Introduction: *Starting Out.* 'Europes', Hippogriffs, and Mathematics

Abstract: The introduction provides an overview of the objectives, method, and structure of the book. The first part explains the focus on Europe within the discussion of the *Imago mundi* and the geographical tradition constituted by its translations and adaptations. The second section introduces two theoretical concepts which will play a central role in the following discussion: the chronotope and fuzzy sets. These are subsequently used in the book to explain the texts' treatment of regions and borders. The introduction concludes with a roadmap for the book.

Keywords: *Imago mundi*; Europe; medieval geography; chronotope; space-time; fuzzy sets

The majestic polyphony of European cultural references that is Ludovico Ariosto's *Orlando Furioso* features a flight over and beyond Europe on the back of a hippogriff.

> Ben che Ruggier sia d'animo constante,
> né cangiato abbia il solito colore,
> io non gli voglio creder che tremante
> non habbia dentro piú che foglia il core.
> Lasciato avea di gran spazio distante
> tutta l'Europa, et era uscito fuore
> per molto spazio il segno che prescritto
> avea già a'naviganti Ercole invitto.
>
> Quello ippogrifo, grande e strano augello,
> lo porta via con tal prestezza d'ale…[1]

1 Ludovico Ariosto, *Orlando Furioso*, canto 6, stanza 17; Ludovico Ariosto, *Orlando Furioso: A Selection*, ed. by Pamela Waley (Manchester: Manchester University Press, 1975), p. 55.

Petrovskaia, N.I. *Transforming Europe in the Images of the World, 1110–1500. Fuzzy Geographies*. Amsterdam: Amsterdam University Press, 2025.
DOI 10.5117/9789048563166_INTRO

> Courageous man that he was, Ruggiero's face retained its normal hue; but I do believe that his heart within him was trembling like a leaf. He had left the European mainland far behind him, and had passed way out beyond the bounds which matchless Hercules had set for mariners. The great and wondrous bird, the hippogryph, bore him away…[2]

This passage is both seemingly unproblematic and in reality impossible, and not only because of the hippogriff.[3] The latter is not the only imaginary entity involved. The other, somewhat unexpectedly perhaps, is 'Europe': for the first challenge in any discussion of Europe as 'geographical unit' or 'space' is the geographer's valid objection that there is no such thing.[4] Though frequently attached by convention in everyday discourse to the term 'continent', Europe is not a continent (if we can speak of continents at all), as Martin W. Lewis and Karen E. Wigen point out.[5] It does not coincide, for instance, with a single tectonic plate that would arguably provide a 'natural' boundary.[6] The term does not correspond, if one takes the extreme view, to a geographic object. The problem is epistemological, and also fundamentally a paradox: a term conventionally and habitually used, and for which people seem to agree, more or less, on a meaning, that does not appear to have a corresponding physical referent. This reflects Robert L. Fowler's more general observation that, 'Even if the maps we create only make sense to us – even if our north is in absolute terms really south, or even if there are no absolute terms at all – we are compelled to orient ourselves somehow,

2 Ludovico Ariosto, *Orlando Furioso*, trans. by Guido Waldman, Oxford World Classics (Oxford: Oxford University Press, 1974), p. 52.

3 Ruggiero's travels later take him full circle around the world, returning to Europe by flying westwards again. For a discussion of Ariosto's geography, see Federico Italiano, *Translation and Geography* (Abingdon: Routledge, 2016), pp. 32–50; the discussion of Ruggiero's hippogriff flight is at pp. 38–43. Italiano's discussion begins with a question similar to the one posed here, on the relationship between the text and the geographical 'reality' as perceived by the author. See also Jo Ann Cavallo, *The World Beyond Europe in the Romance Epics of Boiardo and Ariosto* (Toronto, Buffalo, and London: University of Toronto Press, 2013).

4 The point is made so frequently as to render a full list of references impossible. See, for example, Gerard Delanty, *Formations of European Modernity: A Historical and Political Sociology of Europe* (London: Palgrave Macmillan, 2019), p. 16; Michael Heffernan, *The European Geographical Imagination* (Stuttgart: Franze Steiner, 2006), pp. 12, 13. Cf. the introduction to Arnaud Brennetot and Muriel Rosemberg, 'Géographie de l'Europe et géographie de la construction européenne', *L'Espace Politique*, 19 (2013), http://journals.openedition.org/espacepolitique/2613 (accessed 25 March 2020).

5 Martin W. Lewis and Karen E. Wigen, *The Myth of Continents: A Critique of Metageography* (Berkeley: University of California Press, 1997), pp. 17, 21, 29–30.

