like a cartographer (whether it be Münster, Peter Apian, Ortelius, Gemma Frisius, Mercator, William Cuningham, Oronce Fine or André Thevet) who draws a map with its plains, mountains and cities, the eye of the poet has the power of making the invisible visible by giving it a place to identify and inventory its various placenames. For, even if the art of map-making serves as a metaphor of poetic creation which, in Theseus' monologue, suggests that a new world is being created, thus giving to 'imaginary puissance' a form of *hic et nunc* reality, such a statement remains somewhat general and theoretical. The playwright naturally associates his *dramatis personae* with a spatial location (the city or court) by opposing it to another one situated at the antipodes of the first (the forest, the wilderness or some aristocratic house), thus piling a whole

as keen to discourse on non-existent lands as to study real lands. This imaginary geography should not be neglected, 'this false geography preparing the real one, projection of mental space into the geographic void', according to what G. Gusdorf writes). In this passage, Broc quotes Febvre (1947, 367) and Gusdorf (1969, 381).

series of fictitious or imaginary elements on the realities of the map. The exact place is left vague so that the name or toponym takes on a polysemic value. The forest of Arden, India, Illyria, Egypt, Rome or the Bermudas are used to allow a number of poetic echoes to reverberate and to introduce symbolic correspondences in the playtext. All these complex signifiers take on verbal, historical and magical connotations. They are turned into incantations with a particular power of evocation or equivocation which makes them almost impossible to define once and for all, so that their definite meaning is never really stable or fixed. As Richard Wilson puts it,

> … the fact remains that so many of these plays contain *aporia*, blind-spots, or liminal places which give them meaning, and retain the potential for resistant readings to the extent that, though under the very eye of power, they are never in its sight: worlds within – rather than off-stage. (2002, 173)

In his invaluable book on Renaissance geography, Numa Broc writes that the only Shakespeare play with a geographical background is *The Tempest*, insofar as most places mentioned by the playwright are theatrical decors, even if certain details apparently reveal that he was conversant with the great voyages and explorations published by Richard Eden and Richard Hakluyt for example (1986, 225).

It is true that Shakespeare used the narratives of classical writers such as Herodotus or Pliny (Philemon Holland's translation appeared in 1601) as well as images borrowed from the Greek myth of the Fortunate Isles or from the medieval *Travels of John Mandeville* (1357-1371), where Jerusalem is situated at the centre of the world and where one finds a naïve desire to give 'a local habitation' to paradise or to the legendary realm of Priester John. Similarly, when Shakespeare turns the city of Milan into a port in *The Two Gentlemen of Verona* (1.1.71) or when he invents a sea-coast in landlocked Bohemia in *The Winter's Tale* (3.3.2), he becomes part of this literary tradition of imaginary cosmography and of impossible localisations (Orgel 1996, 37). In those days, maps and atlases were not only bought by navigators and explorers but were also read as marvellous books filled with images of such monstrous creatures as Amazons or Blemmyes ('men whose heads / Do grow beneath their shoulders', *Othello*, 1.3.145-146) as well as of other monsters or curiosities present in Münster and in the first edition of Hakluyt's *Principall Navigations* (1589).

Though Shakespeare's history plays and tragedies are mostly confined inside the European frontiers (with the exception of *Antony and Cleopatra*), they also often refer to an exotic elsewhere, to India, Arabia or Africa. Europe then defined itself in opposition to the world of pagans and infidels like Lear's 'barbarous Scythian / Or he that makes his generation messes / To gorge his appetite' (*King Lear*, 1.1.115-117). Shakespeare's imagined cosmography thus seems to create places with a double face or function, simultaneously real and imaginary like the city of Verona and the forest in *The Two Gentlemen of Verona*, the city of Athens and the woods nearby where the lovers get lost in *A Midsummer Night's Dream*, the court and the forest of Arden (itself referring both to the Warwickshire forest and to the French 'forêt des Ardennes') in *As You Like It*, or Venice and Belmont in *The Merchant of Venice*. This technique allows him to play with perspective, to create the equivalent of a vanishing point in a painting which allows the spectator to call upon what the first Chorus of *Henry V* defines as an 'imaginary puissance' (Prologue, l. 25). The main function of this double or double-sided space is to allow the main topography to be completed or contradicted by another one suggesting flight, exile or nostalgia

The cosmographic dream becomes synonymous with escape, detour or indirection for characters in quest of liberty since, for various reasons, they are obliged to live in a country or city which, like Denmark for Prince Hamlet, looks like a prison to them. The fascination with travel and faraway lands establishes a link between geography and desire, seduction, and

the marvels of strange languages. It arouses curiosity, creates a feeling of wonder and invites the reader or spectator to launch himself/herself into a quest of the unknown. If, in all this, there are echoes of ancient times and a form of return to the enchanted and fabulous worlds of mediaeval literature, the place of cosmography in the Shakespearian canon, be it imaginary or real, is part and parcel of this taste for discovery and experience at the time of the Renaissance, a taste which turned the world into a vast cabinet of curiosities.

