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Winds and Continents: Concepts for Structuring the World and Its Parts

Abstract: The present essay is an attempt to show how and why winds and geographic entities, originally referred to as the parts of the earth and only later as continents, became important for the perception of the structure of the world. My starting point is Burchard of Mount Zion's travel report 'Descriptio terrae sanctae', written between 1274 and 1285, which was based on these two concepts. Versions of that report, which circulated from the fourteenth to the sixteenth century, were adorned with various illustrations. I explore the ways in which these cultural concepts developed into well-known cartographic and textual motifs by means of several examples from medieval cartography and travel literature. I also discuss how their meaning and forms of representation have changed. In order to do so, I first address the abstract ideas that appear in illustrated copies of travel reports such as Burchard's 'Descriptio'. I then analyse the correlation and development of the four- and threefold concepts of the world and examine the different wind systems with eight or twelve rays as structural elements of texts and images.

Keywords: Burchard of Mount Zion, cartography, Holy Land, parts of the world, travel report, wind diagram, world maps

In his travel report 'Descriptio terrae sanctae', written between July 1274 and May 1285, the Dominican Burchard of Mount Zion explained his method for a sensible systematic description of the Holy Land:

Considering, however, how I might usefully describe these things, so that they might be easily understood by my readers in their imagination, I thought of defining a central point among them and of setting out all land around it in due measure. And for this centre I have chosen the city of Acre, as it is better known than other places. However, it is not located in the centre but at its western border on the sea. From it I have drawn four lines corresponding to the four parts of the world and each quarter I have divided into three, so that those twelve divisions might correspond to the twelve winds of heaven; and in each division I have placed the cities and places mentioned more especially in scripture, so that the location and disposition of individual places might more easily be found, and the part of the world in which they lie.¹

¹ Denys PRINGLE (ed.), *Pilgrimage to Jerusalem and the Holy Land, 1187–1291* (Crusade Texts in Translation 23), Farnham 2012, pp. 241–320, here pp. 242–243; Latin edition: Burchard de Monte Sion, *Descriptio terrae sanctae*, in: Johann C. M. LAURENT (ed.), *Peregrinatores medii aevi quatuor*, Leipzig

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The figure that Burchard used as a reference was a circle around the city of Acre, the last Crusader bastion until its fall in 1291 and the starting point for his exploration. The circle was divided into four quarters, each segmented into three subdivisions, which resulted in the twelve principal winds of Pliny's system with its eight secondary winds distributed in pairs among the four cardinal directions.² This structure formed the basis for Burchard's text and for the location and disposition of the various sites within its description. This division of the world into four parts and twelve winds was widely accepted and commonly understood during the Middle Ages. Isidore of Seville, whose 'Etymologiae' (13, 11, 2–14) and 'De natura rerum' (37, 1–4) relayed the ancient knowledge to a wider public, was among its early medieval proponents.

Based on these preliminary observations, the simple but far from trivial questions addressed in this essay are how and why phenomena such as winds, the parts of the earth, and later continents became so important – at least in the Latin Middle Ages – for the medieval perception of the world and its diagrammatic visualization. A discussion of different examples from medieval cartography and travel literature illuminates the process through which such cultural concepts were developed and used in cartographic and textual works. The analysis considers a representative selection of sources, in particular copies of popular encyclopedic works by authors such as Isidore, as well as chronicles and world maps of the twelfth and thirteenth centuries. The notion of structural elements can thus be studied in a broader context. How their meaning was established, how it transformed, and how forms of representation and different cultural conventions affected the production and interpretation of cartographic images becomes more apparent. Clearly, geographers and cartographers had to invent 'instruments' in order to make the underlying invisible configuration of the world visible, whereby concepts that referred to invisible or intangible phenomena became structural constituents of the visualization.

In the following, the abstract thinking in such travel reports as 'Descriptio terrae sanctae' is addressed first; second the correlation between the four cardinal directions and a tripartite earth is discussed; and third, the function of four, eight, and twelve winds as structural elements of cartographic perception is examined. A summary of

1873, pp. 11–94, here p. 21: *Advertens autem, quomodo possem hec utiliter describere, ita ut possent a legentibus imaginatione facili comprehendere, cogitavi centrum aliquod in ea ponere et circa illud totam terram modo debito ordinare. Et ad hoc elegi civitatem Achonensem, tanquam plus aliis notam. Que tamen non est in medio, sed in occidentali eius fine supra mare sita. Et ab ipsa protraxi quatuor lineas, quatuor mundi partibus respondentes, et quamlibet quartam divisi in tria, ut responderent duodecim divisiones iste duodecim ventis celi, et in singulis divisionibus posui civitates et loca in scripturis magis nota, ut singulorum locorum situs et dispositio posset de facili reperiri ad quam partem mundi esset collocata.* First English translation: Aubrey STEWART, Burchard of Mt. Sion: Description of the Holy Land (Literary of the Palestine Pilgrims' Text Society), London 1896, repr. New York 1971, here pp. 4–5. 2 C. Plinius Secundus, *Naturalis Historiae Libri XXXVII*, Lib. II, 119, described Homer's original classification into four winds, which was expanded to the wind rose with twelve points by the Greek philosopher Poseidonios.

the results in comparison with an alternative system of organization concludes the observations.

Travel Reports and Cartographic Abstraction – A Case Study

Burchard of Mount Zion gave the world and specifically the region covered on his voyage a well-defined structure when he recorded his experiences during or after several years spent in the Holy Land.³ In revealing his knowledge concerning the fortified cities and Crusader fortresses, landscapes, holy places and religions, plants, animals, and inhabitants, he took into account not only the regional borders and frontiers between local powers but also the traditional classification systems: the division of the known world in quarters and the demarcation of twelve winds. In this way, he created a relationship between the physical land and an abstract division, that is, between the visible earth and the invisible winds. He also claimed to have observed everything that he conveyed to his readers and to have recorded nothing that he did not see with his own eyes. Of course, the wind directions could hardly be seen – at best they could be felt – but they were present in the readers' minds. In this form, they became fundamental components of a geographic and cartographic model, which was then completed by additional elements within his account. The whole organization of the report was arranged to allow readers to imagine the spaces and to relive the travel experiences, which was why Burchard divided the land and sea around the city of Acre into twelve sectors and enriched this structure with accounts of physical distances and specific places.

Burchard's text enjoyed enormous success in the Late Middle Ages. Approximately 100 medieval and early modern manuscripts of the work have survived as have some early prints. Even more important is the fact that some of the later copies and printed

³ On Burchard and his travel report, see Aryeh GRABOÏS, *Christian Pilgrims in the Thirteenth Century and the Latin Kingdom of Jerusalem: Burchard of Mount Sion*, in: *Outremer. Studies presented to Joshua Prawer*, Jerusalem 1982, pp. 285–296; Paul D. A. HARVEY, *Medieval Maps of the Holy Land*, London 2012, pp. 94–106; Ingrid BAUMGÄRTNER, *Reiseberichte, Karten und Diagramme. Burchard von Monte Sion und das Heilige Land*, in: Steffen PATZOLD/ Anja RATHMANN-LUTZ/ Volker SCIOR (eds.), *Geschichtsvorstellungen. Bilder, Texte und Begriffe aus dem Mittelalter. Festschrift für Hans-Werner Goetz zum 65. Geburtstag*, Wien, Köln, Weimar 2012, pp. 460–507; Ingrid BAUMGÄRTNER, *Burchard of Mount Sion and the Holy Land*, in: *Peregrinations. Journal of Medieval Art & Architecture* 4,1: Special issue “Mapping”, eds. Asa Simon MITTMAN/ Dan TERKLA (Spring 2013), pp. 5–42; Ekkehart ROTTER, *Windrose statt Landkarte. Die geografische Systematisierung des Heiligen Landes und ihre Visualisierung durch Burchardus de Monte Sion um 1285*, in: *Deutsches Archiv für Erforschung des Mittelalters* 69, 1 (2013), S. 45–106, who used data, digital copies of manuscripts, transcriptions, and literature provided by a research project at Kassel University; Jonathan RUBIN, *Burchard of Mount Sion's Descriptio Terrae Sanctae: A Newly Discovered Extended Version*, in: *Crusades* 13 (2014), pp. 173–190.

editions illustrate the travel narrative with a range of pictures and cartographic representations, including a city plan of Jerusalem, regional maps of Palestine and the Near East,⁴ and wind diagrams of the eastern Mediterranean,⁵ as well as a T-O schema of the world.⁶ This broad range demonstrates how textual and pictorial systems of recording worked together to create, systematize, and contextualize knowledge; how information was transferred from textual descriptions to diagrams and maps; and which practices were implemented to store, order, and transmit knowledge.

In the following, I focus on the T-O and the wind schemata because both principles are mentioned explicitly in Burchard's prologue as ways that he structured his text. To explain his approach, Burchard's travelogue starts with the short statement, "I have drawn four lines corresponding to the four parts of the world".⁷ Pictorial representations of this concept are still preserved in several hundred medieval manuscripts. An interesting T-O schema, sketched with a quill (Fig. 1),⁸ can be found in a Munich codex. It was inserted in a series of 'Descriptio' excerpts and accompanied by a fragment of the historiographic treatise 'De bellis sacris', which includes historical notes on the occupation and destruction of Jerusalem from biblical times until the Islamic conquest.⁹ The diagram's inner lines divide a circular world into two equal parts on which three continents are superimposed. At the top, Asia encompasses a spacious semicircle, whereas below Europe and Africa are each limited to one quarter. There

⁴ Florence, Biblioteca Medicea Laurenziana, Plut. 76.56, fol. 97v–98r; Hamburg, Staats- und Universitätsbibliothek, Cod. geogr. 59, pp. 70–71.

⁵ London, British Library, Add. Ms. 18929, fol. 1r–50v (c. 1380–1420, long version), fol. 51r with a wind diagram; Berlin, Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, Handschriftenabteilung, Ms. lat. oct. 293, fol. 1*v (14th/15th century, long version); Munich, Bayerische Staatsbibliothek, Clm 569, fol. 184r–210v (15th century, short version), fol. 186v with a wind diagram; Hamburg, Staats- und Universitätsbibliothek, Cod. geogr. 59, pp. 10–69 (16th century, long version), p. 13 with a wind diagram. For late medieval cosmologic diagrams in general see inter alia Katrin MÜLLER, *Visuelle Weltaneignung. Astronomische und kosmologische Diagramme in Handschriften des Mittelalters* (Historische Semantik 11), Göttingen 2008; Eckart Conrad LUTZ/ Vera JERJEN/ Christine PUTZ (eds.), *Diagramm und Text. Diagrammatische Strukturen und die Dynamisierung von Wissen und Erfahrung* (Überstorfer Colloquium 2012), Wiesbaden 2014; Henrike HAUG/ Christina LECHTERMANN/ Anja RATHMANN-LUTZ, *Diagramme im Gebrauch* (Das Mittelalter. Perspektiven mediävistischer Forschung 22,2), Berlin, Boston 2017.

⁶ Munich, Bayerische Staatsbibliothek, Clm 14583, fol. 454r–488v, here fol. 471v (15th century).

⁷ PRINGLE (note 1), p. 243; Burchard de Monte Sion, ed. LAURENT (note 1), p. 21: *Et ab ipsa protraxi quatuor lineas, quatuor mundi partibus respondentes*.

⁸ Munich, BSB, Clm 14583, fol. 454r–488v, here fol. 471v; cf. the digital reproduction and the description of the manuscript by Julia KNÖDLER, München, Bayerische Staatsbibliothek, Katalog der Handschriften aus dem Benediktinerkloster St. Emmeram in Regensburg, since 2012 researchable on <http://www.manuscripta-mediaevalia.de/info/projectinfo/muenchen-emmeram.html>.

⁹ On this text cf. Heinrich CANISIUS/ Jacques BASNAGE DE BEAUVAL (ed.), *Thesaurus Monumentorum Ecclesiasticorum*, tom. 4, Antwerpen 1725, pp. 426–446, here pp. 439–440, extant in many versions; cf. Michele CAMPOPIANO, *Tradizione e edizione di una compilazione di testi sulla Terra Santa proveniente dal convento francescano del Monte Sion (fine del XIV secolo)*, in: *Revue d'histoire des textes* 6 (2011), pp. 329–359, here pp. 336, 338, 359 no. 8.

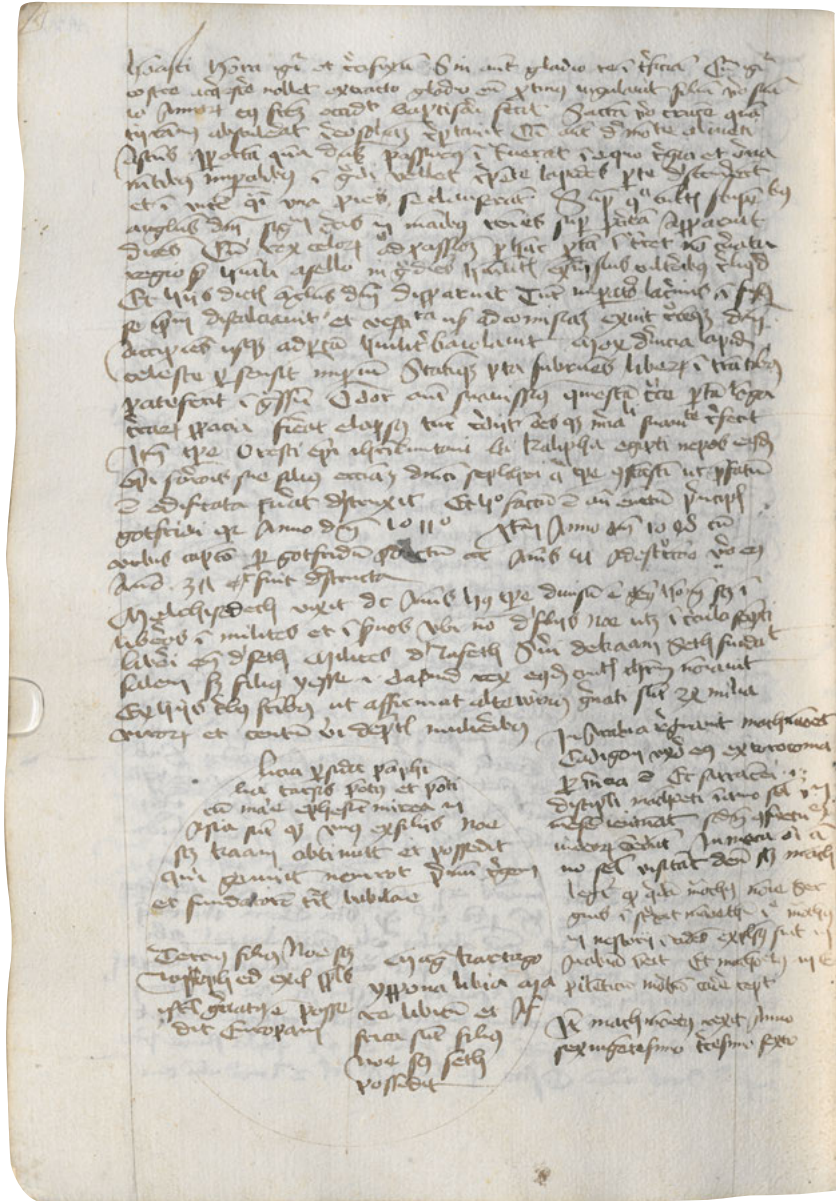


Fig. 1: T-O schema; Munich, Bayerische Staatsbibliothek, Clm 14583, fol. 471v; 15th century. By permission of the Bayerische Staatsbibliothek München.

is a certain tension between the four quarters as a geometrical division and the three parts of the earth, which were later equated with the continents. Each of the latter was attributed to one of Noah's sons. The diagram filled the continents with words, which included topographical terms from the Bible and the region's geography as well as

the Noachide names.¹⁰ The most important achievements of their descendants were recorded as well: Nimrod from the tribe of Ham is portrayed as the first king and initiator of the Tower of Babel and Japheth is depicted as the progenitor of the Israelites.¹¹ Such T-O schemata were common not only in encyclopedic treatises and descriptions of the world but also in geographical texts and compilations about the Holy Land, such as those by Burchard, Johannes Poloner, and the anonymous author of ‘De bellis sacris’, as exemplified by the present example, and the many creators of a wide range of fragments, excerpts, and other literary works.¹²

The prologue in Burchard’s report on the Holy Land continues by elucidating the world’s segmentation: “each quarter I have divided into three, so that those twelve divisions might correspond to the twelve winds of heaven; and in each division I have placed the cities and places mentioned more especially in scripture.”¹³ His chapters follow these divisions in accordance with the twelve principal winds, also taking the political importance of the Crusader city Acre in the center into account. From there, the routes extend across Palestine, Syria, and Lebanon, all the way to Lesser Armenia in the north and Egypt in the south. Seven out of the sectors surrounding coastal Acre cover land and five cover water. Colored chapter headings such as those in the manuscript in Padua¹⁴ order the expansive fan-shaped arrangement.