6 Lewis and Wigen, *The Myth of Continents*, p. 34.

or we simply cannot function'.[7] The cultural construction of a geographical system thus lies at the very basis of any discourse as the foundation of our capacity to place ourselves in the world. This tension between, on the one hand, geographical entities (and their depictions) as cultural constructs, and on the other, geographical description as a model of the world onto which such cultural constructs are mapped, is at the heart of *Transforming Europe*.[8]

This book has two objectives. The first, addressed in Part I, is to explore the medieval European geographical system by bringing together for the first time in a single discussion various branches of an extensive textual geographical tradition deriving from a single source – the Latin encyclopedia *Imago mundi*, composed in the twelfth century by Honorius Augustodunensis (fl. *c*. 1090–*c*. 1140).[9]

This text, written in fairly straightforward Latin, is an accessible and structured compendium of established knowledge, and, in Scott D. Westrem's words, 'perhaps the most generally known book with an extended, if rudimentary, discussion of geography'.[10] It was translated (we will come back to

7 Robert L. Fowler, 'Encyclopaedias: Definitions and Theoretical Problems', in *Pre-Modern Encyclopaedic Texts Proceedings of the Second COMERS Congress, Groningen, 1–4 July 1996*, ed. by Peter Binkley (Leiden: Brill, 1997), pp. 3–29 (p. 7).

8 The tension is fundamental to the study of geography; see J. B. Harley, 'Maps, Knowledge, and Power', in *The Iconography of Landscape: Essays on the Symbolic Representation, Design and Use of Past Environments*, ed. by Denis Cosgrove and Stephen Daniels (Cambridge: Cambridge University Press, 1988), pp. 277–312; J. B. Harley, 'The Map and the Development of the History of Cartography', in *History of Cartography I: Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean*, ed. by J. B. Harley and David Woodward (Chicago and London: University of Chicago Press, 1987), pp. 1–42 (p. 3).

9 For editions, see *De imagine mundi libri tres*, ed. by Jean-Paul Migne, Patrologiae Latinae Cursus Completus (PL) 172 (Paris, 1895) and *Imago Mundi*, ed. by Valerie I. J. Flint, *Archives d'histoire doctrinale et littéraire du moyen Âge*, 49 (1982). It should be noted that this edition differs in its chapter divisions from the earlier ones. A translation of the text is available in Nicholas Ryan Foster, 'The *Imago mundi* of Honorius Augustodunensis' (unpublished MA thesis, Portland State University Department of History, 2008), online: DOI: 10.15760/etd.5974 (accessed 11 April 2024). Throughout the following discussion I use my own translation of the *Imago mundi*, since in some instances precise nuances in the wording of the Latin text, and in some instances, comparison with vernacular adaptations, required a separate translation. For a recent brief overview and bibliography relating to Honorius and his *Imago mundi*, see Michael W. Twomey, 'Honorius Augustodunensis (c. 1080–c.1140)', in *Routledge Resources Online: Medieval Studies*, DOI: 10.4324/9780415791182-RMEO96-1 (accessed 24 February 2023); see also *ARLIMA: Archives de littérature du moyen âge*, https://www.arlima.net/eh/honorius_augustodunensis (accessed 11 April 2024) and, for the *Imago mundi* in particular, Bayerische Akademie der Wissenschaften database *Repertorium: 'Geschichtsquellen des deutschen Mittelalter'*, https://www.geschichtsquellen.de/repOpus_02846.html (accessed 11 April 2024).

10 Scott D. Westrem, *Broader Horizons: A Study of Johannes Witte de Hese's Itinerarius and Medieval Travel Narratives*, Medieval Academy Books 105 (Cambridge, MA: Medieval Academy,

this term and the variety of concepts it represents) into multiple European vernaculars and incorporated in the form of extracts and quotations into both scientific treatises and literary works produced in different parts of Europe in various languages throughout the medieval period, becoming one of the most popular and influential medieval European encyclopedic texts.[11] Despite this enormous popularity, the *Imago mundi* is more often the subject of footnotes in contemporary scholarship than of separate studies (if it is mentioned at all). However, as we shall see in this book, this text's monumental importance deserves more attention. Thus, the opening chapters of this book constitute the first overview of the enormous and influential tradition generated by this text. The extended family of texts that translate, adapt, and use sections of *Imago mundi* in a new context is sufficiently broad as to make a complete analysis a multi-volume endeavour. This book therefore makes the first step towards the systematic study of this tradition as a single, multilingual and multi-genre whole.[12] It is hoped that it will facilitate further discussion.

2001), p. 20 n. 43. For an overview of the contents and structure of this text, see Chapter 1 below, and for an overview of its translations and adaptations, Chapter 2. For comments on the accessability of Honorius's style, see Flint, ed., *Imago mundi*, p. 14, and more generally, Walter Andrew Hannam, 'The *Ineuitabile* of Honorius Augustodunensis: A Study in the Textures of early Twelfth-Century Augustinianisms' (unpublished PhD dissertation, Boston College, Graduate School of Arts and Sciences, 2013), pp. 62–65, 89, 91, 135–37, 142, 194–95. See also Michael W. Twomey, 'Medieval Encyclopedias', in R. E. Kaske, *Medieval Christian Literary Imagery: A Guide to Interpretation* (University of Toronto Press, 1988), pp. 182–215 (pp. 189–91).