3. *The 'Body' of the World*

In *The Comedy of Errors*, the female body is associated with a number of foreign countries and with more or less exotic lands in the bawdy dialogue in which Antipholus and Dromio of Syracuse exchange their impressions about Nell, the kitchen wench:

Syracuse Dromio … she is a wondrous fat marriage.
Syracuse Antipholus How dost thou mean, a fat marriage?
Syracuse Dromio Marry, sir, she's the kitchen wench, and all grease … I warrant her rags and the tallow in them will burn a Poland winter … she is *spherical*, like a *globe*; I could find out countries in her.
Syracuse Antipholus In what part of her body stands Ireland?
Syracuse Dromio Marry, sir, in her buttocks; I found it by the bogs.
Syracuse Antipholus Where Scotland?
Syracuse Dromio I found it by the barrenness, hard in the palm of the hand.
Syracuse Antipholus Where France?
Syracuse Dromio In her forehead …
Syracuse Antipholus Where England?
Syracuse Dromio I looked for the chalky cliffs, but I could find no whiteness in them. But I guess it stood in her chin, by the salt rheum that ran between France and it.
Syracuse Antipholus Where Spain?
Syracuse Dromio Faith, I saw it not; but I felt it hot in her breath.
Syracuse Antipholus Where America, the Indies?
Syracuse Dromio O, sir, upon her nose, all o'er embellished with rubies, carbuncles, sapphires, declining their rich aspect to the hot breath of Spain, who sent whole armadoes of carracks to be ballast at her nose.
Syracuse Antipholus Where stood Belgia, the Netherlands?
Syracuse Dromio O, sir, I did not look so low. (3.2.94-144)

Such a comic enumeration of the parts of the female anatomy, along with the correspondences established with different European countries, belongs to the misogynous genre of the 'female grotesque'[7] traditionally providing an anti-Petrarchan version of the blazoning and counter-blazoning vogue of the period. These geographic blazons, visibly inspired by the anatomic blazons of Clément Marot and other French Renaissance sonneteers, probably anticipate Hamlet's obscene double entendre when he mentions to Ophelia what he calls 'country matters' (*Hamlet*, 3.2.110). Such a cynical cue in which the Prince establishes an equivalence between the female vulva and the 'Low Countries' is somewhat similar to these exchanges. According to Michael Neill, who sees in this an 'unashamed erotic blazoning of the map of Ireland', the association of Ireland with the buttocks is supposed to be a parody of the cartography of the female body

[7] Nevertheless, as Sophie Chiari writes in the 'globe' entry of her dictionary, this also applies to a character like Falstaff whose fat body feminises him: '… in *2 H4*, Hal punningly depicts Falstaff as "a globe of sinful continents" (2.4.288), that is as a fat carnivalesque body' (2022, 145-146).

(1994, 23-24). The source of these parallels may be found in a woodcut of Sebastian Münster's *Cosmography* which, according to the traditional tripartite division of the world into Europe, Africa and Asia, represents Europe in an upside down image as a strongly built woman holding a globe (in Shakespeare's text, the word 'globe' appears on line 116) in her right hand and a sceptre in her left one, while Africa may be seen on the upper left-hand corner, Asia at her feet and Scandinavia on the right-hand corner at the level of her belt.[8] Spain corresponds to her head and face, France to the upper part of her breast, Germany to her breasts, while Greece and Tartary are aligned at the level of her feet under her long dress. In *The Comedy of Errors*, such gendered cosmography makes this description both amusing and rather odd since Nell's body is mainly being described in terms of European analogies while she is supposed to dwell in the town of Ephesus, in Asia Minor.

This Europe-centred cosmography is part of this strategy of the double-sided space used by the playwright, which combines closeness and distance, familiarity and strangeness. This type of grotesque humour turns the human body into a map where macro-and microcosm meet on several levels. It is the most ancient and systematic use of the technique of spatial anamorphosis in which body and landscape are presented as interchangeable. In *A Midsummer Night's Dream*, the image of the 'brow of Egypt' (5.1.11) connotes a black skin comparable to an 'Ethiope' (3.2.257), or to a 'tawny Tartar' (3.2.263), geographic references which serve Helena to qualify her rival, the dark-haired Hermia. In *The Merry Wives of Windsor*, Falstaff makes Mrs Page 'a region in Guiana' (1.3.66) while the two wives he is courting are respectively turned into his 'East and West Indies' (1.3.68). In spite of Guyana's reputation as an 'eroticized land' (Hall 1995, 187), it is soon clear that the down-at-the-heels knight is not so much trying to gratify his libido than to fill his purse. The two wives are indeed a real Eldorado for Falstaff who has always made his living out of women's generosity or gullibility. Further, Titania describes her pregnant 'votaress' as an intimate friend of hers 'in the spicèd Indian air by night' (*A Midsummer Night's Dream*, 2.1.124), then describing her as a sail made 'big-bellied with the wanton wind' returning 'as from a voyage, rich with merchandise' (2.1.129-134). Like in Spenser's *Amoretti*, Shakespeare joins here what Jane Grogan calls 'trade, travel and desire'.[9] Fairyland geography is marked by a nostalgia for a golden age as well as by a mercantile appetite (that of the colonizing expeditions which gradually replaced the traditional cosmography by a more exact, empirically verified cartography) according to which fertility is being measured in terms of financial, rhetorical and maternal exchanges (Hendricks 1996). The little 'changeling boy' (51) is the signifier allowing the spectator/reader to bring and bind together commercial, linguistic and female rules. Femininity and fairydom merge in these dense and suggestive image clusters in which the principles of imagination and reality harmoniously combine.