The text describes the system of sectors from Syria in the north to the coastal areas in the south. The first four (*prima*, *secunda*, *tercia*, and *quarta divisio*) are followed

10 On this kind of map with a chorographical text, called ‘list map’ or ‘Listenkarte’, see Evelyn EDSON, *Mapping Time and Space. How Medieval Mapmakers Viewed Their World*, London 1997, S. 5–6; Bettina SCHÖLLER, *Wissen speichern, Wissen ordnen, Wissen übertragen. Schriftliche und bildliche Aufzeichnungen der Welt im Umfeld der Londoner Psalterkarte (Medienwandel – Medienwechsel – Medienwissen 32)*, Zürich 2015, pp. 70–75, 186–195.

11 Munich, BSB, Clm 14583, fol. 471v: *Licia Persida Pamphilia Tarsis Pontus et Ponticum mare Ephesum mirca in Asia sunt quam unus ex filiis Noe scilicet Kaam [sic] obtinuit et possedit qui genuit Nemrot primum regem et fundatorem turris Babilonis. | Magna Karthago Yppona Libia mare Libicum in Affrica sunt, filius Noe secundus Seth [sic] possedit. | Tercius filius Noe scilicet Japhed ex quo populus Israel generatus est possedit Europam*. The schema is not edited and follows the manuscript in Wolfenbüttel, Herzog August Bibliothek, Cod. Guelf. 354 Helmst., f. 290vb of which we have the description by Bertram LESSER (<http://diglib.hab.de/?db=mss&list=ms&id=354-helmst&catalog=Lesser>). In both manuscripts, the T-O schema is accompanied by an excerpt from Honorius Augustodunensis’ ‘Imago mundi’, lib. 3 (PL 172, p. 166), probably written by Johannes Poloner for his text ‘De filiis Noe et de divisione mundi’ (*Melchisedech vixit DC annis huius tempore ...*). This part of Poloner’s work is not edited.

12 The copy of Poloner’s report in Wolfenbüttel, Herzog August Bibliothek, Cod. Guelf. 354 Helmst., f. 290 is close to Munich, BSB, Clm 721, 70v–86r (written 1454–1457), which also contains a schematic world map in the T-O format and a simple pictorial representation of the Church of the Holy Sepulcher in Jerusalem; cf. Andres BETSCHART, *Zwischen zwei Welten. Illustrationen und Berichte westeuropäischer Jerusalemreisender*, Würzburg 1996 (Würzburger Beiträge zur deutschen Philologie 15), p. 268 no. 5.

13 PRINGLE (note 1), p. 243; Burchard de Monte Sion, ed. LAURENT (note 1), p. 21: *et quamlibet quartam divisi in tria, ut responderent duodecim divisiones iste duodecim ventis celi*.

14 Cf., for instance, Padua, Biblioteca Antica del Seminario Vescovile, Cod. 74.

by two densely populated sectors in the eastern quarter (*secunda* and *tercia divisio quarte orientalis*), with an additional section on Jerusalem and its surroundings, and lastly the southern sector (*prima divisio quarte australis*) with its coastal towns. The concluding three chapters provide an overview of the Holy Land's size and its tribes, the crops and animals of the earth that was blessed with fertility, as well as the religions and customs of the region. This structure carries out what was suggested in the long version of the preface (*prologus*) of the 'Descriptio', cited above.¹⁵

The division of the world into four parts and twelve wind directions informs the text's construction, and that also becomes apparent in the graphic depictions. Of late, it has been assumed that the regional diagrams in the 'Descriptio' manuscripts now in London, Munich, and Hamburg¹⁶ were meant to illustrate the travel account's internal organization; the manuscript in Berlin, former Hildesheim, includes a diagram showing twelve winds, named in Latin and German, but does not connect them to the region of the Holy Land.¹⁷ However, the different modes of visualization have never been studied carefully. Without doubt, these cartographic schemata present highly abstract images. The text follows principal roads, whereas the illustrations employ the straight lines of the wind directions to conceptualize the world as divided into terrestrial and maritime units. Burchard utilized the wind rose for his text as did later copyists for their illustrations exclusively in regard to dry land, even though contemporary sea charts usually associated these devices with the sea. Burchard's description concentrated on the Holy Land and its surroundings so it reaches only as far as the coastline of the Mediterranean, not beyond.¹⁸

The division into four parts – like the four parts of the world and the four principal winds – was the way in which to provide readers with a reliable orientation, regardless of their own location and education. Burchard opened his description with

15 LAURENT (note 1), pp. 19–21, esp. 21; PRINGLE (note 1), pp. 241–243, esp. 243; STEWART (note 1), pp. 1–5, esp. 4–5.

16 London, British Library, Add. Ms. 18929, fol. 51r; Munich, Bayerische Staatsbibliothek, Clm 569, fol. 186v; Hamburg, Staats- und Universitätsbibliothek, Cod. geogr. 59, p. 13.

17 Berlin, Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, Handschriftenabteilung Ms. lat. oct. 293 (olim Hildesheim, Bibliothek des bischöflichen Gymnasium Josephinum, Nr. 17*), fol. 1*v. I am grateful to Jonathan Rubin and Michael Schonhardt for bringing this manuscript to my attention. Cf. Joseph Godehard MÜLLER, Nachrichten über die Bibliothek des Gymnasii Josephini und die auf derselben vorhandenen Handschriften und alten Drucke, Hildesheim 1876, S. 6–7; Bettina WAGNER, Die 'Epistola presbitri Johannis' lateinisch und deutsch. Überlieferung, Textgeschichte, Rezeption und Übertragungen im Mittelalter, mit bisher unedierte Texten (Münchner Texte und Untersuchungen zur deutschen Literatur des Mittelalters 115), Tübingen 2000, S. 47–48. ROTTER (note 3), S. 84 wrongly states that the manuscript was lost.

18 Emmanuelle VAGNON-CHUREAU, Mesurer la Terre sainte. Mesures de l'espace et cartographie de l'Orient latin, du IXe au XVe siècle, in: Mesure et histoire médiévale, XLIII^e Congrès de la SHMESP, Paris 2013, pp. 293–309, esp. p. 301.

the shoreline of the Mediterranean south of Acre, which was the most important area for pilgrims, as that was the place where they usually arrived:

Let it be known first of all, as has been said above, that I have divided the Holy Land into four parts, corresponding to the four quarters of heaven, that is to say the eastern, western, southern and northern, notwithstanding that the whole of the western division faces the Great Sea as do those parts of the southern and northern divisions that adjoin the western. I shall begin first of all by proceeding in a straight line south from the city of Acre, which in antiquity was called Ptolomais, passing by the cities and places that are located on the shore of the Great Sea.¹⁹

Emmanuelle VAGNON points out that the expression “the four quarters of heaven” (*quatuor plagis celi*) relates to the terminology of scholarly astronomy, which – following Aristotle – became part of Dominican university education.²⁰ This quartering as an academic model caused Burchard to implement the encyclopedic and Christian tradition of dividing the space into twelve parts that stood in contrast to the practical concepts of the eight or sixteen wind directions used by sailors. Burchard related his four-twelve construction to biblical themes that pertain to the structure of the Holy Land. The twelve tribes of Israel, which shaped not only biblical history but also the text’s composition, seem to have been especially important:

It should be known first of all that one part of the land that we call the Holy Land, which fell to the lot of the twelve tribes of Israel, was called the kingdom of Judah and contained two tribes, Judah and Benjamin. The other part was called the kingdom of Samaria, that is to say of the city that is now called Sebaste and was the capital of the ten remaining tribes, which were called Israel.²¹

The numbers four and twelve harmonize with Dominican preferences that became visible on different levels in regard to the quartering of the whole world and the number twelve as a territorial classification associated with the biblical tribes and the regions evangelized by the apostles.

19 PRINGLE (note 1), p. 245; cf. LAURENT (note 1), p. 23: *Sciendum igitur primo, sicut supra dictum est, quod terram sanctam in quatuor partes diuisi, que partes respondent quatuor plagis celi, scilicet orienti, occidenti, meridiei et septentrionali, licet pars tota occidentalis respiciat mare magnum, et austri et aquilonis similiter partes ille, que sunt collaterales occidentali. Incipiam primo a directa linea, a ciuitate acconensi, que antiquitus Ptolomayda dicebatur, uersus aquilonem procedendo propre ciuitates et loca, que sunt in littore magni maris sita.*

20 VAGNON-CHUREAU (note 18), p. 301; on the different types of wind roses cf. Patrick GAUTIER DALCHÉ, Pere Marsili, une carte majorquine (1313) et l’*ardua controversia* des vents, in: *Itineraria* 5 (2006), pp. 153–169.

21 PRINGLE (note 1), p. 243; cf. STEWART (note 1), p. 5; LAURENT (note 1), p. 21: *Sciendum autem est in principio, quod terra ista, quam sanctam dicimus, que cecidit in sortem duodecim tribuum Israel, pro parte aliqua dicebatur regnum Iuda, que erat duarum tribuum, scilicet Iude et Benjamin; pro parte altera dicebatur regnum Samarie, ciuitatis scilicet, que nunc Sebaste dicitur et erat caput decem tribuum reliquarum, que Israel dicebantur.*

However, not all of the wind diagrams in manuscripts with the ‘*Descriptio terrae sanctae*’ follow Burchard’s concept in every detail, and, surprisingly, there are slight differences in regard to important elements. In a Munich manuscript (Fig. 2), a later scribe or illuminator transformed Burchard’s original design into a wind diagram oriented to the north.²² It shows the seaport of Acre on the Mediterranean coast as a heavily fortified triangle with nine steepled city gates, the three largest dominating the corners of the walls. Twelve sectors of land and water are separated by double lines: whereas the seven on land are labeled, the five on water are not. All lines emanate from the town’s center and lead to individual wind names outside the circle: *septentrio* is in the north, *aquilo* in the north-northeast, *vulturinus* in the east-northeast, *oriens* in the east, *euroauster* in the east-southeast is not named; next are *eurus* in the south-southeast, *nothus* in the south, *auster* in the south-southwest, *africus* in the west-southwest, *zephyrus* in the west, *circius* in the west-northwest, and *chorus* in the north-northwest.²³

Each of the seven land sectors is accompanied by an explicit reference to a biblical or political location. The inscriptions along the double lines refer (from north to south) to the coastal town of Tyre, the Montfort and Château du Roi (*castrum regium*) castles of the Teutonic order, the Templar Castle Sephet (present-day Safed), Cana of Galilee, Mount Carmel, and Haifa on the southern coast.²⁴ Each locale stands for one of the seven districts with all of its various sites, which are portrayed in the respective chapter. Despite the twelve double lines, only eight wind heads are blowing from the outer circle: these are the four principal winds, which alternate with four secondary winds.

In this depiction, a certain tension arises between twelve and eight, that is, between the scholarly and the nautical wind systems and between their connotations and the different structures they impose. The innovative red and turquoise image incorporates not only numbers and their meaning but also various secular and religious concepts. The coastline accentuates the eastern orientation of the Holy Land, Acre’s triangular form in the center evokes the Holy Trinity as a sign of the Christian

22 Munich, Bayerische Staatsbibliothek, Clm 569, fol. 184r–210v (short version), here fol. 186v. The city’s triangular form in the different versions of Burchard’s report relates to the words *habens formam ut clypeus*; cf. ROTTER (note 3), pp. 79–80 fn. 108. Jeffrey F. HAMBURGER, *Haec figura demonstrat. Diagramme in einem Pariser Exemplar von Lothars von Segni ‘De missarum mysteriis’ aus dem frühen 13. Jahrhundert* (Wolfgang Stammerl Gastprofessor für Germanische Philologie. Vorträge 20), Berlin et al. 2013, demonstrated that diagrams were rarely a consistent part of a text and instead represented an additional means of expression. He showed as well that they were often different in the various manuscripts and thus provided new interpretations of the text.

23 Munich, Bayerische Staatsbibliothek, Clm 569, fol. 186v; cf. HARVEY (note 3), p. 95 fn. 13; BAUMGÄRTNER, *Reiseberichte* (note 3), pp. 475; BAUMGÄRTNER, *Burchard* (note 3), pp. 19–22; ROTTER (note 3), pp. 78–82.

24 ROTTER (note 3), pp. 80–81, with a transcription and interpretation of these short texts along the double lines.

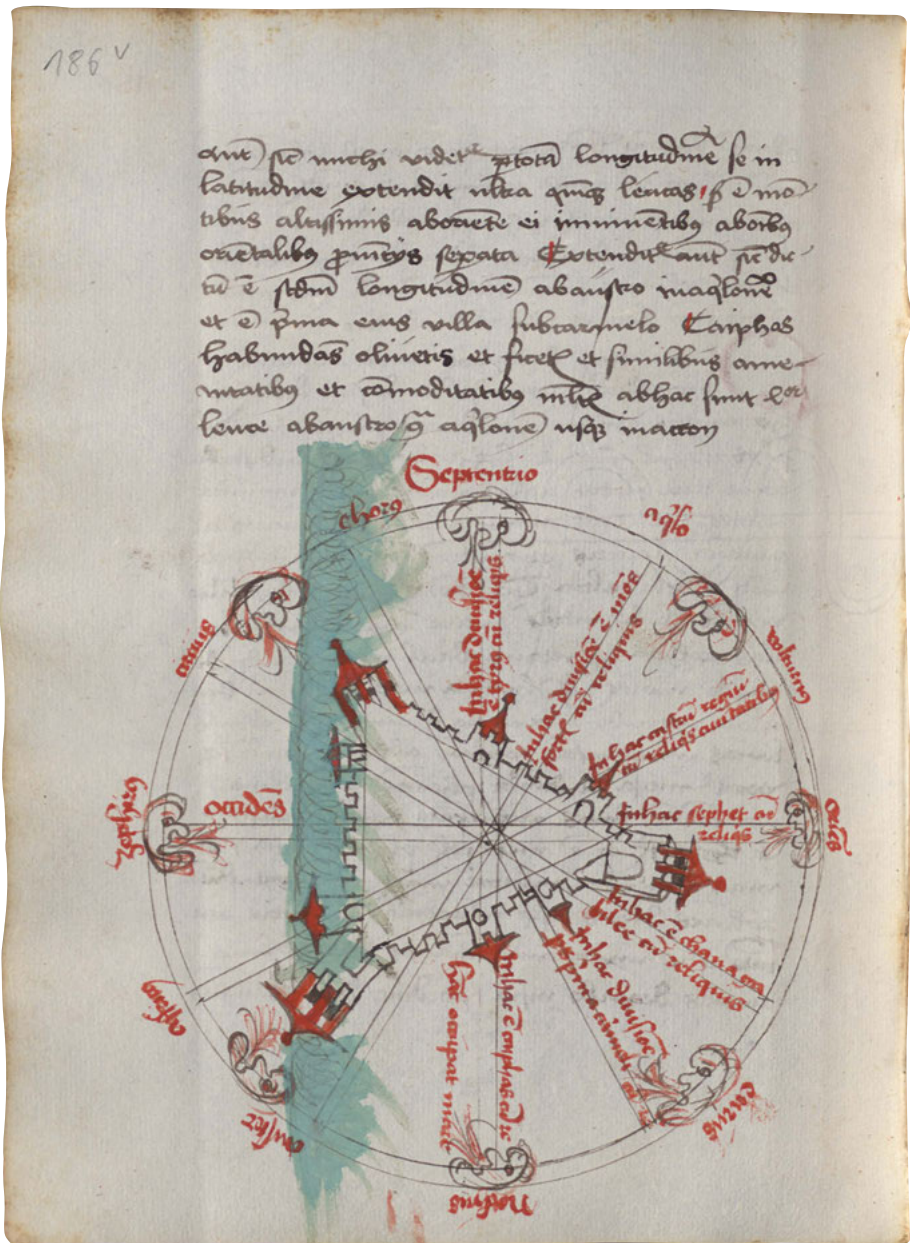


Fig. 2: Wind diagram; Munich, Bayerische Staatsbibliothek, Clm 569, fol. 186v; 15th century. By permission of the Bayerische Staatsbibliothek München.

faith, and the world's circle encompasses the expansive missionary activities of the apostles in accordance with the twelve winds. The eight wind heads might refer to the practical application and usefulness of wind directions.

The location of Acre also defines the layout of the second known wind diagram in a copy of Burchard's report that was probably written around 1380–1420 in Germany, formerly belonged to the Monastery of Saint Peter in Erfurt and is now in London (Fig. 3).²⁵ The port city seems to be indicated by a double-lined semicircle in the middle of the text-laden diagram, which is oriented to the south and focuses mainly on the area east of the shoreline. The lines of seven winds, labeled in red, divide the territory into six sections: *septentrio* blows from the north at the bottom, *boreas* from the north-northeast, *wulturnus* (*volturnus* later on) from the east-northeast, *oriens* from the east, *eurus* from the east-southeast, *euroauster* from the south-southeast, and *auster* from the south.²⁶ The seven lines of the winds or sectors distinguish six territories of different sizes, whose inscriptions list locations and regions (most of them not in the text of the 'Descriptio') in a seemingly uniform manner. The six zones, however, do not correspond to the seven sections of Burchard's text. It is obvious that the illustrator had a twelve-wind schema in mind, which he considered an efficient illustration of the relevant geography. But the semicircle's six parts are unequal and their lines do not all pass through the diagram's center point. The coastline that runs from the south to the north and the east-west intersecting line that meets it at the coast do not connect to the midpoint of the circle as marked by a pair of compasses. The correlation with the quarters of the earth is no longer recognizable. Thus it seems as if the twelve-wind pattern had become an independent model.