11 See Figure 1, p. 59. According to Michael W. Twomey the *Imago mundi* is one of 'only a small handful of encyclopedias that existed in sufficient numbers in medieval Britain to have a chance of exercising some influence *and* surviving the *Suppression*' – the other three texts being the encyclopedias of Isidore, Bartholomaeus Anglicus (Bartholomew the Englishman), and Rabanus Maurus; Twomey, 'Inventing the Encyclopedia', in *Schooling and Society: The Ordering and Reordering of Knowledge in the Western Middle Ages*, ed. by Alasdair A. MacDonald and Michael W. Twomey, Groningen Studies in Cultural Exchange, 6 (Leuven, Paris, and Dudley, MA: Peeters, 2004), pp. 73–92 (p. 81), emphasis Twomey's. Jason Baxter uses *Imago mundi* as an example of the phenomenon he describes as 'an explosion of Latin encyclopedic investigations, which became the inspiration for a whole series of later Latin and vernacular treatises' in the twelfth century; Baxter, '"Videmus nunc per speculum": The Mysticism and Naturalism of the Twelfth-Century *imago mundi*', *Haskins Society Journal*, 28 (2017), 119–42 (p. 119).

12 For a brief prolegomenon to the study the plurivocal multilingual tradition of Honorius's other bestseller, the *Elucidarium*, see Gleb Schmidt, 'From Manual to Best-Seller: The History of Honorius Augustodunensis's *Elucidarium*', in *Books of Knowledge in Late Medieval Europe: Circulation and Reception of Popular Texts*, ed. by Pavlína Cermanová and Václav Žůrek, Utrecht Studies in Medieval Literacy, 52 (Turnhout: Brepols, 2021), pp. 137–63 (pp. 145–49). For the text of the *Elucidarium*, see Yves Lefèvre, L'Elucidarium *et les lucidaires: Contribution, par l'histoire d'un texte, à l'histoire des croyances religieuses en France au Moyen Âge*, Bibliothèque des Écoles françaises d'Athènes et de Rome 180 (Paris: E. de Brocard, 1954), pp. 343–497.

The second objective of the book, addressed in Part II, is linked to this issue of the tradition's popularity. Why was this encyclopedic text copied so much? And why was it translated into so many languages? Why were extracts from it added to so many other texts of such varied genres? I propose here a possible explanation for the phenomenal spread of the *Imago mundi* in a triad of characteristics: archaism, fuzziness (technical term!), and the flexible hodoeporical structure of the text. (I use the term 'hodoeporical' to designate an itinerary-like perambulating structure, where the reader is taken through the regions discussed according to a particular trajectory, going via adjacent regions.) Chapters 3, 4, and 5 in Part II of this book are dedicated to demonstrating and exploring each of these characteristics through the analysis of a selection of the text's vernacular adaptations.

Fuzziness is used throughout this book in its formal sense, as an application of fuzzy set theory developed by mathematician Lotfi A. Zadeh, which is particularly apt for use in the humanities and social sciences, where linear borders and strict binary categorisation have limited applicability.[13] I introduce fuzzy set theory and its implications for the analysis of the geographical material in the *Imago mundi* tradition in a separate section of this introduction.[14]

I explore these characteristics of the material by focusing on how the description of Europe (or, even perhaps, Europes, plural) is transformed in various vernacular texts of the tradition.[15] The size of the extended family of *Imago* mundi–derived texts renders it particularly suited to showing how the geographical description of Europe was 'shifting, divisible and flexible',

13 Lotfi A. Zadeh, 'Fuzzy Sets', *Information and Control*, 8 (1965), 338–53. For a discussion of the slow application of fuzzy set theory in the humanities, anchored in analysis of differing scientific cultures in the two fields, see Settimo Termini, 'On Some "Family Resemblances" of Fuzzy Set Theory and Human Sciences', in *Soft Computing in Humanities and Social Sciences*, ed. by R. Seising, and V. Sanz González, Studies in Fuzziness and Soft Computing 273 (Berlin and Heidelberg: Springer, 2012), pp. 39–54. One of Termini's observations is that both soft computing (the broad field to which fuzzy set theory belongs) and the humanities require rigour and precision – but not digit-based numerical precision, which is often part of the hard sciences (ibid., p. 44).