In the darker context of *Twelfth Night*, the infatuated Malvolio keeps smiling in the presence of Olivia after reading his 'mistress's' letter (' "If thou entertain'st my love, let it appear in thy smiling / Thy smiles become thee well. Therefore in my presence still smile, dear my sweet, I prithee" ', 2.5.164-167). He is thus forcing his severe mien into a smirk, which will allow Maria to describe his transformation in terms of cartographic novelty: 'He does smile his face into more lines than is in the new map with the augmentation of the Indies' (3.2.73-74). This image, probably inspired by the new maps of Edward Wright's *Hydrographiae descriptio* (1599) with their clusters of rhumb-lines, reminds us of the then incessant changes to which cosmographic works were submitted in

[8] See the website: <https://commons.wikimedia.org/wiki/File:Europe_As_A_Queen_Sebastian_Munster_1570.jpg>, accessed 1 February 2023.

[9] See Jane Grogan's article in this volume.

order to include the latest discoveries made by the navigations and voyages of exploration around the globe. At the same time, such books suggest something of the mixture of curiosity and anxiety which must then have permeated early modern people in a Europe confronted with the numerous facelifts of the other parts of the 'known' world.

In its chorographic and ethnographic discourse, Shakespeare's cosmography traditionally described and inventoried such humours as rage, choler or unbridled passion. Inverting the process, Shakespeare also regularly describes humours in terms of natural, geographically localised phenomena. In *The Taming of the Shrew*, Katharina is as violent as the 'swelling Adriatic seas' (1.2.71), while after having sworn to Iago that his decision to blow away to heaven 'all his fond love' for Desdemona (*Othello*, 3.3.448) is from then on irreversible, Othello resorts to an imagery borrowed from Turkey's geography and thus to a liminal space at the borders of Europe and Asia:

Never, Iago. Like to the Pontic sea
Whose icy current and compulsive course
Ne'er keeps retiring ebb but keeps due on
To the Propontic and the Hellespont:
Even so my bloody thoughts with violent pace
Shall ne'er look back, ne'er ebb to humble love
Till that a capable and wide revenge
Swallow them up. (3.3.456-463)

This passage metaphorically describes the flow of the Black Sea into the Sea of Marmara and then into the strait of the Dardanelles, according to the description found in Philemon Holland's translation of Pliny the Elder (1601, Book V, Ch. 30, 154). Othello's habitual use of polysyllabic proper names such as 'Pontic', 'Propontic', and 'Hellespont', is not accidental. They all have a geographic source and they are connected with remarkable forms of the exotic as well as with the marvellous of Mandevillian travels. Othello thus indirectly associates himself with the proverbial cruelty of the Turks, something which will find a confirmation in his final suicide when he tells the story of this 'malignant and turban'd Turk', whose throat he allegedly cut in Aleppo, in Syria (*Othello*, 5.2.350-354). By killing himself in the same manner, he kills the Turk in him.

Shakespeare's cosmographic imagination, however, does not always have to go thus far, since England is also described as an ideal, almost mythical country, or like an eroticized body on the maps which were circulating at the time. He uses the geographic imaginary through an interplay and a tension between proximity and distance, exoticism and homeliness.

4. *Imagining the World: Maps and Empty Spaces*

In *Richard II*, before his death, John of Gaunt delivers a long topographic poem, to celebrate the bygone days of Old England and to stigmatize Richard II's arbitrary rule:

This royal throne of kings, this sceptred isle,
This earth of majesty, this seat of Mars,
This other Eden, demi-paradise
…
This happy breed of men, this little world,
This precious stone set in the silver sea,
Which serves it in the office of a wall

Or as a moat defensive to a house
Against the envy of less happier lands,
This blessed plot, this earth, this realm, this England,
This nurse, this teeming womb of royal kings,
Feared by their breed and famous by their birth,
Renowned for their deeds as far from home,
For Christian service and true chivalry,
As is the sepulchre in stubborn Jewry
…
England, bound in with the triumphant sea,
Whose rocky shore beats back the envious siege
Of wat'ry Neptune, is now bound in with shame,
With inky blots and rotten parchment bonds. (2.1.40-64)

These patriotic lines, imbued with 'cartographic lyricism' (Neill 1994, 14), also serve as a criticism of Richard II's rule. The syncretic vision which they put together is built on a mixed bag of Pagan and Christian elements: Mars and Neptune are indeed here cheek by jowl with the Garden of Eden and the crusades against the Infidels. It also introduces a parallel between East and West in terms of martial glory and reputation. At the end of the monologue, the image of England's 'rocky shore' set inside a 'triumphant sea' progressively reveals the 'rotten parchment bonds' evocative of shame and stains ('inky blots').

This directly leads to the theme of the division of the realm. In *1 Henry IV*, Mortimer, Glendower and Percy (also known as Hotspur) hold a meeting to divide between them the land on the map:

Glendower Come, here is the map, shall we divide our right
According to our threefold order ta'en?
Mortimer The Archdeacon hath divided it
Into three limits very equally
…
Hotspur I do not care, I'll give thrice so much land
To any well-deserving friend:
But in the way of bargain, mark ye me,
I'll cavill on the ninth part of a hair.
Are the indentures drawn? Shall we be gone? (3.1.68-137)

The word 'indentures' refers both to the meanders of the river Trent and to the apprentice's contract of seven years: Shakespeare thus uses again place as a metaphor of the written piece of parchment. The toponyms are equated with a manuscript which may be corrected according to individual caprices or demands, just as a playtext could be revised to include the actors' (mainly the clown's) improvisations.