In a later manuscript now in Hamburg, an east-oriented semicircle was sketched in the lower margin (Fig. 4).²⁷ The drawing was apparently not produced by the text's scribe, but by a later reader. At first glance, there seems to be hardly any order at all. Various names of Crusader castles and other places, fanning out around Acre, have been crossed out. The inscriptions surrounding the semicircle indicate the cardinal directions and winds, namely north (*aquilo*), northeast (*volturnus*), east (*oriens*), southeast (*nothus*), and south (*auster*). The east-southeast wind (*ventus ost sut ost*), at the top right, was presumably not part of the system as indicated by its name, a mixture of Latin and German, and its irregular position compared to the other winds.

²⁵ London, BL, Add. Ms. 18929, fol. 1r–50v (long version), fol. 51r with the wind diagram; HARVEY (note 3), pp. 95–96; BAUMGÄRTNER, Reiseberichte (note 3), p. 475; BAUMGÄRTNER, Burchard (note 3), pp. 21–22; ROTTER (note 3), pp. 84–85; RUBIN (note 3), pp. 173–182.

²⁶ ROTTER (note 3), pp. 85–86 fn. 132 with full transcriptions.

²⁷ Hamburg, Staats- und Universitätsbibliothek, Cod. geogr. 59, p. 13; Reinhold RÖHRICHT, Marino Sanudo sen. als Kartograph Palästinas, in: Zeitschrift des deutschen Palästinavereins 14 (1990), pp. 84–126, esp. p. 93 fn. 1; HARVEY (note 3), pp. 95–96 with illustration; BAUMGÄRTNER, Reiseberichte (note 3), pp. 475–476; BAUMGÄRTNER, Burchard (note 3), p. 22. However, ROTTER (note 3), pp. 86–90, judged the diagram to be incorrect ("fehlerhaft") without consideration for the illustrator's intentions.

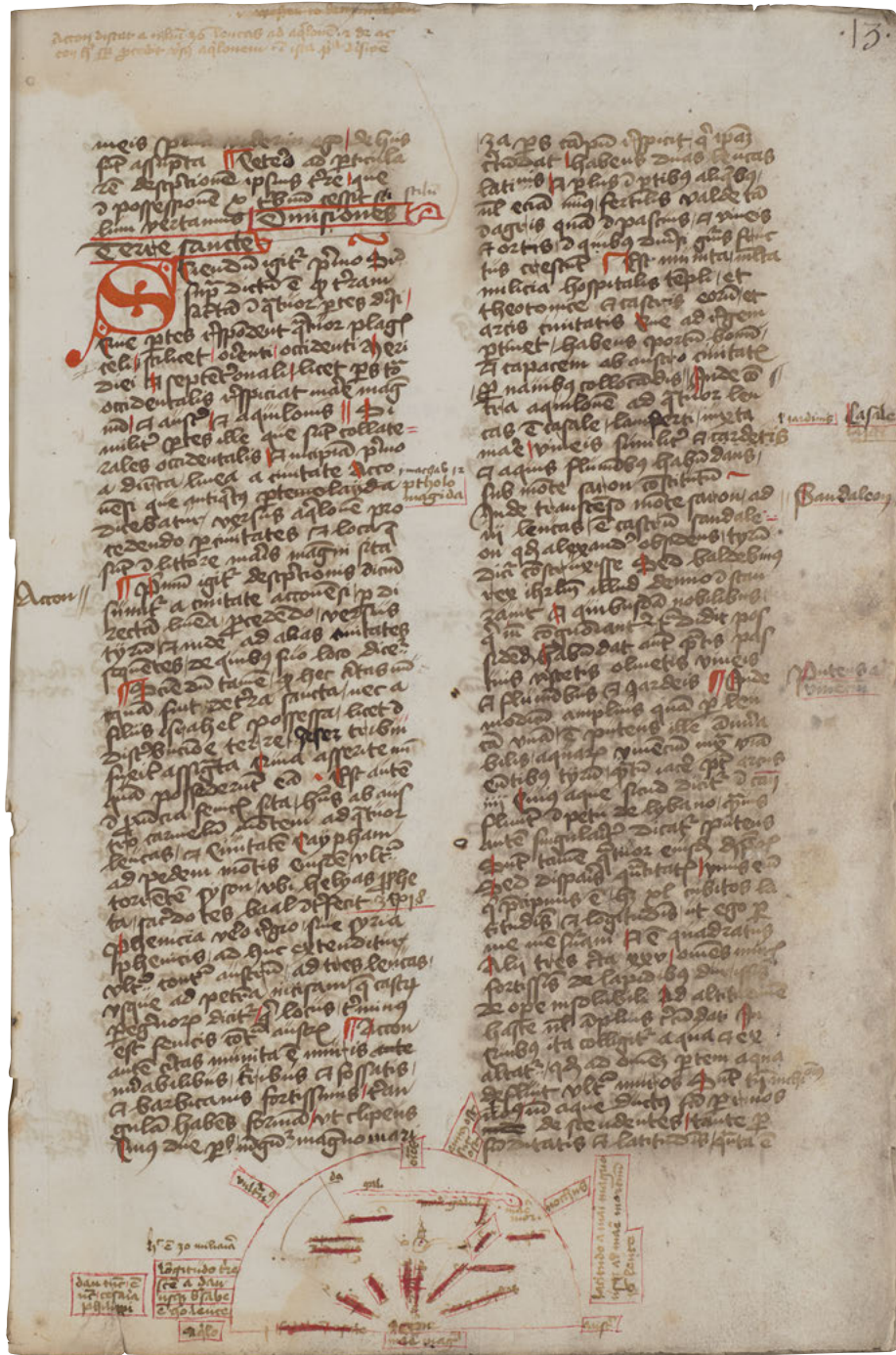


Fig. 4: Wind diagram; Hamburg, Staats- und Universitätsbibliothek, Cod. geogr. 59, p. 13; 16th century. By permission of the Staats- und Universitätsbibliothek Hamburg.

labels, which follow Burchard's account at least to some extent, the pictorial elements seem to implement their creator's idea of an eight-wind classification rather than the travelogue's original system of twelve winds.²⁹ It is obvious that the illustrator's mental image was not in line with Burchard's concept, so he encountered difficulty in combining the two different wind systems. Interestingly, two additional wind roses with eight radial lines are pictured on a map of the Holy Land at the end of the manuscript.³⁰ The images, which emphasize Acre and Jerusalem, were created in the sixteenth century, perhaps at the same time as the aforementioned sketch in this copy of Burchard's report.³¹ It is even possible that all three visualizations originated in the same context.

To summarize some preliminary results: the graphical illustrations of the text's content are not uniform but relate to specifics of its dissemination from the fourteenth to the sixteenth centuries. The surviving diagrams show a particular tension between the world's division into four parts and into eight or twelve wind directions. This exemplifies the prevalent mode of cartographical thinking and emphasizes the importance of a reader's or beholder's imagination in the Middle Ages. Not only were geographical schemata organized in accordance with traditional geometric concepts, but they also pictured the world or parts of the world relying on their creators' memories. The ideas of Greek and Roman philosophers, geographers, and sages were often adopted. Antique concepts that structured the world included, for example, the four quarters or corners of the world, the tripartite division of landmasses, the eight or twelve wind directions, and five or seven climatic zones, which determined the earth's habitable regions. Both of the described principles, the four parts of the world and the classifications according to winds, should be considered in a broader context.

The Four Parts of the World and the Tripartite Order of the Continents

Since the phenomenal world as well as the cosmos were (and are) only partially visible to the naked eye, different methods have been invented to systematize the perception of the world in its entirety, in accordance with the laws of nature and the framework of

²⁹ ROTTER (note 3), p. 89, contends incorrectly that in regard to the 'Descriptio' (and therefore the Munich wind rose), the artist of the wind rose sketch misconstrued several fundamental points. ("Der Zeichner der Windrosenskizze geht in Relation zur Descriptio (und somit zur Münchner Windrose) in grundlegenden Punkten fehl.")

³⁰ Hamburg, Staats- und Universitätsbibliothek, Cod. geogr. 59, pp. 70–71.

³¹ ROTTER (note 3), p. 87 wrongly states that both of the wind roses on the map can be disregarded because their circles have only eight radial lines. ("Diese beiden Windrosen auf der Karte können hier außer Betracht bleiben. Sie haben in der ganzen Kreisfläche nur acht Radien".)

space and time. The continents are among the most common and widespread classifications of geography in the modern world. Their large physical landmasses seem to be natural entities. It is, however, important to be aware that continents are an artificial construct, which often includes simplistic notions of their role in a meta-geography.³² Just like the landmasses and their contours, which are in constant motion, geographic models and criteria evolved throughout history owing to changing cultural concepts. Transformations of the collective consciousness pertained to the global scale as well as to borders between known continents.

From the beginning, the fact that Europe, Asia, and Africa are part of one contiguous landmass raised the question as to how and where a border should be drawn and which parts of the earth belonged to which side. The emergent dispute was influenced by ancient Greek divisions of the inhabited world into either two or three parts.³³ If and how the world should be subdivided was a matter of controversy in which a hierarchy of the three continents had not yet been discussed. The historian Herodotus of Halicarnassus championed the trisection of the world introduced by the ethnographer Hecataeus of Miletus, which contradicted the bipartite system of Asia and Europe that circulated at the same time. Both approaches were conceived from a Greek perspective, that is, from the edge of Europe in close vicinity to Asia. Yet, they differed in their assessment of Libya, which represented Africa. According to one viewpoint, its smaller size and aridity disqualified it as an independent unit. Conversely, Herodotus, who was fully aware that every division in itself was artificial and almost paradoxical in light of the contiguous landmasses, disputed at length about where the physical (not political or cultural) border should be drawn if Europe and Africa were to be divided.³⁴ He did not accept the geometrical division along the Nile and argued instead for a united Egypt on both sides of the river, which formed an entity based on the empirical cartography informed by travel and practical experience.

The twofold and the threefold models existed side by side for a long time. Centuries later, the geographer and historian Strabo continued to criticize the Greeks for placing their own country at the geographical center without considering the whole inhabited earth. However, he accepted the tripartite world and suggested the Red Sea instead

32 Martin W. LEWIS/ Kären E. WIGEN, *The Myth of Continents. A Critique of Metageography*, Berkeley 1997, repr. 2003. This approach was discussed and expanded during an interdisciplinary workshop on 'Mapping Continents in the Premodern World', organized by Christoph MAUNTEL and Klaus OSCEMA on November 28, 2014 in Heidelberg; the result will be published in an article by Jean-Charles DUCÈNE, Martin HOFMANN, Christoph MAUNTEL, and Klaus OSCEMA.

33 Ingrid BAUMGÄRTNER, *Europa in der Kartographie des Mittelalters. Repräsentationen – Grenzen – Paradigmen*, in: Ingrid BAUMGÄRTNER/ Hartmut KUGLER (eds.), *Europa im Weltbild des Mittelalters. Kartographische Konzepte (Orbis mediaevalis 10)*, Berlin 2008, pp. 9–28, esp. pp. 11–17; Klaus OSCEMA, *Bilder von Europa im Mittelalter (Mittelalter-Forschungen 43)*, Ostfildern 2013, pp. 88–96.

34 Herodot, *Historien*, IV, 42, 1–4 and 45,1–5; cf. Klaus M. GIRARDET, *Kontinente und ihre Grenzen in der griechisch-römischen Antike*, in: Sabine PENTH et al. (eds.), *Europas Grenzen (Limites 1)*, St. Ingbert 2006, pp. 19–65, esp. pp. 37–39.

of the Nile as Africa's boundary.³⁵ Pliny the Elder discussed the issue as well. In his widely read 'Naturalis historia', which served as an encyclopedic source for many medieval authors, he formulated the oft-cited sentence *Terrarum orbis universus in tres dividitur partes: Europam, Asiam, Africam*, followed by information about the rivers Phasis or Tanais (Don) and the Nile as boundaries.³⁶

The most crucial aspect of further developments was how this argument related to the ideas of Western Christianity. At the beginning of the fifth century, the Church Fathers Jerome and Augustine and the Christian historiographer Paulus Orosius attempted to reconcile the different notions. In his 'De civitate Dei', written around 413–426, Augustine distinguished the province of Asia from what was called Asia as a part of the tripartite earth and suggested that half of world should be conceded to Asia and that Europe and Africa were to share the other half.³⁷ With this argument, a mode of thought emerged that had serious consequences. In his universal history, Orosius, one of Augustine's students, agreed with his teacher's reasoning when he offered an apologetic defense of Christianity.³⁸ Moreover, Jerome, who wrote numerous commentaries

35 Strabo, Geography, Book I, 4, 7–8; Stefan RADT (ed.), Strabons Geographika, 10 vols., Göttingen 2002–2011, vol. 1: Prolegomena. Buch I–IV: Text und Übersetzung, Göttingen 2002, p. 162–167; Hans C. HAMILTON/ William FALCONER (eds.), The Geography of Strabo, vol. 1, London 1854, p. 102.

36 C. Plinius Secundus, *Naturalis historiae libri XXXVII*, ed. Carolus MAYHOFF (Bibliotheca scriptorum Graecorum et romanorum Teubneriana), Leipzig 1887, repr. Stuttgart 1906 and 1967, 5 vols., III 1,3; C. Plinius Secundus, *Naturalis historiae libri XXXVII*, ed. Roderich KÖNIG in Zusammenarbeit mit Gerhard WINKLER, 2. Aufl., Munich, Zürich 2002, III 1,3.

37 Augustinus, *De civitate Dei*, XVI, 17: *Asiam nunc dico non illam partem quae huius maioris Asiae una provincia est, sed eam quae universa Asia nuncupatur, quam quidam in altera duarum, plerique autem in tertia totius orbis parte posuerunt, ut sint omnes Asia, Europa et Africa; quod non aequali divisione fecerunt. Namque ista quae Asia nuncupatur a meridie per orientem usque ad septentionem pervenit; Europa vero a septentrione usque ad occidentem, atque inde Africa ab occidente usque ad meridiem. Unde videntur orbem dimidium duae tenere, Europa et Africa, alium vero dimidium sola Asia. Sed ideo illae duae partes factae sunt quia inter utramque ab Oceano ingreditur quiddam aquarum terras interluit; et hoc mare magnum nobis facit. Quapropter si in duas partes orbem divides, Orientis et Occidentis, Asia erit in una, in altera vero Europa et Africa.* Saint Augustine, *The City of God against the pagans* in seven volumes, transl. Eva MATTHEWS SANFORD and William MCALLEN GREEN (The Loeb Classical Library), 2. Aufl., Cambridge/ MA, London 1988, vol. 5, pp. 92–93: "Now by Asia I do not mean that portion which is only a province of greater Asia, but what we call the whole of Asia, which certain men have counted as one of the two divisions of the world, while the majority make it one of three parts of the whole, Asia, Europe and Africa. This division is not an equal one. For the part called Asia stretches from the south eastward to the north; Europe from the north to the west, and Africa, adjoining it, from the west to the south. Consequently two divisions, Europe and Africa, are seen to occupy half of the world, while Asia alone occupies the other half. But the first two are considered distinct portions of the world because between them enters from the Ocean the body of water that flows between their shores, and this forms our Great Sea. Therefore, if you divide the world into two parts, east and west, Asia will be in one, and Europe and Africa in the other".

38 Paulus Orosius, *Adversus paganos historiarum libri VII*, I 2,1–12: *Maiores nostri orbem totius terrae, oceani limbo circumsaepitum, triquadrum statuere eiusque tres partes Asiam Europam et Africam vocaverunt, quamvis aliqui duas hoc est Asiam ac deinde Africam in europam accipiendam putarint. [...]*

on the Old and New Testaments, reinforced the Christian reading through his account of Noah's sons and successors: "From Shem were born the Hebrews, from Japheth the people of the Gentiles."³⁹ From this evolved the narrative that each of Noah's three sons received one of the three parts of the world as his inheritance.

Subsequently, the model was firmly established in the Christian imagination. Isidore of Seville, the great mediator of ancient culture, adopted the theological endeavors and accentuated an orientation toward the east.⁴⁰ Like his predecessors, he promoted the idea that Asia, Europe, and Africa divided the world into three with Asia alone occupying one half. This view was further strengthened by certain pictorial strategies, namely the invention of a schematic representation: Asia, Europe, and Africa with a ratio of 2:1:1, encircled by the ocean and divided by the T-shape of the Mediterranean and the rivers Don and Nile. Among the first known T-O schemata are three in a manuscript of Isidore's 'De natura rerum'. In the second recension of the text, preserved at the Escorial (c. 636–686), there are three sketches dating from around the end of the seventh century in the lower margins.⁴¹

At the time, the concept could still be modified at one's discretion because form and meaning had not yet been determined. The famous square design in Clm 210 in Munich, a ninth-century copy of Bede's 'De natura rerum', even offers a world divided in three equal parts with Europe in the lower third. Oriented to the south, the diagram shows the world in the center with four cardinal directions (clockwise from the left)

Et quia breviter generales tirperti orbis divisiones dedi, ipsarum quoque partium regiones, sicut pollicitus sum, significare curabo. Cited from Orosio, *Le storie contro i pagani*, ed. Adolf LIPPOLD, transl. Aldo BARTALUCCI (Scrittori greci e latini), 2 vols., Milan 1976, 4. Aufl. 2001, vol. 1, p. 16; English translation: Andrew T. FEAR, *Orosius: Seven Books of History against the Pagans* (Translated Texts for Historians 54), Liverpool 2010, pp. 36–37.