14 See below, pp. 30–32

15 The tentative suggestion of a plural is inspired by Lucien Febvre's description of the Mediterranean as *un complexe de mers* ('a complex of seas') in Fernand Braudel's classic and pioneering study, *La Méditerranée et le Monde Méditerranéen à l'Epoque de Philippe II* (Paris: A. Colin, 1949); Febvre, 'Un livre qui grandit: *La Médieranée et le monde méditeranéen a l'époque de Philippe II*', *Revue historique*, 203.2 (1950), 216–24 (p. 218). For discussions of the importance of Braudel's work, see A. H. Merrills, *History and Geography in Late Antiquity* (Cambridge: Cambridge University Press, 2005), pp. 16–21; and Hugh Trevor-Roper, 'Fernand Braudel the Annales, and the Mediterranean', *The Journal of Modern History*, 4 (1972), 468–79.

to use Eric Hobsbawm's terminology, within the encyclopedic geographic tradition of the late Middle Ages, in the period of *c.* 1100 to *c.* 1500.[16]

In the following sections of this introduction, I first specify the focus of the enquiry – Europe – then introduce the theoretical framework based on fuzzy logic, and finally provide a roadmap for the book. Because the *Imago mundi* and the related family of texts are being examined together for the first time, the overview of this material is presented in dedicated chapters (Chapters 1 and 2), rather than in the introduction.

Europe: What's in a Name?

While the text quoted in the opening of this book, *Orlando Furioso* – almost surprisingly, given the wide range of the *Imago mundi* tradition – is not related to this family of texts in a direct way, the passage I quote from it vividly illustrates the implications and range of this enquiry.[17] If we can understand what Ariosto means when he has Ruggiero leave the space of Europe flying away on his winged steed, then 'Europe' in this passage must mean something geographical for author and audience, something spatial with a defined size and perhaps even boundaries one can cross.[18]

A way to cut this Gordian knot – a procedure needed in order to discuss geographical definitions of 'Europe' and permit the present book to be written – is offered by Gabrielle Spiegel in her discussion of poststructuralism's implications for literary and historical analysis: 'texts both mirror *and* generate social realities, are constituted by *and* constitute the social and discoursive formations which they may sustain, resist, contest, or seek to transform, depending on the case at hand'.[19] Thus, Europe as a geographic designation is very real because it is also a cultural (and in the twentieth and twenty-first centuries, also a political and a social) construct.[20]

Two particular challenges therefore face both the writer and her readers in a project such as this. The first challenge is that recent research has

16 Eric Hobsbawm, 'The Curious History of Europe', in *On History* (London: Weidenfield & Nicholson, 1997), pp. 217–27 (p. 219).

17 An indirect connection does, however, exist; see Chapter 5, p. 141.

18 For a discussion of the passage in *Orlando Furioso*, see Roberto M. Dainotto, *Europe* (*In Theory*) (Durham and London: Durham University Press, 2007), p. 43.

19 Gabrielle Spiegel, 'History, Historicism, and the Social Logic of the Text in the Middle Ages', *Speculum*, 65 (1990), 59–86 (p. 77), Spiegel's emphasis.

20 For the idea that Europe is the product of 'European geographical imagination', see Heffernan, *The European Geographical Imagination*, p. 8.

focused on the study of Europe not as a physical space, but as a social space, produced, in Henri Lefebvre's terms, through action and interaction, social and political.[21] According to Jacques Le Goff, 'Europe began as a myth and a geographical concept', and studies of the (medieval) idea of Europe often prioritize – justifiably given its contemporary relevance – the former over the latter.[22] For instance, Michael Wintle's monumental and finely crafted *The Image of Europe* and Klaus Oschema's *Bilder von Europa* provide an excellent overview of historical (and in the latter case, specifically medieval)

21 It is worth noting here the focus of many recent studies on the question of European identity: e.g. Chiara Bottici and Benoît Challand, eds, *Imagining Europe* (Cambridge University Press, 2014). See also observations in J. G. A. Pocock, *The Discovery of Islands: Essays in British History* (Cambridge: Cambridge University Press, 2005), p. 49. In Heikki Mikkeli's *Europe as an Idea and an Identity* (New York: St. Martin's Press, 1998), for instance, the focus is on 'ideas about Europe' (p. vi) but not on the geographical conception, and indeed geography is not mentioned at all in the preface. Some examples are discussed further below, but the bibliography is vast. While the history of the cultural and political meanings of 'Europe' lies beyond the realm of the present study, additional bibliographical references might be found in Klaus Oschema, *Bilder von Europa im Mittelalter*, Mittelalter-Forschungen, 43 (Ostfildern: Thornbecke, 2013); and Olaf Asbach, *Europa: Vom Mythos zur Imagined Community? Zur historischen Semantik 'Europas' von der Antike bus ins 17. Jahrhundert*, Europa und Moderne, 1 (Munich: Wehrhahn, 2011). For a discussion of the interrelation between the geographical and cultural constructs, see also Hobsbawm, 'The Curious History of Europe', and Henri Lefebvre, *The Production of Space*, trans. by Donald Nicholson-Smith (Malden and Oxford: Blackwell, 1991), esp. pp. 53, 57, 73. In this reading, a 'space' can be different in different periods of time. The work was originally published in French as *La production d'espace* (Paris: Anthropos, 1974).