In *King Lear,* a map is again produced on stage when the old king decides to divide his kingdom. The three daughters of the king are supposed to flatter him in their public declaration of love. In fact, this more than awkward ceremony has serious subconscious and symbolic implications which will gradually crop up as the play progresses. Even if we are not in the barbaric world of *Titus Andronicus*, this forced ritual amounts to an act of dismembering, to a form of cannibalistic banquet in the course of which Lear feeds the carnivorous appetite of his daughters in an analogy with the 'barbarous Scythian':

The barbarous Scythian,
Or he that makes his generation messes
To gorge his appetite, shall 'to my bosom'
Be as well neighboured, pitied and relieved,
As thou my sometime daughter. (*King Lear*,1.1.117-21)

Here, Shakespeare's cosmography takes us back to an archaic period when the maps were simple vignettes illustrating the different *topoï* of the world upside down (the world of the antipodes) of which early modern maps offer examples in the lower margins of their cartographic representations.[10] Shakespeare thus periodically takes us back to a sort of nebulous mythical horizon which becomes a metaphor for the haunting, repetitive theme of chaos in English history.

At the end of *1 Henry VI* Suffolk, who has seduced Margaret in France, introduces her to the king to make her the future queen of England. He then seems to dream aloud:

Thus Suffolk hath prevailed, and thus he goes,
As did the youthful Paris once to Greece,
With hope to find the like event in love –
But prosper better than the Trojan did.
Margaret shall now be queen, and rule the King:
But I will rule both her, the King, and realm. (5.4.103-108)

At the beginning of *2 Henry VI*, Suffolk reappears to tell the king how he vicariously married Margaret in the king's name and place:

So in the famous ancient city, Tours,
In presence of the Kings of France and Sicil,
The Dukes of Orleans, Calaber, Bretagne and Alençon,
Seven earls, twelve barons, and twenty reverend bishops,
I have performed my task and was espous'd. (1.1.5-9)

3 Henry VI completes the picture, when Edward of York declares to Margaret:

Helen of Greece was fairer far than thou,
Although thy husband may be Menelaus. (2.2.146-147)

The legendary city of Troy thus gradually superimposes itself on the modern city of Tours, the phonetic analogy between the two toponyms having probably led Shakespeare to modify the historical reality (the marriage had actually been celebrated in Nancy). Suffolk becomes the modern embodiment of Paris, Margaret of Helen and King Henry of Menelaus, the cuckolded husband. In the same historical tetralogy, Alexander Iden, the Kentish gentleman who defeats the rebel Jack Cade, whom he encountered totally famished in his garden, bears a name which is reminiscent of the Garden of Eden in the Book of Genesis (*2 Henry VI* 4.10).

[10] See <https://hyperallergic.com/249898/why-cannibals-were-on-every-16th-century-map-of-the-new-world/>, accessed 1 February 2023. The map of Petrus Plancius' 'Orbis Terrarum Typus de Integro Multis in Locis Emendatus' (1594) shows details of cannibalism.

Similar echoes of Biblical and classical geographical sources are found in the comedies. In *The Merchant of Venice*, for instance, Gratiano's triumphal ejaculation, 'We are the Jasons, we have won the fleece', gives Salanio an opportunity for making a quibble which is just as ironical as it is pathetic: 'I would you had won the fleece that he hath lost' (3.2.240-241). Such a pun on the words 'fleets' and 'fleece' works as an allusion to the Greek myth of the Argonauts and to the Golden Fleece which, in the play, corresponds to the golden hair of Portia who has inherited a fabulous fortune. If Bassanio and Gratiano have conquered Belmont's golden fleece, Antonio, for his part, has lost his fleet at sea and now definitely seems bankrupt. He finds himself at the mercy of Shylock, the modern and phonetic counterpart of the classical monster Scylla, as Launcelot suggests: 'Truly then I fear you are damn'd both by father and mother: thus when I shun Scylla (your father), I fall into Charybdis (your mother)' (3.5.13-15). The imaginary cosmography of Shakespeare's comedy allows the roads of contemporary maritime trade to coincide with the legendary sites of the Homeric odyssey.

In *As You Like It*, the forest of Arden obviously recalls the Garden of Eden:

Oliver Where will the Old Duke live?
Charles They say he is already in the Forest of Arden and
a many merry men with him, and there they live like
the old Robin Hood of England. They say many young
gentlemen flock to him every day and fleet the time
carelessly as they did in the golden world. (1.1.108-113)

The medieval legend of Robin Hood is here associated with the Morris dance through links which combine the biblical echo with the maiden name of the playwright's mother, born Mary Arden. But elsewhere Shakespeare's work, especially his comedies, is marked by an undeniable cosmopolitanism, something of an originality at the time, thus turning playwright and audiences into what Janet Clare, in this volume of *JEMS*, calls 'armchair travellers'.