39 Saint Jerome's Hebrew questions on Genesis, transl. with introduction and commentary by Charles T. Robert HAYWARD, Oxford 1995, repr. 2001, p. 38 on Gen. 9, 27; Hieronymus Stridonensis, *Hebraicae quaestiones in libro Geneseos*, ed. Paul DE LAGARDE, in: S. Hieronymi Presbyteri Opera I: Opera Exegetica 1 (Corpus christianorum Series Latina 72), Turnhout 1959, p. 11: *De Sem Hebraei, de Iafeth populus gentium nascitur*. In Christian interpretation, the question of whether the Israelites were to be considered as being among the Gentiles was controversial. Cf. Denis DE ROUGEMONT, *The Idea of Europe*, New York 1966, p. 19.

40 Isidore of Seville, *Etymologiarum sive originum libri XX*, ed. Wallace Martin LINDSAY, 2 vols., Oxford 1911, repr. 1948, vol. 2, XIV, 2: *Divisus est autem trifarie: e quibus una pars Asia, altera Europa, tertia Africa nuncupatur. Quas tres partes orbis veteres non aequaliter diviserunt. Nam Asia a meridie per orientem usque ad septentrionem pervenit; [...]. Quapropter si in duas partes orientis et occidentis orbem divides, Asia erit in una, in altera vero Europa et Africa.* The last sentence cites Augustine word for word. Cf. *ibid.*, XIII, 16,7 on the orientation toward the east. In general cf. Andy MERRILLS, *Geography and Memory in Isidore's Etymologies*, in: Keith D. LILLEY (ed.), *Mapping Medieval Geographies. Geographical Encounters in the Latin West and Beyond, 300–1600*, Cambridge 2013, pp. 45–64 for Isidore's fragmented geography.

41 Madrid, El Escorial, Real Biblioteca R II 18, fol. 24v and 25r with three T-O schemata on both pages; cf. Bede, *On the Nature of Things and on Times*. Translated with Introduction, Notes and Commentary by Calvin B. KENDALL and Faith WALLIS (Translated Texts for Historians 56), Liverpool 2010, p. 10.

oriens, auster, occidentens, and *aquilo*, the four elements *ignis, aer, aqua*, and *terra*, the four climates *calidus, [h]umidus, frigida*, and *sicca*, and the four seasons *ver calidum et humidum* (spring), *aetas calida sicca* (summer), *autumnus erigidus siccus* (fall), and *hiemps erigidus humidus* (winter).⁴² There is a significant tension between three and four, that is, between the circle and the square, which had well-known symbolic meanings: The visualizations in quadruples were in accordance with the fourfold interpretation of Scripture. The circle displayed divine perfection in its infinite consistency. Since every point kept the same distance from its center, it unified all the world's contradictions into the harmony of the Holy Trinity. From the early ninth century on, the three parts of the world were sometimes also identified with Noah's sons: Shem, the first-born, was associated with Asia, Ham with Africa, and Japheth, the youngest, with Europe. One of the earliest surviving depictions can be found in a manuscript of Isidore's 'Etymologiae' now in Rouen; there, the T-O map is combined with a V map to depict the two concepts side by side (Fig. 5).⁴³

The abstract T-O form, influenced by religious ideas but flexible in its production and transmission of meaning, was repeated in many manuscripts. The instantly recognizable design established a convention that helped authors and readers to explain and comprehend the earth and its parts and all the differences among its inhabitants, and a depiction of the schema was not always necessary. Medieval historiographers, travelers, and readers knew that Europe was the third part of the world (*tertia pars mundi*) and that it encompassed only one-quarter of its area and population. In his 'Chronica maiora', the chronicler and cartographer Matthew Paris, a Benedictine monk at the Abbey of St. Albans in Hertfordshire, demonstrated his awareness of this model when he reported that Emperor Frederick II had been accused of heresy by the inhabitants of the four parts of the world (*quatuor mundi partes*) at the Council of Lyon in 1245.⁴⁴ Matthew probably intended his remark to underscore Frederick's global relevance. The Benedictine preferred to illustrate his own works, was fully informed about the world's structure, and was able to navigate

⁴² Munich, Bayerische Staatsbibliothek, Clm 210, fol. 132v; cf. Bede, On the Nature of Things (note 41), pp. 102–103; Barbara OBRIST, Wind Diagrams and Medieval Cosmology, in: *Speculum* 72 (1997), pp. 33–84, here p. 63 on a similar illustration, produced around 818, in Vienna, Österreichische Nationalbibliothek, MS 387, fol. 134r.

⁴³ Rouen, Bibliothèque Municipale, MS 524, fol. 74v, early ninth century; cf. Chet VAN DUZER, A Neglected Type of Medieval Mappamundi and its Re-Imaging in the *Mare historiarum* (BnF MS Lat. 4915, fol. 26^v), in: *Viator* 43,2 (2012), pp. 277–301, esp. p. 294 with fig. Especially well known is the printed diagrammatic pattern in Isidore of Seville, *Etymologiae*, Augsburg, Günther Zainer, 1472 (London, British Library).

⁴⁴ Matthaeus Parisiensis, *Chronica maiora*, ed. Felix LIEBERMANN, in: MGH SS 28, Hannover 1888, S. 107–483, here p. 260: *Constanter igitur et acerrime in pleno et iam plenissimo concilio imperator Frethericus, quasi toti ecclesie contumax et rebellis, a quatuor mundi partes inhabitantibus accusatur*. Cf. OSHEMA (note 33), pp. 295–297, for similar expressions like *quatuor Europae partes* or *quatuor Christianitatis partes*.

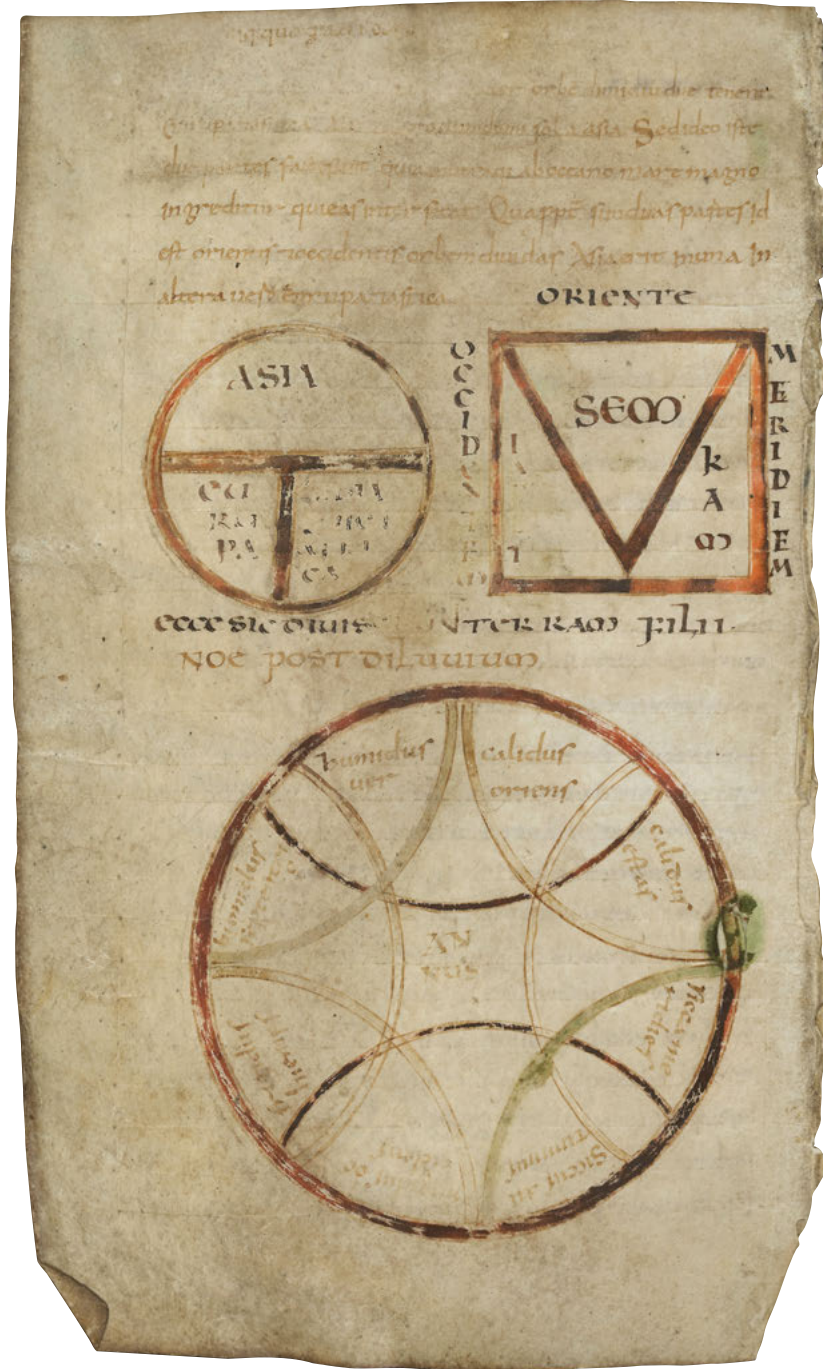


Fig. 5: V-map with the names of Noah's sons; Rouen, Bibl. Municipale MS 524, fol. 74v; early 9th century. By permission of the Bibliothèque Municipale Rouen.

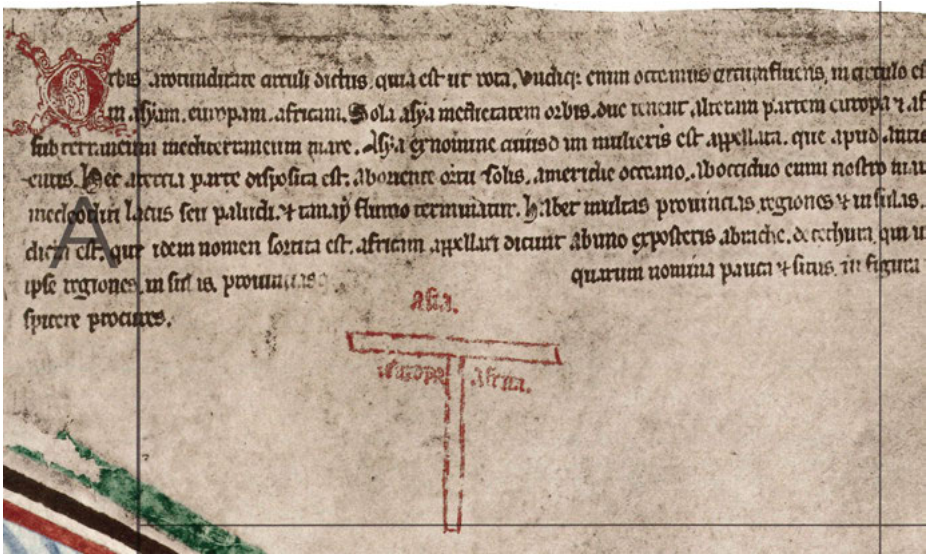


Fig. 6: T-diagram in the margin of the Ebstorf Map; Hartmut KUGLER, *Die Ebstorfer Weltkarte*, 2 vols., Berlin 2007, no. 6 A 1, vol. 1, p. 41.

the different connotations. Nevertheless modern researchers have raised doubts as to whether Matthew was referring to the four quadrants of the tripartite circle, to a fourth continent populated by antipodeans as represented on Beatus maps,⁴⁵ or even to the other side of the earth seen on hemispherical world maps.⁴⁶

The tripartite pattern can be found reflected in different forms and variations on most medieval *mappaemundi*. The Ebstorf Map, for example, presents the capital letters for *EUROPA*, *ASIA*, and *AFRICA* spread out all over its surface. In addition, a T-shape with three names appears outside of the map's circle together with mythological explanations of the terms (Fig. 6).⁴⁷ The account follows Isidore, sometimes

⁴⁵ The Beatus maps regularly show a fourth continent that is occasionally even inhabited, for example, on the Osma Map by the Sciapode. Cf. Ingrid BAUMGÄRTNER, *Visualisierte Weltenräume. Tradition und Innovation in den Weltkarten der Beatus-tradition des 10. bis 13. Jahrhunderts*, in: Hans-Joachim SCHMIDT (ed.), *Tradition, Innovation, Invention. Fortschrittsverweigerung und Fortschrittsbewußtsein im Mittelalter* (Scrinium Friburgense 18), Berlin, New York 2005 pp. 231–276; EAD., *Graphische Gestalt und Signifikanz. Europa in den Weltkarten des Beatus von Liébana und des Ranulf Higden*, in: BAUMGÄRTNER/ KUGLER (note 33), pp. 81–132.

⁴⁶ The Wolfenbüttel manuscript of the 'Liber floridus' by Lambert of Saint-Omer, written around 1112–1121, depicts the tripartite earth on the left half of the globe and the world's other side on the right half: Wolfenbüttel, Herzog August Bibliothek, Cod. Guelf. 1 Gud. Lat., fol. 69v–70r; cf. the facsimile by Christian HEITZMANN/ Patrizia CARMASSI, *Der Liber Floridus in Wolfenbüttel. Eine Prachthandschrift über Himmel und Erde*, Darmstadt 2014.

⁴⁷ Cf. Hartmut KUGLER, *Die Ebstorfer Weltkarte*, 2 vols., Berlin 2007, no. 6 A 1, vol. 1, pp. 40–41 and vol. 2, p. 84: *Orbis a rotunditate circuli dictus, qui est ut rota. Undique enim oceanus circumfluens in*

nearly word for word.⁴⁸ Even the T-form that doubled as a crucifix was adopted from a Christian-Isidorian tradition, which integrated salvation into the *orbis*.⁴⁹

With regard to the Hereford Map, Marcia Kupfer questions the impact of this intellectual and spiritual model. She argues that the practice of writing and reading a map was influenced by optical theories and that every single cognitive step from the first idea or experience to the memorization of the map was planned systematically. Kupfer shows that the writings of Robert Grosseteste and Roger Bacon in particular must have been known in Hereford circles. William Herebert (c. 1270–1333), a Franciscan at Hereford, collected, annotated, corrected, and translated manuscripts of Bacon's works on optics and cosmography.⁵⁰ The younger Richard of Battle, or de Bello, who was, *inter alia*, canon prebendary of Lafford and probably one of the map's sponsors or initiators, had a close connection to Lincoln, the former bishopric of Robert Grosseteste, which had a large manuscript collection. The map has been attributed to a learned author or authors, who united Bacon's moralization of optics with a moralization of geography, and thus created a spiritual vision in an intellectual space with rich potential on many levels.

Based on these ideas, the map's creators skillfully broke with convention to fashion special effects that delighted their erudite audiences. It was probably part of this intellectual game to exchange the inscriptions of *AFFRICA* and *EUROPA* on the lower half of the east-oriented map, which otherwise depicts the three parts of the inhabited world in a conventional manner. The elaborate gold leaf lettering, with *AFFRICA* written diagonally across the northwest quarter of Europe, and *EUROPA* across Africa in the southwest, probably expressed a unique meaning. Hitherto, scholarly opinion explained this reversal as a slip made by a careless or even ignorant artist or scribe, who was said to have made this strange mistake when applying the expensive lettering to the almost completed image. Kupfer, on the other hand, convincingly explains that this inversion of the T-O schema implied God's west-oriented view from the east above, which projected a mirror image of the two western landmasses on the tripartite order.⁵¹ The result was the representation of both perspectives in one figure – the conventional tripartite image and God's inverted view on the world.

circulo. Est triphariam divisus, id est in Asyam, Europam, Africam. Sola Asya medietatem orbis, due tenent alteram partem Europa et Africa, quas intersecat velut subterraneum Mediterraneum mare.

48 Cf. Isidore of Seville, *Etymologiae* 14 (*De terra et partibus*), 2–5: The Etymologies of Isidore of Seville, transl., with introduction and notes, by Stephen A. BARNEY/ W. J. LEWIS/ J. A. BEACH/ Oliver BERGHOF, Cambridge, Ann Arbor 2006, pp. 285–293.

49 Cf. Anna-Dorothee VON DEN BRINCKEN, Die Ebstorfer Weltkarte im Verhältnis zur spanischen und angelsächsischen Weltkartentradition, in: Hartmut KUGLER (ed.), *Ein Weltbild vor Columbus. Die Ebstorfer Weltkarte. Interdisziplinäres Colloquium 1988*, Weinheim 1991, pp. 129–145, esp. pp. 131–132.

50 Cf. Marcia KUPFER, *Art and Optics in the Hereford Map. An English Mappa Mundi, c. 1300*, New Haven 2016, pp. 43–49.

51 Cf. KUPFER (note 50), p. 135 on the T-O schema in different contexts; cf. Wesley M. STEVENS, *The Figure of the Earth in Isidore's 'De natura rerum'*, in: *Id., Cycles of Time and Scientific Learning in Medieval*

Kupfer's theory is based on the assumption that on the Hereford Map Boethius' concept of divine providence was translated into a visual representation that merged the whole world into a gift for Christ enthroned in majesty.⁵² Consequently, the primary motive for this kind of representation would have been the creation of a work of art that inspired its audience to meditate on the reciprocity of human and divine thoughts and acts and to admire God's greatness and omnipotence. The tripartite schema could be converted into a mirrored worldview, as the rational foundation of the multipurpose T-O figure underwent a transformation to become a symbol of Christ.