22 Le Goff, *L'Europe est-elle née au Moyen Age?* (Paris: Seuil, 2003), p. 8. The book has been published in English as *The Birth of Europe* (Malden: Blackwell, 2005). Heffernan's observation, made several decades ago, still largely holds, despite the proliferation of studies dedicated to the idea of 'Europe': he argued that 'How Europeans have creatively imagined themselves *geographically* is a surprisingly ignored theme'. Heffernan, 'The Changing Political Map: Geography, Geopolitics, and the Idea of Europe since 1500', in *An Historical Geography of Europe*, ed. by R. A. Butlin and R. A. Dodgshon (Oxford: Clarendon Press, 1998), pp. 140–80 (p. 142), emphasis Heffernan's. Gerard Delanty observes that the distinction between the geographical and cultural meanings often becomes invisible; Delanty, *Inventing Europe: Idea, Identity, Reality* (Basingstoke: Macmillan 1995), p. 4. For counterexamples (studies where a geographical definition is provided and the problem discussed), see e.g. Anthony Pagden, 'Europe: Conceptualising a Continent', in *The Idea of Europe: From Antiquity to the European Union*, ed. by Pagden (Cambridge: Cambridge University Press, 2002), pp. 33–54, though his focus is not specifically on the Middle Ages; see also Asbach, *Europa*, p. 29. For a recent bibliography of the subject see Klaus Oschema's monumental *Bilder von Europa im Mittelalter*. I am grateful to Christoph Mauntel for first bringing Oschema's monograph to my attention. Two further relevant volumes have appeared during the preparation of the present book: Oschema, *'Europe' in the Middle Ages* (Leeds: ARC Humanities Press, 2023) and Christoph Mauntel, *Die Erdteile in der Weltordnung des Mittelalters: Asien – Europa – Afrika* (Stuttgart: Anton Hiersemann Verlag, 2023). Thanks are due, once more, to Christoph Mauntel for alerting me to these two new publications.

uses of the term 'Europe'.[23] Oschema's great achievement is demonstrating that not only was the term 'Europe' used quite extensively in medieval discourse, but that contrary to the assertion in Denys Hay's classic work the concept of 'Europe' was not subservient to the concept of 'Christendom' and thereby devoid of political meaning.[24] Hay's main thesis is that the term 'Europe' in the Middle Ages only had a geographical sense, and that the real equivalent and precursor of the modern cultural conception of Europe was the concept of 'Christendom'.[25] The idea that the meaning of the term in

23 Of particular relevance to the present study is Wintle's discussion of geographical boundaries of Europe; see *The Image of Europe: Visualising Europe in Cartography and Iconography Throughout the Ages* (Cambridge: Cambridge University Press, 2009), at pp. 41–52, 86–98, 164–77. Oschema's study is more narrowly focused on the medieval period. However, the multitude of sources presented in the course of his analysis, particularly within the chronologically structured first part of his opus, makes it difficult to isolate individual types of use; see also Albrecht Classen's and Klaus Herbers's reviews of the book in *Mediaevistik*, 27 (2014), 245–46, and *Zeitschrift für Historische Forschung*, 43 (2016), 77–78, respectively.

24 A similar argument to Oschema's is found in Claire Weeda, 'Images of Ethnicity in Later Medieval Europe' (unpublished PhD dissertation, Universiteit van Amsterdam, 2012), p. 68 n. 97; see also her *Ethnicity in Medieval Europe, 950–1250: Medicine, Power and Religion* (York: York Medieval Press, 2021). For importance of Hay's work see, for instance, Ingrid Baumgärtner, 'Europa in der Kartographie des Mittelalters. Repräsentationenen – Grenzen – Paradigmen', in *Europa im Weltbild des Mittelalters. Kartographische Konzepte*, ed. by Ingrid Baumgärtner and Hartmut Kugler (Berlin: Akademie Verlag, 2008), pp. 9–28 (p. 11); Wintle, *The Image of Europe*, pp. 33, 156–58, 161; Michel Mollat du Jourdin, *Europe and the Sea* (Oxford: Blackwell, 1993), pp. 115–16; Delanty, *Inventing Europe*, at, for instance, pp. 10, 14, 16–17, 33–42; Pagden, 'Europe', pp. 74–75. Echoes can also be seen in discussions of ideas of 'Europe' for later periods. See, for instance, Ezra Talmor, 'Reflections on the Rise and Development of the Idea of Europe Europe', *History of European Ideas*, 1 (1980), 63–66. For a discussion of the extent of Hay's influence on more recent scholarship, see Oschema, *Bilder von Europa*, pp. 75–76. Hay's work has even led to some suggestions that the geographical concept of Europe as was not used in the medieval context such (or at least the denial of any importance of the concept); see, for instance, William Chester Jordan, '"Europe" in the Middle Ages', in *The Idea of Europe*, ed. by Pagden, pp. 72–90 (pp. 74–75), and the discussion of this view in Oschema, *Bilder von Europa*, pp. 19–23 and 60–76.