5. *The 'Infinite Variety' of Shakespeare's Cosmography*

In an English context, the question of exile naturally contributes to making cosmography and travel negative elements unless they are linked to a return to the native country. The motherland becomes a nourishing breast, an enclosed garden protected by high walls. But if two of the four great tragedies are still situated on the soil of the British isles (England and Scotland), all the comedies, except *The Merry Wives of Windsor*, are situated on foreign land, mostly in Italy, France, Austria, or in imaginary sites such as the forest of Arden or Illyria.

Illyria, mentioned in *2 Henry VI* with its allusion to 'Bargulus, the strong Illyrian pirate' (4.1.108), mainly appears in *Twelfth Night*. Shakespeare found that name in Cicero's *Offices* and in Ovid's *Metamorphoses*, and it seems to correspond to the Adriatic coast of present-day Croatia. According to Harry Levin, 'This Illyrian seaport – it could well be Dubrovnick, formerly Ragusa in its more Italian days – seems to suit these Italian visitors who came from Messaline, wherever that may have been' (1989, 22). Illyria is also another imaginary and utopian country whose name combines the idea of illusion and lyricism, two elements which are very much present in the play, in particular in Duke Orsino's interventions (Riemer 1980, 97-98). According to Roger Warren and Stanley Wells, Illyria does not correspond to any identifiable place on a map: 'Each of these aspects of Illyria – the geographical or Mediterranean, the specifically English, the magical, and the sense of a country of the mind – can be illustrated by the prominence each has been given in notable stagings' (Warren and Wells 2008, 9). Leah Marcus agrees when she writes

that 'Illyria was scarcely familiar territory, more significant, perhaps, for its evocation of like-sounding exotica – Elysium, delirium – than for concrete geopolitical associations' (1988, 161).

What's more, the simultaneously vague and ambivalent space of the play is divided into two different sites, Orsino's palace and Olivia's house as often happens in Shakespeare's Italian plays. This double-sided geography is careful to provide no specific localization and it avoids giving references or quoting the clichés of the time linked to such and such well-known place except when a character like Iago, for example, keeps citing a number of local stereotypes.[11] Such a descriptive uncertainty corresponds to the dramatist's cosmographic strategy of not identifying the exact nature of the geographical decor in order to make indirect allusions to England:

> Shakespeare's city settings are vague on specific geography. The Arno in Florence or the Adige in Verona … are never mentioned … When the Rialto in Venice or St Gregory's Well near Milan is alluded to, it comes as a surprise … One might conclude from the consistency that this vagueness is purposeful … Most importantly Italy serves in part as metaphor for Shakespeare's England … (Levith 1989, 11)[12]

As far as Italy is concerned, the Shakespearian canon is not free from material errors. According to Manfred Pfister, it is perfectly useless to ask for an exact reconstruction of the place or places since Shakespeare creates imaginary places with known toponyms:

> … the Americas, bearing an Italian name, intuited by Florentine cosmographers, and first 'discovered' by an Italian in Spanish services, were to English adventurers and colonists not only a place of encounter with savage aborigines, but also with Mediterranean Catholicism. Prospero's island is at one and the same time Mediterranean and Transatlantic, an island between Naples and Tripolis and one of the far Bermudas. (1997, 301)

In *The Tempest*, the conflict between Prospero and Antonio is also one that opposes city states such as Naples and Milan, both under Spanish rule. According to other critics, the island of *The Tempest* contains other possible allusions to Ireland and to the Irish situation (Callaghan 2000). Situated at the crossroads between Europe and Africa and/or between Europe and America, the romance play is a sort of cosmographic palimpsest which provides much grist to the mill of post-colonial studies.

Another localisation, that of the city of Vienna in *Measure for Measure*, has been questioned by Gary Taylor, who argues that the Italian town of Ferrara should be preferred to it. Similarly, in *Hamlet*, the murder of Gonzago, which is supposed to take place in Vienna, was actually that of the Duke of Urbino which happened in 1538: 'The Murder of Gonzago … is based on an actual murder, that of the Duke of Urbino in 1538. Gonzago, however, was not the name of the Duke, but of his alleged murderer, Luigi Gonzaga, a kinsman of the Duke's wife, Leonora Gonzaga' (Taylor 2004, 257). In this dark comedy, Poland is also placed in a rather decentred position since it is situated somewhere between Norway and Denmark. The play's European geography is thus just as confused from North to South as it is from East to West, in spite of the Prince's statement that he is 'but mad north-northwest' (*Hamlet*, 2.2.315-316). Hamlet here refers to the notion of geographical orientation as indicated on maps to suggest that he is not

[11] See for example: 'Your Dane, your German, and your swag-bellied Hollander … are nothing to your English' (*Othello* 2.3.72-75).

[12] See also Riemer, who analyses the landscape of Shakespearean comedies in terms of 'ideal landscapes': 'The distortions and the rearrangement of everyday reality in most of the comedies represent artistic necessity – the discovery of an ideal landscape in which playfully ambivalent concerns find a proper and comfortable environment' (1980, 65).

a victim of spatial disorientation and knows full well where he is. Earlier on, he had referred to 'this goodly frame the earth … this brave o'erhanging firmament, this majestical roof fretted with golden fire' (2.2.264-267) showing that spatial images of the terrestrial globe and of the overhanging heavens indirectly serve him as a figurative discourse to describe his predicament.