An unfinished T-O map makes for an enlightening example. The image can be found in a manuscript of Isidore's 'De natura rerum' now in the Bodleian Library (c. 1120, and before 1125),⁵³ which belonged to Salisbury Cathedral when Richard de Bello was there in a move to advance his career.⁵⁴ It shows a reversed T-O schema with transposed western quadrants, similar to the design in a particular, well-defined subgroup in Sallust's 'De bello Iugurthino'. This concept for the division of the world, which can be found in a shorter, significantly altered version of Isidore's manual, transformed the T-O motif into a sign aligned with Christ.⁵⁵ It seems that by the twelfth century at the latest two distinct but complementary methods had been developed for visual representations of the earth. The complex *mappamundi* and the geometrical abstraction of the reversed T-O schema with its religious connotations were finally combined on the Hereford Map at the end of the thirteenth century.

Naturally, the concept of the world's three parts provided not only a well-grounded structure for maps but also for historiographies, theological commentaries, and travel reports. One example of the correlation between text and visualization is the universal chronicle of the English historiographer Ranulf Higden. His 'Polychronicon' was

Europe (Variorum Collected Studies CS 482), Aldershot 1995, no. III, pp. 268–277, esp. pp. 274–277 on the reversed image in texts of Isidore and mirror-image astronomy.

52 Cf. KUPFER (note 50), p. 120.

53 Oxford, Bodleian Library, MS Auct. F. 3. 14, fol 19v; cf. KUPFER (note 50), p. 140 fig. 74.

54 Valerie I. J. FLINT, The Hereford Map: Its Author(s), Two Scenes and a Border, in: Transactions of the Royal Historical Society 6th series 8 (1998), pp. 19–44, esp. pp. 27–29; KUPFER (note 50), p. 141.

55 Sallust, De bello Iugurthino 17,3–4, transl. John Carew ROLFE (Loeb Classical Library 1921), London, New York 1980, pp. 170–171: "In their division of the earth's surface geographers commonly regard Africa as a third part, a few recognize only Asia and Europe, including Africa in the latter. Africa is bounded on the west by the strait between our sea and the Ocean, on the east by a broad sloping tract which the natives call Catabathmos". (*In divisione orbis terrae plerique in parte tertia Africam posuere, pauci tantummodo Asiam et Europam esse, sed Africam in Europa. Ea finis habet ab occidente fretum nostri maris et Oceani, ab ortu solis declivem latitudinem, quem locum Catabathmon incolae appellant.*) Cf. Patrick GAUTIER DALCHÉ, De la glose à la contemplation: Place et fonction de la carte dans les manuscrits du haut moyen âge, in: Géographie et culture: La représentation de l'espace du VIe au XIIe siècle (Variorum Collected Studies CS 592), Aldershot 1997, no. VIII, esp. pp. 710–711; Id., L'enseignement de la géographie dans l'antiquité tardive, in: Klio 96,1 (2014), pp. 144–182, esp. p. 166; KUPFER (note 50), pp. 139–141.

one of the most popular history books in late-fourteenth century England. It is extant in some 135 manuscripts, and those of the second recension prepared by the author after 1340 can include an oval world map (Fig. 7).⁵⁶ It is likely that Higden had realized that a cartographic visualization could be enormously helpful, not only to readers who tried to identify the places mentioned in the text, but also to the author who generated and transformed an intellectual perception of the world.⁵⁷ In the context of the present essay, it is interesting that Higden apparently envisioned an east-oriented, tripartite schema and expected his audience to do the same. Cornelia DREER finds some evidence in favor of this theory within the text of the ‘Polychronicon’. Higden explained, for example, that the Mediterranean originates at the Pillars of Hercules in the Straits of Gibraltar and continues “with Africa on its right and Europe on its left” (*ad sui dexteram habens Africam, ad laevam vero Europam*).⁵⁸ He apparently referenced the earthly rather than the divine perspective of the globe and assumed that his audience was acquainted with this particular tripartite world image as well as with the location of Europe and Africa within it.

Other examples in historiographical texts show that this imagined structure could also be organized the other way around, that is, according to the Hellenistic or God’s view from east to west. Many centuries earlier, Orosius described Asia as an enormous territory surrounded by the ocean in the north, the east, and the south. He portrayed it as the part of the world that occupied the entire east, whereas toward the west, it would border Europe “on its right” and Africa “on its left”.⁵⁹ It is evident that such a statement could only have been made from an eastern viewpoint, which, from the tenth century on, reversed T-O schemata in manuscripts by Sallust, Lucan, and a special version of Isidore’s ‘De natura rerum’. The two mental images of the world must have already existed as two different perspectives or two different projections.⁶⁰

56 San Marino/ CA, Huntington Library, HM 132, fol. 4v.

57 Cf. Cornelia DREER/ Keith D. LILLEY, *Universal Histories and their Geographies: Navigating the Maps and Texts of Higden’s Polychronicon*, in: Michele CAMPOPIANO/ Henry BAINTON (eds.), *Universal Chronicles in the High Middle Ages (Writing History in the Middle Ages 4)*, Woodbridge 2017, pp. 275–301, esp. p. 282.

58 *Ranulph Higden, Polychronicon Ranulphi Higden Monachi Cestrensis*, ed. Churchill BABINGTON/ Joseph Rawson LUMBY (*Rerum Britannicarum Medii Aevi Scriptores* 41), 9 vols., London 1865–86, here vol. 1, I, 52; cf. DREER/ LILLEY (note 57), p. 282 with note 24; London, British Library, Royal 14 C.IX, fol. 10v.

59 Paulus Orosius, *Adversus paganos historiarum libri VII*, I 2, 2–3; 2. *Asia tribus partibus oceano circumcincta per totam transuersi plagam orientis extenditur. 3 haec occasum uersus a dextra sui sub axe septentrionis incipientem contingit Europam, a sinistra autem Africam dimittit*, transl. FEAR (note 38), p. 36.

60 Cf. STEVENS (note 51), p. 275: “There have always been two perspectives on the *globus caelestis* and its stellar phenomena, which result in two quite different projections of star charts and land charts. If the astronomer looks up at the sky with *Asia* and its *oceanus orientalis* at his head, then *europa est dextra, Africa est laeva*. On the other hand if he imagines himself outside the globe and looking east, he would see that *europa est laeva, africa est dextera*”.



Fig. 7: World map in Ranulph Higden's 'Polychronicon'; San Marino/California, The Huntington Library, HM 132, fol. 4v. By permission of the Huntington Library.

Borders, regions, and cities varied on medieval maps but the cultural concept of the world's three parts and four quarters was present in the mind of every reader and viewer. Thus, the model helped to organize textual descriptions in travelogues and historiographies. For the medieval audience, each of the world's quarters and parts was immediately recognizable, even if it was depicted separately, such as Europe in the 'Liber floridus' autograph in Ghent, which dates to c. 1112–1121.⁶¹ This unique map enlarged the northwest quarter as a detail, retaining its original form and eastern orientation. An educated observer would have been able to imagine its position in the T-O schema.

The structuring of the world into three parts and four quarters shaped the collective consciousness at all levels. It was not only Burchard who organized his report according to these principles: even historiographers such as Ulrich Richental, a citizen of Constance and the famous chronicler of the Council of Constance (1414–1418), employed the tripartite concept when he registered the attendees in geopolitical order.⁶² Every author who represented the geographical schema as an intellectual category to inspire order and reflection was undoubtedly aware of its three- and four-part divisions.

Only later, after the discovery of the Americas, did the secular concept of continents, defined as big landmasses in the vast ocean, emerge to compete with the religiously charged tripartite schema that focused on the Mediterranean. In modern usage, the terms 'continent' and 'part of the world' are often applied interchangeably. However, for their early users, they carried clearly distinct connotations. When seafarers and their patrons realized that the newly discovered territory did not belong to Asia but was a separate landmass on the other side of the Atlantic, they understood that the *oikoumene* could no longer be described as a single contiguous mainland divided into three parts and encompassed by an ocean. The discovery made the traditional classification appear obsolete and required a new order. Thus, the expression *terra continens* or simply *continens* developed in various contexts but always retained a connection with conventional practices.⁶³

61 Map of Europe by Lambert of Saint-Omer, *Liber floridus* (c. 1212–1221) in Ghent, Bibliotheek der Rijksuniversiteit, Ms. 92, fol. 241r; Lambert von St. Omer, *Liber Floridus*, ed. Albert DEROLEZ, Gent 1968 (facsimile of some parts); cf. Hartmut KUGLER, *Europa pars quarta. Der Teil und das Ganze im 'Liber floridus'*, in: BAUMGÄRTNER/ KUGLER (note 33), pp. 45–61; OSCEMA (note 33), pp. 465–469.

62 Ulrich Richental, *Chronik des Konstanzer Konzils 1414–1418*, ed. Thomas Martin BUCK (Konstanzer Geschichts- und Rechtsquellen 41), Ostfildern 2010, p. 142: "Ee das nun diß angefangen werd, so ist ze wissen, das aller umbkraiß der welt in drü getailt ist. Der erst haifset Asia, der ander Affrica, der dritt Europa". Ibid. p. 143: "Och maint man, das daz tail Asia größer sy dann die andern zway tail, Affrica und Europa". Cf. Christof ROLKER, *Die Richental-Chronik als Wappenbuch*, in: *Deutsches Archiv für Erforschung des Mittelalters* 71 (2015), pp. 57–103, esp. pp. 87–92; Christoph MAUNTEL, *The 'Emperor of Persia'. 'Empire' as a Means of Describing and Structuring the World*, in: *The Medieval History Journal* 20, 2 (2017) [= Chris JONES/ Christoph MAUNTEL/ Klaus OSCEMA (eds.), *A World of Empires. Claiming and Assigning Imperial Authority in the Middle Ages*, Los Angeles et al. 2017], pp. 354–384, esp. pp. 355–356, 377–378.

63 I have to thank Patrick GAUTIER DALCHÉ for bringing this issue to my attention.

One of the first references to the term *continens* can be found in Amerigo Vespucci's 'Mundus novus', his famous letter to Lorenzo di Pier Francesco de' Medici, which was first printed in 1503. In the prologue of the report about his journey under Portuguese command in 1501–1502, Vespucci wrote that the traditional opinion, which still prevailed in his day, was that there could not be a contiguous territory in the southern ocean beyond the equator (*ultra lineam equinoctialem et versus meridiem non esse continentem, sed mare tantum*) and that everyone was convinced that even if it did exist it would not be inhabited.⁶⁴ He used the term *continens*, here and especially in the following sentence about his breathtaking discovery, for a coherent landmass that presented a kind of counterpart to the huge expanse of Europe, Asia, and Africa. Moreover, he recorded that the newly discovered continent in these southern realms was more densely populated than Europe, Asia, or Africa (*continentem invenerim frequentioribus populis et animalibus habitata quam nostram Europam seu Asiam vel Africam*). Thus, the new territory was given a specific character and importance. The expression *continens* was not used in a sense that agreed precisely with its modern definition as a landmass separated from other continents, but it opened the way for a new concept of the world's structure.

A few years later, in 1507, Matthias Ringmann employed the phrase *partes continentes*, that is, coherent parts, for the three parts of the Old World in his 'Cosmographiae introductio' (Chapter 9). He used the term *insula* for the New World, which he famously named America after its discoverer.⁶⁵ His views were again based on the long-established model of the world's four quarters: he conceived of the first three quarters as continuous landmasses and the fourth part as a huge, solitary island surrounded by water. He evidently made an effort to integrate the New World into the accepted image of the earth divided into three and four, since this model represented an important tool that allowed an abstract concept to be understood and given visible form.

⁶⁴ Amerigo Vespucci, Petri Francisci de Medicis salutem plurimam, Paris 1503, Ex. Séléstat BM, No. 2380 – K1156e (according to John ALDEN/ Dennis C. LANDIS (Eds.), *European Americana. A Chronological Guide to Works Printed in Europe Relating to the Americas, 1493–1776*, vol. 1, New York 1980, p. 7, no. 503/9), fol. a2r: *Etenim hec opinionem nostrorum antiquorum excedit, cum illorum maior pars dicat, ultra lineam equinoctialem et versus meridiem non esse continentem, sed mare tantum, quod Atlanticum vocavere. Et si qui earum continentem ibi esse affirmaverunt, eam esse terram habitabilem multis rationibus negaverunt. Sed hanc eorum opinionem esse falsam et veritati omnino contrariam, hec mea ultima navigatio declaravit, cum in partibus illis meridianis continentem invenerim frequentioribus populis et animalibus habitata quam nostram Europam seu Asiam vel Africam, et insuper aerem magis temperatum et amenum quam in quavis alia regione a nobis cognita*. Cited from Klaus Anselm VOGEL, *Sphaera terrae. Das mittelalterliche Bild der Erde und die kosmographische Revolution*, Diss. Göttingen 1995, pp. 449–450; Ilaria Luzzana CARACI, *Per lasciare di me qualche fama. Vita e viaggi di Amerigo Vespucci*, Rome 2007, pp. 76–82, 253–254 with the text and an Italian translation.

⁶⁵ Martin LEHMANN, *Die Cosmographiae Introductio Matthias Ringmanns und die Weltkarte Martin Waldseemüllers aus dem Jahre 1507*, Munich 2010, pp. 163–164: *Hunc in modum terra iam quadripartita cognoscitur et sunt tres primae partes continentes, quarta est insula, cum omni quaque mari circumdata conspiciatur*.

Wind Diagrams

In addition to the concept of four quarters, Burchard of Mount Zion used wind directions to structure his travelogue. This subdivision, however, was more ambiguous, owing to different kinds of segmentations and a broad range of wind names. Two distinct systems existed in the thirteenth century: one comprised twelve winds in accordance with the scholarly astronomy of Aristotle, which was adopted by Romans such as Varro, Vitruvius, and Seneca, and the other counted either eight or sixteen winds based on nautical practices.⁶⁶ Both classifications had developed earlier but found their use during the Middle Ages.

Wind, as a natural phenomenon, had shaped perceptions of the world since ancient times. Winds were pictured as personifications or even as gods in many cultures. The geometrical wind schema was probably invented by the astronomer Philip of Opus or by Medma, one of Plato's students and later his secretary. Aristotle developed the system further and described the winds' relative positions in his 'Meteorologica'.⁶⁷ The four main winds of the Greeks were *boreas/aparctias* (north), *eurus* (southeast, near to the eastern *apeliotes*), *notus* (south), and *zephyrus* (west). In Aristotle's treatise, three were accompanied by a pair of minor winds. Only *notus* was left alone or flanked by unnamed winds. This resulted in an asymmetrical pattern with ten sections, which did not satisfy the requirements of later geographers.

After 270 BCE, Timosthenes of Rhodes, commander of the fleet and renowned nautical expert under the Egyptian pharaoh Ptolemy II Philadelphus, noted twelve directions to complete the wind rose and made Rhodes, his home port, its center.⁶⁸ As a specialist at surveying, he used the twelve winds not only at sea, but also as a means of locating people, nations, and regions within the inhabited world, as well as sunrise and sunset in summer and winter. The division into twelve parts generated an essentially astronomical diagram that corresponded to the twelve hours of day and night, the twelve months of the year, and the signs of the zodiac.

The twelve-point wind rose persisted for a long time. It was adopted and communicated during the following centuries, especially by such Roman authors as Seneca, Pliny, Suetonius, and Apuleius.⁶⁹ The twelve winds were still an important reference

⁶⁶ Cf. Thomas RAFF, *Die Ikonographie der mittelalterlichen Windpersonifikationen*, in: *Aachener Kunstblätter* 48 (1978/1979), pp. 71–218; OBRIST (note 42), pp. 33–84; Alessandro NOVA, *The Book of the Wind. The Representation of the Invisible*, Milan 2007, pp. 177–179; GAUTIER DALCHÉ, *Pere Marsili* (note 20), esp. pp. 159–169.

⁶⁷ Aristotle, *Meteorology*, 2, 4–6, ed. Henry Desmond Pritchard LEE (Loeb Classical Library 397), Cambridge, London 1978, pp. 187–191; cf. John B. HARLEY/ David WOODWARD (eds.), *Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean (The History of Cartography 1)*, Chicago 1987, p. 145 with fig. 8.14; RAFF (note 66), p. 81; OBRIST (note 42), p. 37.

⁶⁸ HARLEY/ WOODWARD (note 67), p. 153 with fig. 9.3; NOVA (note 66), p. 178.

⁶⁹ Pliny, *Natural History* 2, 119–121; Seneca, *Quaestiones naturales* 5, 16.1–3; Apuleius, *Liber de mundo*, 10–14; cf. OBRIST (note 42), pp. 36–38.

point around 531 CE, when the Neoplatonic philosopher Priscian of Lydia explained them in his ‘*Solutiones ad Chosroem*’, his answers to King Chosroes of Persia, which discussed various fields of knowledge, especially in the natural sciences.⁷⁰ Lastly, Isidore of Seville secured the astronomical image of a twelvefold world by adapting it for a medieval audience.