25 *Europe: The Emergence of an Idea* (Edinburgh: Edinburgh University Press, 1957), p. x; Denys Hay, *The Medieval Centuries*, 2nd edn (London: Methuen, 1964), p. 3. The term 'Christendom' had a political as well as a spatial signification; see Nora Berend, 'The Concept of Christendom: A Rhetoric of Integration of Disintegration?', in *Hybride Kulturen im mittelalterlichen Europa*, ed. by Michael Borgolte and Bernd Schneidmüller (Berlin: de Gruyter, 2010), pp. 51–62 (p. 55). For a criticism of this idea, see Oschema, *Bilder von Europa*, esp. pp. 31–32. A striking example of the distinction between 'Europe' the territory and 'Christendom' as cultural unity is presented in the famous crusading speech of Urban II; the William of Malmesbury version is found in *De Gestis Regum Anglorum*, ed. W. Stubbs, Rolls Series 90, 2 vols (London, Her Majesty's Stationary Office, Rolls Commission, 1887–89), II, pp. 394–95; translated in Hay, *Europe: The Emergence of an Idea*, p. 32. This is discussed in Chapter 3 below. An example of the explicit association between the two concepts, written by the Mallorcan cartographer Guillem Soler in the 1380s, is discussed

the Middle Ages was exclusively geographical has since been questioned, marking a dominant trend in the scholarly studies on the subject: the study of the history and development of the current cultural concept of 'Europe'.[26] This underlines the importance of the model–construct tension within the history of geographical ideas that I mentioned at the outset of this discussion, and since the tension in this case concerns our understanding of medieval geographical constructs, it brings us to the medieval side of our problem.

The polyvalence of the word results in a situation where 'Europe', to quote J. G. A. Pocock, 'can be defined in so many ways that one must always ask – but not always hope to be told – in what sense it is being used at the moment.'[27] As Henk Wesseling points out 'what we understand by the word Europe is not a geographical unity'.[28] The term can mean different things in different contexts, including a rhetorical topos, a legendary female figure, a king, or 'a geographical entity' which, as Caroline D. Eckhardt puts it, 'could be mapped in abstract terms as one of the three inhabited continents

by Sandra Sáenz-López Pérez, in 'El "otro" en la cartografía bajomedieval: Aportaciones desde la lectura de los mapas', in *Através do olhar do Outro: Reflexões acerca de sociedade europeia* (*séculos XII–XV*), ed. by José Albuquerque Carreiras, Giulia Rossi Vairo, and Kristjan Toomaspoeg (Tomar: Instituto Politécnico de Tomar, 2018), pp. 135–56 (p. 142). Voltaire, in his *Essai sur les moeurs et l'esprit des nations*, also associated the medieval idea of Europe with Christendom; see the discussion in Wolfgang Schmale, 'Europe: Eighteenth-Century Definitions', in *Bordering Early Modern Europe*, ed. by Maria Baramova, Grigor Boykov, and Ivan Parvev (Wiesbaden: Harrazzowitz Verlag, 2015), pp. 79–93 (p. 85).

26 See in particular P. Gautier Dalché, 'Représentations géographiques de l'Europe – septentrionale, centrale et orientale – au Moyen Age', in *Europa im Weltbild des Mittelalters: kartographische Konzepte*, ed. by Ingrid Baumgärtner and H. Kugler, Orbis Mediaevalis: Vorstellungswelten des Mittelalters, 10 (Berlin: Akademie, 2008), pp. 63–79 (p. 63); William Wallace, 'Where Does Europe End? Dilemmas of Inclusion and Inclusion', in *Europe Unbound: Enlarging and Reshaping the Boundaries of the European Union*, ed. by Jan Zielonka (New York: Routledge, 2002); and Pagden, ed., *The Idea of Europe*. There have been so many works dedicated to this subject that a full bibliography is impracticable here. Examples include Delanty's *Inventing Europe*; Mikkeli, *Europe as an Idea*. Also relevant here is the question of what would have been understood as geography in the Middle Ages; Keith Lilley, 'Geography's Medieval History: A Neglected Enterprise?', *Dialogues in Human Geography*, 1 (2011), 147–62. For a detailed overview of previous studies, see also Oschema, *Bilder von Europa*, pp. 19–23 and 60–76.

27 Pocock, *The Discovery of Islands*, pp. 48–49. See also the description of differences between what was meant by 'Europe' in different time periods and a comment on the perceived stability of the concept, which he observes is often 'largely unquestioned' even when it is one the concepts 'purported to be the objects of enquiry', in Alexis Wick, *The Red Sea: In Search of Lost Space* (Oakland: University of California Press, 2016), pp. 62–63. See also, however, the discussion and references in Oschema, *Bilder von Europa*, at p. 77.

28 H. Wesseling, *A Cape of Asia. Essays on European History* (Leiden: Leiden University Press, 2011), p. 92.

of the spherical earth'.[29] *Transforming Europe* deals specifically with this abstract concept.