In *Othello*, the characters come from two different parts of Italy (Venice and Florence) while the Moor's origins remain fairly mysterious:

> Be he a black or a north African Moor … Othello's otherness remains. He is more than a stranger, he comes from a mysteriously 'other' world, a world that lies beyond our reach, hinted at rather than defined. Despite his self-identification with Venice and Christianity the Moor cannot shake off this mystery, a by-product of his dark skin and of the associations this had in European minds. (Honigmann 1997, 27)

When we pass from Venice to Cyprus, in act 2, the play transforms what still looked like a variant of city comedy, in which the Old Father is traditionally outwitted by his daughter who imposes on him her own matrimonial choice, into a domestic tragedy where passionate love, jealousy and betrayal prevail:

> In Venice they do let God see the pranks
> They dare not show their husbands. (*Othello*, 3.3.205-206)

The name Venice is coupled with that of Venus, not only through the paronomasia but also because Cyprus was known as the goddess' island, the place where she was allegedly born, where she was celebrated as the goddess of love and where there was a cult of Venus in her temple at Paphos. After sailing form Venice to Cyprus, Des*demon*a is demonized (the word 'demon' at the heart of her name is thus emphasized) by Iago's perverse insinuations. The geographic imaginary, so intimately associated with the iconography of Venus and with classical mythology is thus reactivated on this island recently reclaimed from the Turks after the battle of Lepanto in 1571. Venus was the wife of Vulcan, a cripple whose skin was blackened by his work in an underground smithy, and the mistress of Mars, the god of war. Their love story, which had aroused Vulcan's ire and then the giggles and guffaws of all the gods on Mount Olympus, was abundantly represented in Renaissance Venetian painting and especially by Titian.

So, beyond the confines of Europe, the exoticism of distant lands had often taken on an erotic and phantasmatic dimension, belonging to a mental cartography situated half-way between pleasure and terror. In *Othello*, this space is situated closer to hell than to paradise since the Pontic and Propontic seas serve as images to render the irreversible flow of fury and hysteria (3.3.456-459).

In *As You Like It*, Touchstone hints at Ovid's exile on the shores of the Black Sea and political exile to the land of the Goths (3.3.6). But in *Richard II*, exile is hardly felt as Bolingbroke says to his father John of Gaunt:

> O, who can hold a fire in his hand
> By thinking on the frosty Caucasus?
> Or cloy the hungry edge of appetite
> By bare imagination of a feast?
> Or wallow naked in December snow
> By thinking on fantastic summer's heat? (1.3.294-299)

The Caucasus, the mountain chain dividing Europe from Asia, is indeed situated within the confines of the civilised world and it represents the antipodes, or the negative of England. Here, the geographic image, reinforced by the contrast between fire and frost, serves to enhance the biting pain of an exile to a distant country. In a similar way, the allusions to Russia in *The Winter's Tale* (Hermione claiming at her trial that she is the daughter of the emperor of Russia, 3.2.117) create an atmosphere of suspicion and despotism close to the paranoid fears that Ivan the Terrible introduced in the Jacobeans' imagination:

> The king [Leontes] inhabits a world of secrecy, suspicion, and spying that has no proper name until the playwright asks his audience to think on the emperor of Russia … The Sicilian king is trapped in a Muscovite bind, struggling to control his wife's talk in … a precarious court while attempting to be hospitable. (Palmer 1995, 335)

Thus, one sees how the map of Europe, from Syracuse to Russia, from Ephesus to the forest of Arden, from Ireland to the Mediterranean, also served to draw an inner map so as to figure a topography of humours in which the local or national idiosyncrasies are being subverted and attached to other signifiers. This type of stylistic freedom enabled the playwright to work on a very varied range of sounds and images, which he then separates from their specific geographic context, in order to allow them to circulate freely inside his drama.

6. *Conclusion: Maps, Memory and the 'Distracted Globe'*

Shakespeare's cosmography is often vague and rooted in the world of imagination. The placenames which the playwright quotes in the canon, the allusions to cities, nations, traditions, customs as well as costumes remain as so many *trompe l'œil* that allow all these double-sided places to make any specific localisation impossible and which favour the creation of some sort of never-never land. This is part of an effect of anamorphosis and perspective which also looks ahead to the quick decor changes of the court masque.

Shakespeare's maps blend real and imaginary names while suggesting underground itineraries whose material traces have been erased and which only survive in the memories of men:

> the quaint mazes in the wanton green,
> For lack of tread, are undistinguishable. (*A Midsummer Night's Dream*, 2.1.99-100).

In comedy, spatial confusion and disorientation reign because of the distempered weather, something which may be regarded as the equivalent of a spatial imaging of the loss of memory and oblivion. In *Hamlet*, written some seven or eight years later, after the erection of the Globe, the image of the head and of the theatre serve as a figuration of memory when, after listening to his father's narrative, Hamlet exclaims:

> Remember thee?
> Ay, thou poor ghost, whiles memory holds a seat
> In this distracted globe. (1.5.95-97)

The word 'globe' indeed clearly refers here both to Hamlet's head and to Shakespeare's brand-new playhouse. As in the small-scale cosmography of Holbein's *Ambassadors*, where one sees an earthly and a celestial globe, as in the customary marriage of heaven and earth of contemporary

cosmographic representations and discourses, the globe is both the worldly map and the distorted skull at the feet of the two sitters. This speaking picture delivers a coded message while, in Shakespeare, indeterminacy is used as a rhetorical trick to multiply possible interpretations without giving the text or the word any definite or fixed meaning. His dramatic cosmography was thus made compatible with the dream of spatial expansion.