Yet winds were irregular, incorporeal, and could turn quickly. To integrate them into a concise symmetrical system was not easy. Aristotle had already noted the minor role of meteorology in a perfect cosmos and emphasized that the winds’ natural order was less clear than the regular rotation of the planets.⁷¹ Perhaps this was the reason for another classification that emerged in the Greek world. During the first century BCE at the latest, the Tower of the Winds, the *Horologion* of Andronikos, was constructed in Athens. This octagonal building was set with a frieze of sculptured personifications of eight winds: two triads centered on *boreas* to the north and *notus* to the south and were divided by *zephyr* to the west and *apeliotes* to the east.⁷² The tower was built at the edge of the Roman agora, and, aside from its main purpose of measuring time, it was apparently used to observe the impact of seasonal changes on the winds.

A few decades later, Vitruvius described the octagon, with its sculptured figures on the façade and the roof, in his architectural treatise, when he debated the influence of different wind formations on structural design:

It pleases to say that there are four winds: from equinoctial east Solanus, from the south Auster, from the equinoctial west Favonius, and from the north Septentrio. But those who have studied the matter more thoroughly insist that there are eight, above all Andronicus Cyrrestes, who even went so far as to demonstrate this by means of an octagonal marble tower in Athens. On each side of the octagon he designed sculpted images of the winds, each facing its own blast, and atop this tower he put a conical column and above this he placed a bronze Triton holding a wand in its right hand, so contrived as to revolve with the wind, so that it will always face into the prevailing wind and hold its wand over the image of the wind that is blowing at the moment.⁷³

Vitruvius considered the fourfold system inadequate and asked for further distinctions in accordance with the movements of the Triton on the rooftop. He pointed out

70 Priscian. *Answers to King Khosroes of Persia*, ed. Pamela HUBY/ Sten EBBESEN/ David LUNSLow/ Donald RUSSELL/ Carlos STEEL/ Malcolm WILSON, London 2016, 98,26–104,1, pp. 82–86.

71 Aristotle, *Meteorology*, 1, 1.

72 NOVA (note 66), pp. 30–31; Hermann J. KIENAST, *Der Turm der Winde in Athen, mit Beiträgen von Pavlina KARANASTASI zu den Reliefdarstellungen der Winde und Karlheinz SCHALDACH zu den Sonnenuhren* (Archäologische Forschungen 30), Wiesbaden 2014; cf. Poul PEDERSEN, *Rez. in: Orbis Terrarum* 14 (2016), pp. 284–288.

73 Vitruvius [Marcus Vitruvius Pollio], *De architectura libri decem*, ed. Curt FENSTERBUSCH, *Zehn Bücher über die Architektur*, Darmstadt 1964, 6th ed. Darmstadt 2008, I, 6, 4, pp. 60–63; English translation: Ingrid D. ROWLAND/ Thomas NOBLE HOWE, *Vitruvius. Ten Books on Architecture*, Cambridge 1999, pp. 29–30.

that a system of eight, or rather sixteen or twenty-four winds, would be preferable in order to precisely define each individual direction and its impact on architecture. For this reason, he explained step by step how to locate a north and south point and how to divide an imagined circle into eight equal parts by lines drawn to its center.⁷⁴ Justification for an intersection into sixteen or more winds was derived from mathematical calculations by Eratosthenes of Cyrene, who had estimated the earth's circumference and discovered that each of the eight winds would have to cover the enormous space of 3,937,500 paces in its section.⁷⁵ Hence, Vitruvius developed a more practical system of twenty-four winds by adding a pair of secondary currents to each of the original eight. Every wind was given a name⁷⁶ and an alphabetically designated position in the carefully structured system of the octagonal tower.⁷⁷ To make sure that every reader would understand his explanations, the architect added two drawings to his text,⁷⁸ which were intended to visualize the concept of the winds and demonstrate its importance for architectural practice, just as its significance was later represented for cartographic purposes.⁷⁹

In all of these different systems of twelve, eight, sixteen, or twenty-four sections, the number four was crucial, for it was deeply rooted in the cosmos as well as the Bible, where it is recorded that since the beginning of the universe there have been four elements – air, water, earth, and fire. Four cardinal points defined the main directions that corresponded with Plato's four cardinal virtues and the four fluids of humoral pathology. The number four determined the seasons based on the movements of the sun and the moon, which God created on the Fourth Day. Fourfold were the primeval transgressions in the Book of Genesis, that is, the Fall of Adam and Eve, the Fratricide, the Flood, and the Tower of Babel. Three symbolized the patriarchs

74 Vitruvius (note 73), I, 6, 7; ROWLAND/ NOBLE HOWE (note 73), p. 30.

75 Vitruvius (note 73), I, 6, 9; ROWLAND/ NOBLE HOWE (note 73), p. 30.

76 Vitruvius (note 73), I, 6, 10; ROWLAND/ NOBLE HOWE (note 73), p. 30: "Thus at the right and left of Auster, Leuconotus and Altanus are wont to blow; on either side of Africus, Libonotus and Subvesperus; around Favonius, Argestes and at certain times of the year the Etesian breezes, at the sides of Caurus, Circias and Corus; around Septentrio, Thracius and Gallicus; to the right and left of Aquilo, Supernas and Caecias; around Solanus, Carbas and at a certain time of the year the Ornithiæ; and with Eurus occupying the middle range, Euricircias and Vulturnus take up the extremes (Figure 21). There are many other names for other breaths of wind, derived from places, or rivers, or mountain tempests."

77 Vitruvius (note 73), I, 6, 12–13; ROWLAND/ NOBLE HOWE (note 73), p. 31.

78 Vitruvius (note 73), I, 6, 12; ROWLAND/ NOBLE HOWE (note 73), p. 31: "Because these things have already been set out by us briefly so that they be more easily understood, it seemed best to me that at the end of this book, I supply two figures or, as the Greeks say, *schêmata*, one so drawn that it displays the directions from which the various winds originate, and another showing how their harmful breaths may be avoided by the oblique orientation of streets and avenues".

79 Alessandro NOVA, *The role of the Winds in Architectural Theory from Vitruvius to Scamozzi*, in: Barbara KENDA (ed.), *Aeolian Winds and the Spirit in Renaissance Architecture*, London, New York 2006, pp. 70–86.

of the Bible and four evoked the female world with the matriarchs Sarah, Rebecca, Rachel, and Leah. The four gospels provided room for various other narratives around the number four in the Bible. From the very start, a fourfold division defined the time, space, and narratives of the world.

In the Bible, each of the four corners of the earth corresponded to a cardinal direction and to one of the principal winds. The four winds stood for devastation and displacement in the Old Testament, as well as in Elam, the ancient pre-Iranian civilization,⁸⁰ but Revelation in the New Testament describes four angels who restrained the strong winds from blowing violently across the earth and instead brought order and stability.⁸¹ These four winds appear in many medieval texts and illustrations, which indicates that the imagining of space was circumscribed by the number four, as shown by the angels on several world maps from the eleventh and twelfth centuries.⁸² The Commentary on the Apocalypse by Beatus of Liébana provides good examples: its illustrations depict the four corners of the earth as angels blowing wind or as figures sitting astride bags full of air.⁸³ Thomas Raff, who proposes three categories to organize the rich material (winds as figures of myth, as personifications, and as cosmological symbols), suggests that images of the twelve winds developed from the system of four. He elucidates how the division into twelve acquired its own importance in the context of medieval cosmologies and encyclopedias.⁸⁴

The twelve-point wind rose dominated during Roman times as a model that systematized and explained the winds, but its cosmological and religious connotations must have been a medieval conception that was based on the symbolic meaning of the number twelve: astronomically and chronometrically, twelve referred to the signs of the zodiac, the months of the year, and the hours of day and night, while biblically it was associated with the apostles, the tribes of Israel, the judges, and the gates of Jerusalem. An important source for this development was again Isidore of Seville,

80 Jeremiah 49, 36: "I will bring upon Elam the four winds from the four ends of heaven. And will scatter them to all these winds".

81 Revelation 7, 1: "After this I saw four angels standing at the four corners of the earth, holding back the four winds of the earth, so that no wind would blow on the earth or on the sea or on any tree."; cf. Bianca KÜHNEL, *Carolingian Diagrams, Images of the Invisible*, in: Giselle DE NIE/ Karl F. MORRISON/ Marco MOSTERT (Eds.), *Seeing the Invisible in Late Antiquity and the Early Middle Ages* (Utrecht Studies in Medieval Literacy 14), Turnhout 2005, pp. 359–389. Kühnel connected this passage convincingly with the sign of the cross that stopped the "destructive action of the winds" and brought "order, perfection and stability into diagrams" (ibid. p. 362).

82 Jörg-Geerd ARENTZEN, *Imago mundi cartographica. Studien zur Bildlichkeit mittelalterlicher Welt- und Ökumenekarten unter besonderer Berücksichtigung des Zusammenwirkens von Text und Bild* (Münstersche Mittelalter-Schriften 53), Munich 1984, pp. 155–160.

83 New York, The Pierpont Morgan Library, Ms. 644, fol. 115v; Turin, Biblioteca Nazionale Universitaria, Ms. I.II.1, fol. 45v–46r with a world map. Cf. NOVA (note 66), pp. 45–50 on the transformation of winds into angels.

84 Cf. RAFF (note 66), pp. 139–155.

who described the winds and their purpose in long passages. His ‘Etymologiae’ distinguished between the four main winds and the total of twelve winds:

There are four principal winds: the first of these, from the east, is *Subsolanus*; from the south is *Auster*; from the west *Favonius*; and from the north blows a wind of the same name (i.e., *Septentrio*, “the north”). Each of these has a pair of winds associated with it. *Subsolanus* has *Vulturnus* from the right side and *Eurus* from the left; *Auster* has *Euroauster* from the right and *Austroafricus* from the left; *Favonius* has *Africus* from the right and *Corus* from the left; finally *Septentrio* has *Circius* from the right and *Aquilo* from the left. These twelve winds whirl around the globe of the world with their blowing.⁸⁵

Isidore tried to explain the origin and significance of each wind name based on classical texts, tracing them back to Greek models as well as citations taken from Lucretius and Virgil.⁸⁶ In the end, he created a hierarchy and assured his readers that the northern *septentrio* and the southern *auster* were the two most important principal winds.⁸⁷ Isidore’s argument in his ‘De natura rerum’ is shorter,⁸⁸ but no less remarkable, especially owing to the variety of illustrations and wind figures that appear in different manuscripts of the text and are always based on the twelvefold pattern.

During the centuries that followed, the twelve-point wind schema with its primary and secondary winds was described in many texts and even more often was represented as a diagram or by the means of personifications. Under the Carolingians, the wind names were translated into the vernacular. One of the first to implement the Old High German terms was probably Einhard, who listed them in his ‘Vita Caroli’ with the intention of making them part of a veritable education program.⁸⁹ The Isidorian text became a recurrent element of diagrammatic representations from the eleventh

⁸⁵ Cf. Isidore of Seville, *Etymologiae* 13,11, 1–15, here 13,11,2–3; 2 *Ventorum quattuor principales spiritus sunt. Quorum primus ab oriente Subsolanus, a meridie Auster, ab occidente Favonius, a septentrione eiusdem nominis ventus adspirat; habentes geminos hinc inde ventorum spiritus. 3 Subsolanus a latere dextro Vulturnum habet, a laeva Eurum: Auster a dextris Euroaustum, a sinistris Austroafricum: Favonius a parte dextra Africum, a laeva Corum: porro Septentrio a dextris Circium, a sinistris Aquilonem. Hi duodecim venti mundi globum flatibus circumagunt.* English translation cited from *The Etymologies of Isidore of Seville*, transl., with introduction and notes, by BARNEY et al. (note 48), p. 275; *Isidoro di Siviglia, Etimologie, Libro XIII: De mundo et partibus*, ed., trad. e commento a cura di Giovanni GASPAROTTO, Paris 2004, pp. 55–69.

⁸⁶ Isidore of Seville, *Etymologiae* 13, 11, 4–13.

⁸⁷ Isidore of Seville, *Etymologiae* 13, 11, 14: *Ex omnibus autem ventis duo cardinales sunt: Septentrio et Auster.*

⁸⁸ Isidore of Seville, *De natura rerum* 36 and 37, 1–4; cf. Isidore of Seville, *On the Nature of Things*, transl. with introduction, notes, and commentary by Calvin B. KENDALL/ Faith WALLIS, Liverpool 2016, pp. 162–165 with the wind diagram of the second version.

⁸⁹ Einhard, *Vita Karoli magni imperatoris*, ed. Oswald HOLDER-EGGER (MGH SsRG [25]), Hannover 1911, c. 29, pp. 33–34: *Item ventos duodecim propriis appellationibus insignivit, cum prius non amplius quam vix quattuor ventorum vocabula possent inveniri. [...] Ventis vero hoc modo nomina inposuit, ut subsolanum vocaret ostronivint, eorum ostsundroni, euroaustum sundostroni, austrum sundroni,*

century on, mainly through the inclusion of a short poem: “From four thresholds rise four winds. These are joined on either side, right and left. And thus, twelve breezes surround the world.”⁹⁰ Other diagrams inserted the T-O schema into the middle of a circle or square. A manuscript in Trier, for example, shows a rectangle with four diagonal lines that lead to a surrounding circle, cutting it into quadrants; each quarter is divided into three parts, which produces twelve segments that contain the relevant passages on the winds from Isidore’s text as well as the names of the months. The composition gave the appearance of a calendar that organized space as well as time.⁹¹

A similar combination of T-O schema and wind diagram can be found in the Wolfenbüttel version of Lambert of Saint-Omer’s ‘Liber floridus’ (Fig. 8).⁹² There, the twelve winds forming a wind rose surround a small, tripartite, east-oriented world in the center. The winds are represented in multiple ways: as wavy double lines, personified as faces with pointed ears, through descriptions of their specific qualities and effects, and simply through their individual names in the outer circle. The different approaches were combined in a single design. The accompanying text refers to Isidore and the Venerable Bede. The illustration is part of a series of four circular diagrams of the earth and its climates, the course of the sun and moon, and the resulting seasons, parts of the day, and elements. In this context, only the astronomical model with its twelve winds was suitable.

The said wind rose played a significant role in the organization and communication of geographical knowledge, which also informed the famous world maps of the following centuries. According to Hartmut KUGLER, it seems likely that the creator of the Ebstorf Map used the technical construction of a wind rose as a basis for the map and as its underlying drawing (Figs. 9a and 9b).⁹³ Along the ocean surrounding the image, winds are indicated by double circles at regular intervals; each circle was inscribed in Leonine hexameter explaining the connection between each wind and

austroafricanum sundwestroni, africanum westsundroni, zephyrum westroni, chorum westnordroni, circium nordwestroni, septentrionem nordroni, aquilonem nordostroni, vulturum ostnordroni.

90 *Quatuor a quadro consurgunt limine venti. Hos circumgemini dextra levaque iugantur. Atque ita bisseño circumstant flamine mundum.* Translation by the author of this article. Cf. OBRIST (note 42), pp. 51–52 with an eleventh-century diagram in fig. 11 (Dijon, Bibliotheque municipale, MS 488, fol. 75r); RAFF (note 66), p. 150.

91 OBRIST (note 42), pp. 58 and fig. 18 with a T-O map with winds from St. Maximin, today still in Trier, Staatsbibliothek, MS 1084/115, fol. 99r.

92 Lambert of Saint-Omer, *Liber floridus*, Wolfenbüttel, Herzog August Bibliothek, Cod. Guelf. 1 Gud. Lat., fol. 16r; cf. HEITZMANN/ CARMASSI (note 46), pp. 34, 103.

93 KUGLER (note 47), vol. 1, pp. 18–19 and vol. 2, pp. 29–30, and commentaries to segments no. 4/3, 6/3, 14/7, 28/11, 49/10, 60/3, 57/35, 56/5, 43/12, 15/1, 22/3, and 2/2. Less convincing is Brigitte Englisch’s suggestion that the Beatus maps were constructed based on a right triangle; Brigitte ENGLISCH, *Ordo orbis terrae. Die Weltsicht in den Mappae mundi des frühen und hohen Mittelalters* (Orbis medievalis. Vorstellungswelten des Mittelalters 3), Berlin 2002; cf. Hartmut KUGLER, *Weltbild, Kartenbild, geometrische Figur. Eine Auseinandersetzung mit Brigitte Englischs Analyse mittelalterlicher Weltkarten*, in: *Zeitschrift für deutsche Philologie* 124, 1 (2005), pp. 440–452.



Fig. 8: Wind representation in Lambert of Saint-Omer's 'Liber floridus'; Wolfenbüttel, Herzog August Bibliothek, Cod. Guelf. 1 Gud. Lat., fol. 16r; HEITZMANN/ CARMASSI (note 45), p. 103.