The second challenge is that we all already have a particular (and subjective) idea of Europe in mind, formed by our own time and cultural context.[30] Indeed, in contemporary discourse, the term 'Europe' is endowed with an almost unparalleled complexity. Our current geographical concept of 'Europe' (even if we leave aside for the moment the use of the term as shorthand for 'European Union' in contemporary discourse) is a modern construct, and it is difficult to shed its influence. The 'sevenfold continental system' invoked in a modern mind by the concept of Europe as continent only took its current form towards the second half of the twentieth century.[31] Furthermore, the very size, shape, and layout of the 'continent' (irrespective of its land boundaries, which pose a separate problem that we will return to in Chapter 4), so deeply imbedded in the modern imagination, have been shown to be a geocultural construct.[32]

The Mercator projection, but one method among many of representing the spherical Earth on a flat surface, expands the size of the northern hemisphere, making Europe appear much larger than it in fact is, in comparison to Australia and New Zealand, for instance, which appear much smaller than they are in three-dimensional reality.[33] Thus the complex of associations

29 As excellently summarised in Caroline D. Eckhardt, 'One Third of the Earth? Europe Seen and Unseen in the Middle English Chronicles of the Fourteenth Century', *Comparative Literature*, 58.4 'The Idea of Europe' (2006), 313–38 (p. 324).

30 Dipesh Chakrabarty, *Provincializing Europe: Postcolonial Thought and Historical Difference* (Princeton, NJ: Princeton University Press, 2000), pp. xii–xiv, 43.

31 Lewis and Wigen, *Myth of Continents*, p. 21.

32 In my use of 'geocultural' here I follow Romm, 'Continents, Climates, and Cultures: Greek Theories of Global Structure', in *Geography and Ethnography: Perceptions of the World in Pre-Modern Societies*, ed. by Kurt A. Raaflaub and Richard J. A. Talbert (Chichester: Wiley–Blackwell, 2010), pp. 215–35 (p. 216). See also Christopher Dawson, *Understanding Europe* (Washington, DC: Catholic University of America Press, 2008; first edition London: Sheed and Ward, 1952), pp. 39–40; Lewis and Wigen, *The Myth of Continents*, esp. pp. 16–17, 21–25; Peter J. Yearwood, 'Continents and Consequences: The History of a Concept', *Journal of Global History*, 9 (2014), 329–56; Pagden, 'Europe', pp. 36–37, 45–46.

33 The Mercator projection, its influence on contemporary cartography, and critique of its cultural impact have been the subject of much discussion. See, for instance, Wintle, *The Image of Europe*, pp. 255–56; Jordan Branch, *The Cartographic State: Maps, Territory, and the Origins of Sovereignty* (Cambridge: Cambridge University Press, 2013), pp. 57–58; Michael Wintle, 'The Early Modern Iconography of Europe: Visual Images and European Identity', in *Contesting Europe: Comparative Perspectives on Early Modern Discourses on Europe, 1400–1800*, ed. by Nicolas Detering, Clementina Marsico, and Isabella Walser-Bürgler (Leiden and Boston: Brill, 2020), pp. 54–76 (pp. 61–65). For an overview of the controversies and debates, see Monmonier, *Drawing the Line: Tales of Maps and Cartocontroversy* (New York: Henry Holt, 1995), esp. pp. 16–22, and

of the geographical term itself is vastly different in the present day from that of its medieval counterpart.[34] As will become apparent in the course of *Transforming Europe*, medieval and modern ideas of the geographical entity designated 'Europe' do not necessarily entirely coincide, although, through constraints of chronology and causality, medieval ideas will have perforce played a role in the genesis of modern ones.

As Ingrid Baumgärtner observes, the search for a set meaning for the concept of Europe in the Middle Ages is complicated by the very real possibility that every writer had their own individual idea of it.[35] Karl Leyser's 1992 article provides an important prolegomenon to the analysis of the 'geographically and cosmologically oriented understanding of Europe', founded on the tripartite worldview (Asia, Africa, and Europe), shared by the most important early medieval authorities – Augustine, Isidore, and Orosius – and passed on to later writers.[36] Leyser brings the narrative up to the eleventh century, and offers a tantalising glimpse into the importance of understanding just how Europe was defined as a geographical space by various medieval writers. It is therefore appropriate that the narrative in this book starts with the twelfth century, with a work that relies heavily on these previous authorities.

The choice to focus on the combination of the *Imago mundi* tradition and descriptions of Europe is thus justified by its nodal position in the development of medieval encyclopedic thought, which means its idea of Europe will be one of the more dominant ones. As I have already mentioned, this text was translated, together with fragments of the encyclopedic text itself, into different cultures, languages, texts and genres, and even continued to circulate in the Age of Discovery and the Age of Print. A selection of its

Monmonier, *Rhumb Lines and Map Wars: A Social History of the Mercator Projection* (Chicago and London: University of Chicago Press, 2010), esp. pp. 138–50.

34 This point was made by Patrick Geary in relation to peoples and nations in *The Myth of Nations* (Princeton, NJ: Princeton University Press, 2002), pp. 13, 37–38.