As the articles of this volume demonstrate, cosmography in diverse European countries and through multiple genres, combined science, arts and ideology, mostly of a religious nature (even if many cosmographies openly or secretly leaned towards Protestantism). Thanks to the technology of the printing press, those books circulated widely throughout Europe among humanists, universities as well as among explorers and professional travellers. In 'Renaissance Cosmographical Knowledge and Religious Discourse: A "Disenchantment of the World"?', Étienne Bourdon rightfully argues that the passage from cosmography to geography entailed a progressive disenchantment of the world. In this perspective, it would seem that Shakespeare's plays had an exactly contrary effect and did contribute, albeit briefly, to a re-enchantment of the world. So, if the influence of cosmography on the world of the theatre and on Shakespeare in particular, may be considered as effective, then this moment should be regarded as a short-lived, enchanted parenthesis, turning its back to the new empiricism recording the latest discoveries of navigators which would progressively become the science of geography in the course of the seventeenth century.

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Contributors

Étienne Bourdon is an Associate Professor (Maître de conférence) in Early Modern History at the University of Grenoble Alpes (France), and a member of the Laboratoire de Recherche historique Rhône-Alpes (LARHRA). His main research topics are the history of knowledge from the fifteenth century to the beginning of the twentieth century, the study of François de Belleforest's *Cosmographie* (1575), the relationship between mountains and religion, the national and political uses of history (*La forge gauloise de la nation. Ernest Lavisse et la fabrique des ancêtres*, 2017) and the epistemology of history, in particular the questions of Time and Truth. In 2013 he has been awarded the Georges Goyau Prize by the French Academy for his essay *Le voyage et la découverte des Alpes. Histoire de la construction d'un savoir, 1492-1713* (2011). He has two books forthcoming: *Combattre par la plume. François de Belleforest et les guerres de Religion* and *Croire et savoir. L'invention du monde à la Renaissance*.

Sophie Chiari is Professor of Early Modern English Literature at Université Clermont Auvergne, France, where she is also the Director of the 'Maison des Sciences de l'Homme de Clermont-Ferrand', a research institute encompassing the humanities and social sciences. She has edited or coedited various collections of essays including *Performances at Court in the Age of Shakespeare* (coedited with John Mucciolo, 2019) and *The Experience of Disaster in Early Modern English Literature* (2022). Her current research focuses on ecocritical issues in Shakespeare and his contemporaries. Her most recent works are *Shakespeare's Representation of Weather, Climate, and Environment* (2019) and *Shakespeare and the Environment. A Dictionary* (2022).

Janet Clare is Honorary Professor in English at the University of Bristol and Research Fellow at the Institute of English Studies, School of Advanced Studies, University of London. In 2016 she was Visiting Professor at the Università degli Studi di Firenze. Her books include *Art Made Tongue-Tied by Authority: Elizabethan and Jacobean Dramatic Censorship* (second edition, 1999); *Drama of the English Republic, 1649-1660* (2002) and *Shakespeare's Stage Traffic: Imitation, Borrowing and Competition in Renaissance Theatre* (2014, 2017). She has edited *What You Will* for the *Oxford Complete Works of John Marston*. Her current research concerns cosmography and the early modern English literary imagination for which she has been awarded a Leverhulme Emeritus Fellowship.

Tom Conley is the Abbott Lawrence Lowell Professor at Harvard University where he teaches in the Department of Art, Film & Visual Studies. He is the author of studies on literature and cartography: *The Self-Made Map: Cartographic Writing in Early Modern France* (1996, 2011), *Cartographic Cinema* (2007), *An Errant Eye: Poetry and Topography in Early Modern France* (2011), *À fleur de page: Voir et lire le texte de la Renaissance* (2016). He is currently finishing *Des mots à la carte*, a monograph on early modern poetry and space. He was the recipient of an honorary doctorate from the University Clermont-Auvergne in 2011.

Isabelle Fernandes is Lecturer in British History and Civilization (sixteenth and seventeenth centuries) in the Department of English Studies at Université Clermont Auvergne, France. She specialises in John Foxe and protestant martyrs. She has published *Le sang et l'encre. John Foxe et l'écriture du martyre protestant anglais* (2013), 'Un chien vivant vaut-il mieux qu'un lion mort? John White et le sermon prononcé aux obsèques de Marie 1re', *Prêcher la mort à l'époque moderne* (2020), ' "The deformed imp of the devil": John Foxe and the Protestant fashioning of the Catholic enemy', *Angles* (2020), and *Publish and Perish: The Practice of Censorship in the British Isles in the Early Modern Period* (2020). 'Ressuscité des morts. Vivre et mourir pour sa foi dans *The Actes and Monumentes* (1563) de John Foxe ou la question de la conversion' is forthcoming.