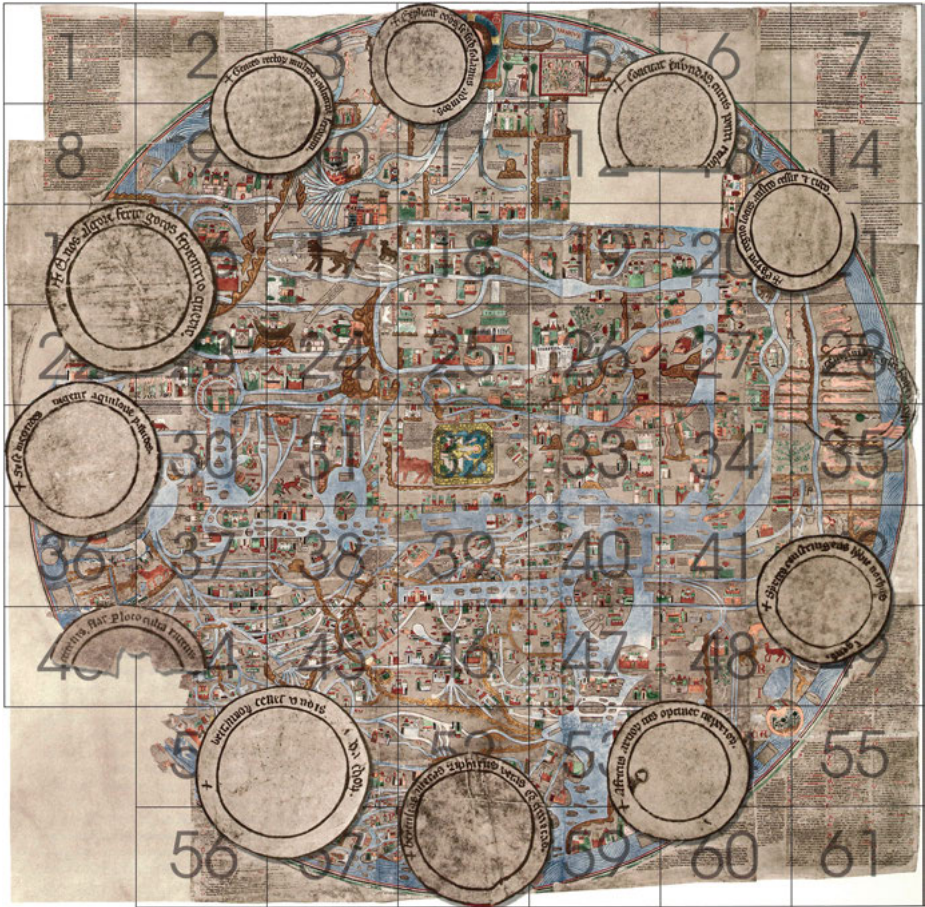


Fig. 9a: The Ebstorf Map as a twelvefold wind rose; Hartmut KUGLER, *Die Ebstorfer Weltkarte*, 2 vols., Berlin 2007, vol. 1, p. 19.

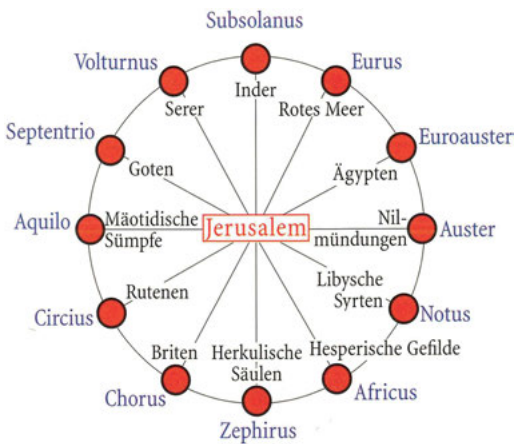


Fig. 9b: Schema of the twelvefold wind rose; Hartmut KUGLER, *Die Ebstorfer Weltkarte*, 2 vols., Berlin 2007, vol. 1, p. 19.

its assigned region of the earth. Accompanying quotations from Isidore enhance the information on natural history, territories, and people. The map's creators broke with convention in only one detail: they reversed the positions of the north wind *septentrio*, usually one of the cardinal directions, and of *aquilo*, the secondary wind in the north-northeast.⁹⁴

KUGLER is the first to take this as a deliberate decision and not as the mistake of a careless scribe. He argues convincingly that this modification was part of a program to revalue the northern region. *Septentrio*, with its negative reputation as a violent, destructive storm, was moved upward, closer to the area of the apocalyptic people Gog and Magog, while the immediate north became linked to the less fearsome *aquilo*. Thus, the character of each wind corresponded perfectly with its spatial arrangement and with the attributes associated with the climate and inhabitants of its particular region.

Apparently the practice of describing and depicting the earth's provinces in accordance with the twelve winds was widespread when Burchard wrote his travelogue in the second half of the thirteenth century. Every writer and artist and every reader and viewer knew this system by heart. The same pattern can be found in connection with wind blowers (sometimes combined with texts by Isidore) on other prominent world maps, such as the human heads on the so-called Munich Isidore Map,⁹⁵ the grotesque faces on the London Psalter Map,⁹⁶ and the zoomorphic heads on the Hereford Map.⁹⁷ All of them relate in many aspects to the 'Descriptio Mappemundi', probably written by Hugh of Saint Victor, which organized the winds in the same manner and might have influenced cartographic images.⁹⁸ On each map, the twelve personifications were located where winds supposedly emerged, namely beyond the circle of the earth, from where they affected its territories.

It must have been against this background that Burchard utilized the prevalent theory of twelve (instead of eight or sixteen) winds to structure his travel account. He combined his choice of the accepted contemporary concept with the innovative idea of applying the model to a specific region, namely the Holy Land, where the twelve tribes of Israel and other biblical references reinforced and enhanced its meanings. Instead of classical Rhodes, which was not far away, he brought Acre into focus, the last Crusader port on the coast of the Holy Land and the starting point for his expeditions to the Near East. In the prologue of the travelogue's long version cited

94 KUGLER (note 47), no. 15/1 and 22/3.

95 Munich, Bayerische Staatsbibliothek, Clm 10058, fol. 154v; cf. Patrick GAUTIER DALCHÉ, *La Descriptio mappae mundi* de Hugues de Saint-Victor. Texte inédit avec introduction et commentaire, Paris 1988, p. 193.

96 SCHÖLLER (note 10), pp. 48–49, 99, 257–258.

97 Scott D. WESTREM, *The Hereford Map*, Turnhout 2001 (*Terrarum orbis*, 1), pp. 10–21, no. 16–19 on cardinal directions, no. 20–31 on winds, no. 32–34 on the earth's three parts.

98 SCHÖLLER (note 10), pp. 77–155, 258–270.

above, the world was divided into four parts and twelve wind directions. This concept appears in an almost identical fashion in one copy of the short version that divided the world around Acre into four sectors, each with three parts, and the corresponding winds, whereas other copyists simply misinterpreted the template or reproduced a corrupted text.⁹⁹

Regardless of the different versions of the text, all of which need further investigation, Burchard was not responsible for the images, as they were all inserted at a later date. The depiction in a long version held in the British Library in London (Fig. 3), produced after 1380, focuses on the half of the world east of the harbor city: six sections between seven winds structure a long list of locations and regions. As a result, the textual description and the graphic image resonate strongly, just as they do in the case of the ‘list maps’, which were repeatedly created in the twelfth and thirteenth centuries. The lines were not constructed with a pair of compasses; their position depended on the number of words they contained rather than on an attempt to systematically represent the cardinal directions.

The diagram in Munich Clm 569 (Fig. 2), which is a short version written in the fifteenth century, adopts the twelvefold structure from the textual description. However, the artist also recorded the other, more practical eightfold concept and inserted eight wind blowers, even though they altered the symmetrical perfection of the visualization as a whole. In contrast, the diagram in the Berlin manuscript, which is a long version dated to the end of the fourteenth or the beginning of the fifteenth century, concentrates on the twelve winds and their names in Latin and German, but does not relate them to the journey’s regional focus (Fig. 10).

These concepts were, of course, not spontaneous choices but deliberate decisions with due consideration for the existing, long-standing tradition. As Eckart Conrad LUTZ and Vera JERJEN point out, diagrammatic representations helped to systemize common experiences and contents related to their own society and order them logically while the knowledge was being conveyed. In this way, they stimulated readers to think about their self-positioning in the world and to reflect on their own ways

⁹⁹ Short version in Klagenfurt, Ms. 10, fol. 173r–173v: *Advertent autem studiosi, quomodo possem utiliter haec omnia describere, ita ut a legentibus posset facile intelligi et ymaginacione facili comprehendendi, cogitavi in terra centrum aliquod locare et circa illud totam terram modo debito ordinare et ad hoc elegi civitatem Accinensem, licet vere non sit in medio terrae, et ab ea protraxi lineas ad quatuor plagas terrae seu mundi et quamlibet partem divisi in tria, ut respondeat XIIcim ventis*; cited in ROTTER (note 3), p. 64, see p. 71 on differences to other short versions. The old print version of the text supposedly taken from a lost Regensburg manuscript is misleading; cf. Burchard de Monte Sion, *Descriptio terrae sanctae*, ed. Heinrich CANISIUS, in: *Id., Antiquae lectiones* 6, Ingolstadt 1604, pp. 295–322, repr. in: Jacques BASNAGE, *Thesaurus monumentorum ecclesiasticorum et historicum, sive Henrici Canisii Lectiones antiquae*, Antwerpen 1725, 4, pp. 1–28, here p. 10: *cogitavi centrum aliquod in ipsa terra collocare, & circa illud totam terram ordinare, & ad hoc elegi civitatem Accinensem, licet non sit vere in medio terrae, & ab ea protraxi lineam ad decem plagas mundi, & quamlibet quartam in tria, ut respondeant novem ventis*.



Fig. 10: Berlin, Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, Handschriftenabteilung, Ms. lat. oct. 293 (olim Hildesheim, Bibliothek des bischöflichen Gymnasium Josephinum, Nr. 17*), fol. 1*v; 14th/15th century. By permission of the Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, Handschriftenabteilung.

of judging and acting.¹⁰⁰ Historiographical texts in particular referred over and over again to established structures such as the three parts of the world, the four cardinal virtues, the six ages of the world, and the winds. The last became more prominent in the middle of the thirteenth century.

Two Benedictine monks at the politically and educationally significant Abbey of St. Albans – John of Wallingford, who died in 1258, and Matthew Paris – were already concerned with the subject when they portrayed the wind rose in historiographic and cartographic contexts. Matthew's notes on the last folio of his 'Historia S. Albani' are instructive; he mentioned two medieval interpretations of the wind schema:¹⁰¹ the twelve winds that intersect the circular horizon at regular intervals and the sixteen-point wind rose, which he considered to be mathematically more precise. In view of the limited area of southern England, the first concept betrays a debt or at least a close proximity to a model by Elias of Dereham (d. 1245), canon of Salisbury and architect of the Great Hall at Winchester Palace, whose wall is said to have been decorated with a *mappamundi*. Elias valued the design that was still predominant in educated circles. Matthew's second concept followed the aforementioned practice that grouped each of the four cardinal winds with two secondary currents, but he arranged them at angles of exactly 23.5 degrees (instead of about 30 degrees), which corresponded to the declination of the southern and northern tropics from the equator. Thus, sufficient space remained to insert four more winds, bringing their overall number to sixteen. He augmented his design with mnemonic verses to ensure that readers could memorize it.¹⁰²

During the same years, John of Wallingford produced a similar wind diagram with accompanying notes on the back of Matthew's map of Britain, also preserved in London.¹⁰³ This corresponding copy in another codex is not only a sign that the two creators might have worked closely together and exchanged opinions, but also suggests

100 Eckart Conrad LUTZ, *Geschichte verstehen. Wie mittelalterliche 'Annalisten' informieren und was das mit diagrammatischem Denken zu tun hat*. Zu Rodulf Glaber, Hugo von St. Viktor, der 'Oberrheinischen' und der 'Limburger Chronik', in: LUTZ/ JERJEN/ PUTZ (note 5), p. 241–286; Vera JERJEN, *Struktur und Erfahrung im 'Welschen Gast' Thomasins von Zerclaere*, in: LUTZ/ JERJEN/ PUTZ (note 5), S. 349–372.

101 London, British Library, Cotton Nero D.V, last folio; Eva Germaine TAYLOR, *The 'De Ventis' of Matthew Paris*, in: *Imago mundi* 2 (1937), pp. 23–26; NOVA (note 66), pp. 178. For the description of the manuscript, see Andrew G. WATSON, *Catalogue of Dated and Datable Manuscripts c. 700–1600 in the Department of Manuscripts, the British Library*, 2 vols., London 1979, no. 545.

102 London, British Library, Cotton Nero D.V; cited by TAYLOR (note 101), p. 24. For three other diagrams of winds by Matthew Paris, see Cambridge, Corpus Christi College, MS 16I (= former MS 16, fol. Ir-Vv), containing inter alia a diagram of the winds, itineraries, and maps, and MS 26; London, British Library, Royal 14 C.VII; cf. HARVEY (note 3), p. 74–75.

103 London, British Library, Cotton Julius D.VII, fol. 51v–52r; cf. Alfred HIATT, *Topographies of the Past: The Anglo-Saxon Heptarchy and the Birth of Historical Geography*, in: Nathalie BOULOUX/ Anca DAN/ Georges TOLIAS (eds.), *Orbis disciplinae. Hommages en l'honneur de Patrick Gautier Dalché*. Turnhout, Brepols 2017, pp. 689–714, esp. p. 701; Anna-Dorothee VON DEN BRINCKEN, *Die Klimatenkarte in der Chronik des Johann von Wallingford – ein Werk des Matthaues Parisiensis?*, in: EAD.,

that both tried to reconcile the scholastic system, derived from antiquity, with the sub-lunary system utilized by sailors. In any case, it is remarkable that these two wind diagrams and several others originated in the same region within a short period of time.

Other authors followed suit: During his exile in France, Brunetto Latini discussed the two concepts in his ‘*Li livres dou tresor*’, written between 1260 and 1266. He accentuated their equivalence in his vernacular summary of scholarly erudition and also translated the names of the winds.¹⁰⁴ The Dominican Pere Marsili, who served under King James II of Aragon and Majorca, did not accept a clear distinction between the philosophical and the nautical classification when he described the function of lines on sea charts in the ‘*Chronica illustrissimi regis Aragonum domini Iacobi*’ written around 1313, which was his Latin version of a Catalan biography of the king. Patrick GAUTIER DALCHÉ has clearly indicated the contradictions and fluid transitions among the various intellectual contexts, where Pere Marsili favored the nautical terms, whereas his audience still expected the Latin names that prevailed in philosophical writings.¹⁰⁵ Under discussion was not which cultural milieus could claim superiority, but rather the different ways in which the models, which were also associated with different devices, such as the armillary sphere of the clerics and the portolan chart of the mariners, could be used.¹⁰⁶ As these examples show, the subject was much debated in monastic, civic, and academic milieus and use of the relevant terms changed with the respective context of interpretation.

In view of these developments, it is not surprising that the Hamburg diagram (Fig. 4), which was drawn at the beginning of the sixteenth century in a long version of Burchard’s ‘*Descriptio*’, was elaborated and refined. Text and images no longer corresponded because the draftsman had the eight- or even sixteenfold model in mind. Both concepts were implemented at the time, but the cartography of portolan charts had gained importance and the twelvefold system lived on as scientific tradition. In treatises and *disputationes*, scholars attempted to synchronize the two practices to fall in line with the new requirements. Approaches were compared and contrasted. The efforts resulted in wind roses like those in an early sixteenth-century illuminated French manuscript of nautical instructions in Paris, which shows two circles on the same page: one with twelve rays on top and another with eight, sixteen, and thirty-two segments below (Fig. 11).¹⁰⁷ In this way, the anonymous author solved the

Studien zur Universalkartographie des Mittelalters (Veröffentlichungen des Max-Planck-Instituts für Geschichte 229), Göttingen 2008, pp. 137–148, esp. p. 143.

104 Brunetto Latini, *Li livres dou tresor*, I, 106, 10–14, ed. Francis J. CARMODY, Berkeley 1948, repr. Geneva 1998, pp. 92–93, § 10–14; Brunetto Latini, *Tresor*, I, 106, 10–14, ed. Pietro G. BELTRAMI/ Paolo SQUILLACIOTTI/ Plinio TORRI/ Sergio VATTERONI, Turin 2007, pp. 148–151.

105 Cf. GAUTIER DALCHÉ, Pere Marsili (note 20), pp. 153–169.

106 Cf. GAUTIER DALCHÉ, Pere Marsili (note 20), p. 166.

107 Paris, BnF, ms. français 2794, fol. 2r; cf. Emmanuelle VAGNON, Un portulan illustré de cartes à la Renaissance, le manuscrit français 2794 de la Bibliothèque nationale de France, in: BOULOUX/ DAN/ TOLIAS (note 103), pp. 731–751, esp. pp. 736–740.