Jane Grogan is a Professor in English Literature at University College Dublin. She is the author of two monographs, *Exemplary Spenser* (2009) and *The Persian Empire in English Renaissance Writing, 1549-1622* (2014), editor of two collections of essays, *Celebrating Mutabilitie* (2010) and *Beyond Greece and Rome: Reading the Ancient Near East in Early Modern Europe* (2020) and editor of a scholarly edition of the first English translation of Xenophon's *Cyropaedia* (2020), for the MHRA Tudor and Stuart Translations series, as well as various chapters and journal articles on Spenser, Shakespeare, Xenophon and Persia. She is currently working on a book about the massacre at Smerwick (1580), in its global contexts.

Stephanie Inverso is a Lecturer in the Modern Languages, Literatures, and Cultures Department at the University of Massachusetts Boston. She was awarded her Ph.D. in French at Boston University in 2020. She has published on the Flemish cartographer Abraham Ortelius, the French scientific poet Guillaume du Bartas, and François Rabelais. She specializes in early modern cartography. Her current monograph, tentatively titled *Heretical Hearts: Cordiform Maps and the Early Modern Imagination*, is under contract with Brill Press. Her research focuses on metaphors of body and world in early modern French literature. She is particularly interested in cordiform, or heart-shaped, maps of the world in the sixteenth century. She has published in the Journal for *Early Modern Cultural Studies*, *French Studies Bulletin*, and the volume *Early Modern Écologies*, as well as in the *Boston Globe*.

François Laroque is Emeritus Professor of English Literature and Early Modern Drama at Université de la Sorbonne Nouvelle-Paris 3. He is the author of *Shakespeare's Festive World* (1991), and *Court, Crowd and Playhouse* (1993). He has also co-edited a two-volume anthology of *Elizabethan Theatre* (2009) and published translations of plays by Marlowe and Shakespeare. His last book is a *Dictionnaire amoureux de Shakespeare* (2016). Now, his main activities are lecturing and translating novels including those of Jane Austen and Louise May Alcott (for Livre de Poche and éditions RBA).

Willy Maley is Professor of Renaissance Studies at the University of Glasgow. He is author of *A Spenser Chronology* (1994), *Salvaging Spenser: Colonialism, Culture and Identity* (1997), and *Nation, State and Empire in English Renaissance Literature: Shakespeare to Milton* (2003). Edited collections include *Representing Ireland: Literature and the Origins of Conflict, 1534-1660* (1993), *British Identities and English Renaissance Literature* (2002), *Shakespeare and Scotland* (2004), *Shakespeare and Wales: From the Marches to the Assembly* (2010), *This England, That Shakespeare: New Angles on Englishness and the Bard* (2010), and *Celtic Shakespeare: The Bard and the Borderers* (2014). He is completing a monograph entitled *Mapping Milton: Colonialism and Cartography in the Seventeenth Century*.

Anthony Payne read history at Cambridge and obtained his PhD from the National University of Ireland, Galway, under the supervision of Professor Daniel Carey. His is currently an Honorary Research Fellow at the University of East Anglia. His specialist research interest is the history of the early modern book, especially the literature of voyages and travels. He has published several articles on Richard Hakluyt and his major study *Richard Hakluyt: A Bibliography 1580-88* is planned for publication by the Hakluyt Society in late 2023.

Omar Rodríguez Camarena is Professor in Science, Technology and Society at the National Autonomous University of Mexico. His research focuses on the history and development of European thought in the Ibero-American multicultural world, with particular emphasis on Renaissance humanism and its cosmological and cosmographical conceptions. More recently, he has been interested in studies on the anthropocene, specifically in the changes in the Valley of Mexico in the last centuries. He is involved with several interdisciplinary research groups: 'Critique of Epistemocracy, Cognitive Pluralism, Epistemic Equity and Democracy', 'Images of the American Skies', and 'The Water City. The Political Epistemology of Hydrogeological Praxis'.

Antonio Sánchez Martínez is Assistant Professor of History and Philosophy of Science at the Autonomous University of Madrid with an interest in early modern Iberian science, especially in the production of artisanal knowledge, cosmography and maritime culture. He leads a research project dedicated to early modern maritime culture in Iberia and is a member of several international research teams, including the Rutter Project 'Making the Earth Global' at the University of Lisbon and the 'Mapping and the Making of Empire' project at the University of Groningen.

Margaret Small was a Senior Lecturer in Early Modern History at the University of Birmingham where she specialized in history of geography, history of exploration and colonisation, and the classical tradition. She trained initially as a classicist at the University of Alberta and the University of Victoria before becoming a sixteenth-century specialist. She wrote extensively on geography in the Early Modern period, and in 2020 published her monograph entitled *Framing the World: Classical Influences on Sixteenth-Century Geographical Thought*.

Sandra Young is Professor of English Literary Studies at the University of Cape Town. Her scholarship pursues questions of social justice in works imaginative and historical. She authored S*hakespeare in the Global South: Stories of Oceans Crossed in Contemporary Adaptation* (2019) and *The Early Modern Global South in Print: Textual Form and the Production of Human Difference as Knowledge* (2015), which traces the emergence of a racialised 'South' in early modernity. She has published on contemporary cultures of memory in the aftermath of injustice across a range of genres, including testimony, life narrative, visual art, museum practice, and organised protest.

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