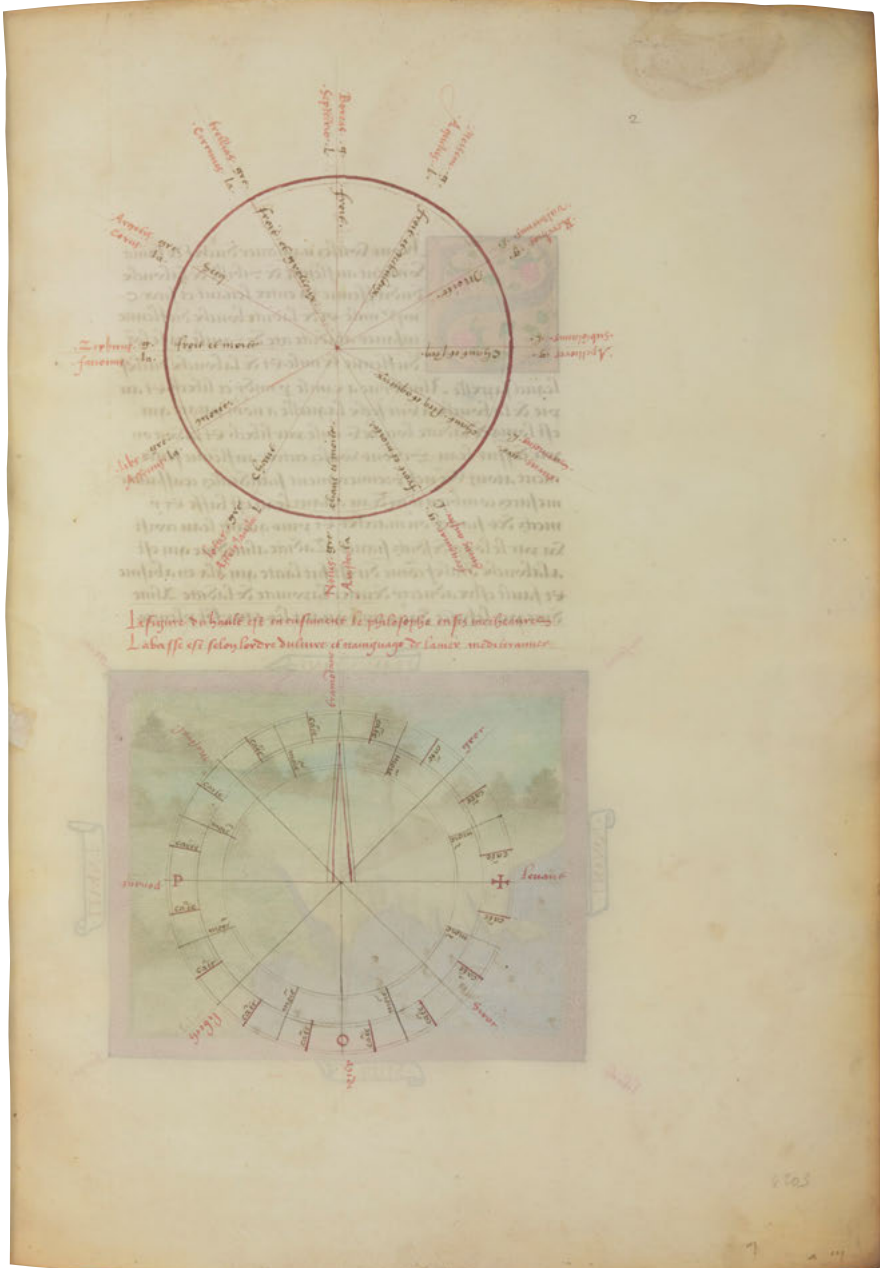


Fig. 11: Two wind roses; Paris, BnF, ms. français 2794, fol. 2r; early 16th century. By permission of the Bibliothèque nationale de France.

long-standing debate about the marine wind rose that contradicted Aristotle and Isidore. He considered its regular bisections in quarters and eighths to be the simpler solution compared to traditional schemata, which described physical and climatic conditions, that is, heat and cold and humidity and aridity, outside of as well as within their circles. Only the former could be widely used and helped to understand the different regional sailing techniques in the Mediterranean Sea and the Atlantic Ocean.

On sea charts, compass roses with sixteen or even thirty-two rays had, above all, nautical relevance. Their basic design featured a web of lines that signified order and incorporated directions, distances, and measurements. The practical information these lines provided established a new dimension of map construction and produced a classification system in which a varying number of sixteen or thirty-two centers, that is, intersections of rays, covered the space of a map. Nautical handbooks and treatises, such as Benedetto Cotrugli's 'De navigatione', one of the oldest known manuals of this kind, which combined practical know-how and formalized literary knowledge, referred to the new categories and described them comprehensively.¹⁰⁸ After characterizing the twelfold scheme, Cotrugli, a wealthy and well-educated merchant, explained the modern system of thirty-two winds associated with the compass and listed their names in Italian. Moreover, he described the way in which the different colors marked their hierarchical order: black symbolized the eight principal winds, red the half-winds (*meçanici*), and green the quarter-winds (*quarte*). Such texts verbalized regulations and instructions for navigation, whereas portolan charts provided their graphic representation and implementation. Space was usually organized according to wind directions, as the names of winds were the same as their directions.

By the sixteenth century, cartographers in Italy, Spain, and Portugal had appropriated these methods, which were first established for the Mediterranean and later implemented in connection with the earth's vast oceans. Despite their rational, geometrical approach, mapmakers sometimes added wind blowers, personifications deeply rooted in cultural memory, on the margins of their world maps. A telling example of this contradictory practice is one of the first printed world maps that pictured the New

108 Piero FALCHETTA, Il trattato De navigatione di Benedetto Cotrugli (1464–65). Edizione commentata del ms. Schoenberg 473. Con il testo del ms. 557 di Yale, in: Studi Veneziani 57 (2009), pp. 15–335, esp. pp. 136–143, 240–243, 305–308; Benedetto Cotrugli, De navigatione / Benedikt Kotruljević, O plovodbi (Yale University, Beinecke Library, MS 557), ed. Damir SALOPEK, Zagreb 2005, pp. 150–152. For the French translation with a commentary of this passage see Emmanuelle VAGNON, La représentation cartographique de l'espace maritime, in: Patrick GAUTIER DALCHÉ (ed.), La Terre. Connaissance, représentations, mesure au moyen âge, Turnhout 2013, pp. 443–503, esp. pp. 459–472. Cf. also Piero FALCHETTA, Schiffsgeschichten: Michele da Rodi und Benedetto Cotrugli, in: Nicole HEGENER/ Lars U. SCHOLL (eds.), Vom Anker zum Krähenest. Nautische Bildwelten von der Renaissance bis zum Zeitalter der Fotografie / From the Anchor to the Crow's Nest. Naval Imagery from the Renaissance to the Age of Photography, Bremen 2011, pp. 140–150.

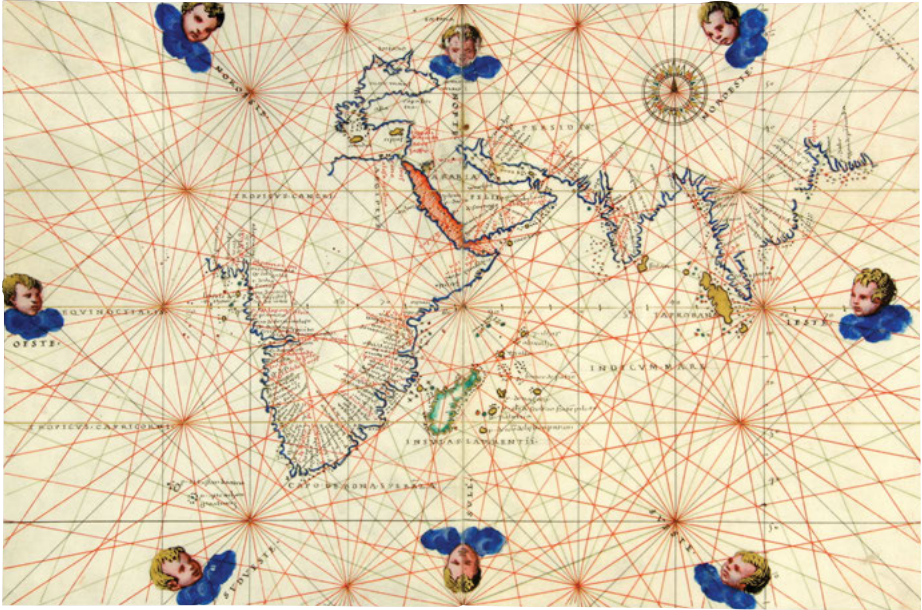


Fig. 12: Map of the Indian Ocean with eight wind personifications and their Venetian names, Battista Agnese, Atlas of 1542; Kassel, Universitätsbibliothek Kassel – Landesbibliothek und Murhardsche Bibliothek der Stadt Kassel, 4° Ms. Hist. 6, fol. 8v–9r. By permission of the Universitätsbibliothek Kassel – Landesbibliothek und Murhardsche Bibliothek der Stadt Kassel.

World (1508). Its maker, the Florentine cartographer Francesco Rosselli, surrounded his visualization of the spherical earth with personifications of the twelve winds.¹⁰⁹ By anchoring the new discoveries of the seafarers in the traditional twelfold world-view, he generated a hybrid depiction that combined Ptolemy's elliptical earth and the Latin winds with new empirical information.

Battista Agnese, an extremely successful mapmaker in Venice, produced at least seventy-seven atlases between 1535 and 1564, many of which ascribed a double meaning to the winds. Their network of lines with sixteen centers visualized directions to assist with basic orientation, and personifications embodied the formations of eight and twelve winds. Agnese's atlas of June 1542, today in Kassel, is a typical example, as it comprises three different wind illustrations in the same manuscript: The portolan maps of the Indian Ocean and the Black Sea (Fig. 12), with eight wind personifications and their vernacular names, conveyed nautical meaning in two different

¹⁰⁹ Francesco Rosselli, Planisphere, copperplate engraving in Florence, Biblioteca Nazionale Centrale, Landau Finaly, Carte Rosselli, planisfero; cf. Ingrid BAUMGÄRTNER, *Der Portulan-Atlas des Battista Agnese. Das Kasseler Prachtexemplar von 1542*, Darmstadt 2017, pp. 18–19.

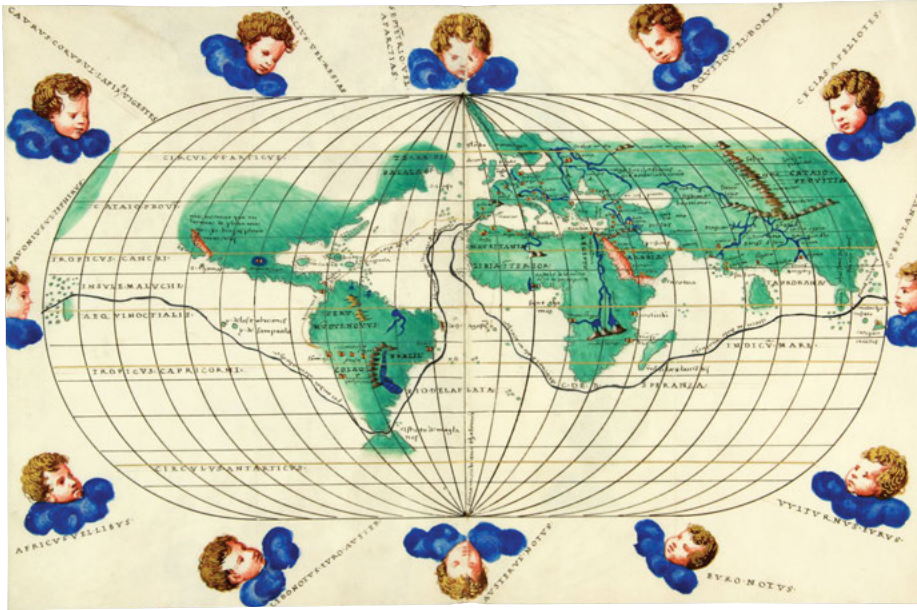


Fig. 13: World map with twelve wind personifications, Battista Agnese, Atlas of 1542; Kassel, Universitätsbibliothek Kassel – Landesbibliothek und Murhardsche Bibliothek der Stadt Kassel, 4° Ms. Hist. 6, fol. 15v–16r. By permission of the Universitätsbibliothek Kassel – Landesbibliothek und Murhardsche Bibliothek der Stadt Kassel.

styles – in Nordic-German and Venetian, respectively.¹¹⁰ The twelve wind heads on the following Ptolemaic map, which surround an elliptical earth with a modernized geography and the route of the globe's first circumnavigation by Magellan, evoked the ancient scientific tradition through their names in Latin and Greek (Fig. 13).¹¹¹ The different concepts matched perfectly with the cartographic picture that was being presented: the first displayed the Indian Ocean in accordance with the seafarers' new information about Africa and Asia and the second showed the Black Sea as a Venetian dominion; on each of these two maps, a part of the earth was combined with geographical knowledge on coastlines and ports. The third map depicted the entire world in keeping with the most recent information, while its elliptical shape and twelve putti referred to the scientific standards of Ptolemy.

110 Battista Agnese, Portulan Atlas, Kassel, Universitätsbibliothek Kassel – Landesbibliothek und Murhardsche Bibliothek der Stadt Kassel, 4° Ms. Hist. 6, fol. 8v–9r and fol. 14v–15r; cf. BAUMGÄRTNER (note 109), pp. 69–70, 76–78.

111 Battista Agnese, Portulan Atlas, Kassel, Universitätsbibliothek Kassel – Landesbibliothek und Murhardsche Bibliothek der Stadt Kassel, 4° Ms. Hist. 6, fol. 15v–16r; cf. BAUMGÄRTNER (note 109), pp. 78–83.

The contemporary audience was obviously accustomed to both styles and expected, accepted, and encouraged the discourse with all its contradictions. The growing production of portolan charts led to the increasing importance of the eightfold system not only for mariners but even for erudite readers and viewers. The late medieval shift to the vernacular, the multitude of powers concerned with the making of portolan charts, and the international composition of the field forced the question of language into focus. This went so far that, for example, in one of his atlases the Portuguese cartographer Diogo Homem included a concordance of wind names in different languages with explanations of their character and relevance.¹¹² His familiarity with various languages was likely a result of his own life experience, as he had been exiled for a crime and worked first in England and later in Venice, where he died in 1576.

The persistence of contradictory systems might be the reason that Burchard's travelogue attracted a range of visualizations until the sixteenth century, even though or perhaps because his text offered only a rough structure and did not refine the wind names or other parameters. Thus illustrators could conceive their own visual designs based on their own associations.

Conclusion

In the Middle Ages, concepts such as the three or four parts of the earth and the twelve or eight directions of the winds were used in texts and images to organize perceptions of the world. This was possible owing to their dual meaning: the parts of the world appeared as its quarters and as three differently sized 'continents', the winds as natural phenomena and as directions. The two models complemented one another excellently and between them described the composition of the world. For research on the intentions behind the use of these concepts, Burchard's travel report 'Descriptio terrae sanctae', written between 1274 and 1285, provides an exceptional source because the text evolved from both principles. Burchard divided the territory around Acre into four parts and twelve sections, seven on land and five at sea, according to the wind directions. During the text's history from the fourteenth to the sixteenth century, copyists adopted these guidelines and furnished the travelogue with various graphic representations of the written words. Whereas the travel report itself and its earliest images followed the scientific system of twelve winds, it was subsequently combined with the eightfold model. This alteration in the course of the text's reception is noteworthy because it was implemented to aid readers' comprehension of the narratives through a systematic categorization of the information. Apparently, conceptual models were behind these developments.

¹¹² TAYLOR (note 101), p. 26.

This essay demonstrated how and why phenomena such as winds and geographic entities, at first referred to as parts of the earth and only later as continents, became crucial for the perception of the world's structure. A representative sample of encyclopedic and historiographical writings, cartographic material, and travel literature from the Middle Ages has revealed that these cultural concepts developed over a long period of time. From their conception in antiquity to their wider dissemination as cartographic and textual motifs, they were important for visualizing and memorizing their underlying ideas. Tensions between the four- and threefold concept, on the one hand, and the eight- and twelvefold concept, on the other, led to contradictions and dynamics that evoked changes in their meaning. Ancient scientific knowledge about the physical world was combined with Christian exegesis. Religious content and motifs such as the Holy Trinity, the cross, and the evangelizing Twelve Apostles were systematically linked to information from pagan sources. The diagrams of the earth and the winds provided sophisticated vehicles for productive reflections on conflicting ideas. The numbers three, four, eight, and twelve came to signify entire belief systems, while their scientific meaning was combined with Christian subtext. Finally, new contexts and new interpretations led to the evolution of the four quarters and three parts of the world into continents when an additional landmass was discovered on earth. The wind directions acquired new meaning when the portolan chart wind roses with sixteen or thirty-two rays dominated the discourse.

Other spatial models were developed to explain the earth's structure. The climate zones, for example, organized the globe according to meteorological conditions and their alleged effects on people and cultures. The zones were used to differentiate cultural and political settings not only on maps but even in historiographies and travel literature. William of Malmesbury was not the only author who attributed a weakness to the people of the East and their long-lasting empires, which he linked to climatic conditions.¹¹³ Such models, however, were less appealing and less appropriate for a broader public. Diagrammatic symbols such as T-O maps and wind roses were simple but also meaningful and effective. Within seconds, entire worlds could be constructed that were inaccessible to the naked eye. In the Middle Ages, the earth's parts and the wind directions became basic categories, which were adopted as conventions by which to structure the world. The borders of the continents were just as invisible as the winds, but the words of their descriptions and the lines of their depictions made them visible and gave shape to their elusive presence.

113 William of Malmesbury, *Gesta regum anglorum* IV, 360, eds. Roger A. B. MYNORS/ Rodney M. THOMSON, 2 vols., Oxford 1998–1999, here vol. 1, 632–634: As many travelers, he was absolutely convinced that the 'Persian' (i.e., Seljuk) Empire was less the result of its strong rulers than of the weak personality and servile habit of their climatically determined subjects. Cf. MAUNTEL (note 62), pp. 370–371, 380.