35 Baumgärtner, 'Europa in der Kartographie des Mittelalters', p. 10, with reference to Bernd Schneidmüller, 'Europa im Mittelalter: Vorstellungen und Forschungsaufgaben', in *Integration und Transformation in Europa: Beiträge aus dem Forschungsschwerpunkt 'Integration und Transformation in Europa* (*ITE*)', ed. by Heinz-Dieter Wenzel, Forschungsforum: Berichte aus der Otto-Friedrich-Universität Bamberg, 9 (Bamberg: Universitäts-Verlag Bamberg, 1999), pp. 6–16 (p. 7); and Schneidmüller, 'Die mittelalterlichen Konstruktionen Europas: Konvergenz und Differenzierung', in *'Europäische Geschichte' als Historiographisches Problem*, ed. by Heinz Duchhardt and Andreas Kunz, Veröffentlichungen des Instituts für Europäische Geschichte, Abteilung Universalgeschichte Beiheft 42 (Mainz: Philipp von Zabern, 1997), pp. 5–24 (p. 12).

36 Leyser, 'Concepts of Europe in the Early Middle Ages', *Past and Present*, 137 (1992), 25–47 (pp. 26–27).

translations and adaptations form the core of this study. Their fidelity to the original ranges from the very faithful to a complete restructuring and incorporation into a new encyclopedic format, and thus even when the term 'translation' is used here, it is in its broadest sense.[37]

Of Space-Time, Borders, and Mathematics

In the article quoted towards the beginning of this Introduction, Gabrielle Spiegel cites Bakhtin's articulation of the analytical principles she proposes.[38] In the following discussion, recourse is made to Bakhtin again, for a concept of paramount usefulness, the *chronotope*, which he defined as 'the intrinsic connectedness of temporal and spatial relationships'.[39] This concept has a triple role to play in the following discussion.

In the first place, it is useful for articulating the interconnectedness of space-time in the medieval worldview. It is optimal for the discussion of medieval world maps (*mappae mundi*) which, to quote Alfred Hiatt, can be read 'chronologically, as well as chorographically, in terms of time as well as space'.[40] *Mappae mundi*, particularly those of the so-called T-O type, provide a visual representation corresponding to, and also complementing the type

37 See Chapter 2. See also Joëlle Ducos, 'Que traduire en français? Traductions uniques et traductions multiples', in *Translation and Authority: Authorities in Translation*, ed. by Pieter de Leemans and Michèle Goyens, The Medieval Translator, 16 (Turnhout: Brepols, 2017), pp. 39–52 (p. 40); and discussion in Natalia I. Petrovskaia, 'Translation and Transmission of Texts in Medieval Europe: Two Aspects of Translatio', in *Literature, Science and Religion: Textual Transmission and Translation in Medieval and Early Modern Europe*, ed. by Manel Bellmunt Serrano and Joan Mahiques Climent, Problemata Literaria 88 (Kassel: Edition Reichenberger, 2020), pp. 359–90 (p. 360).

38 Spiegel, 'History', p. 83.

39 M. M. Bakhtin, 'Forms of Time and of the Chronotope in the Novel: Notes toward a Historical Poetics', in *The Dialogic Imagination: Four Essays by M. M. Bakhtin*, ed. by Michael Holquist, trans. by Caryl Emerson and Michael Holquist, University of Texas Press Slavic Series, 1 (Austin: University of Texas Press, 1981), pp. 84–258 (p. 84). For a discussion of the medieval unity of space-time, see below, pp. 27–28. For the use of the concept in relation specifically to medieval geographical sources, see, for instance, Dale Kedwards, 'Geography', in *A Critical Companion to Old Norse Literary Genre*, ed. by Massimiliano Bampi, Carolyne Larrington, and Sif Rikharðsdóttir (Cambridge: D. S. Brewer, 2020), pp. 127–44 (p. 128 and n. 4), without reference to Bakhtin.

40 Hiatt, 'Maps of Empires Past', in *Post-Empire Imaginaries? Anglophone Literature, History, and the Demise of Empires*, ed. by Barbara Buchenau, Virginia Richter, and Marijke Denger (Leiden and Boston: Brill, 2015), pp. 3–23 (p. 14). See also comments on time and medieval maps in Robert Bartlett, 'Heartland and Border: The Mental and Physical Geography of Medieval Europe', in *Power and Identity in the Middle Ages: Essays in Memory of Rees Davies*, ed. by Huw Pryce and John Watts (Oxford: Oxford University Press, 2007), pp. 23–36 (pp. 32–33). Since there

of information that we find in geographical texts such as Book I of the *Imago mundi*. The name of the T-O maps reflects the tripartite structure: they are based on the simple schemas dividing the inhabited world – depicted by a circle – into three parts.[41] Thus, both these maps and our text describe the inhabited world as separated into three parts: Asia, Europe, and Africa, treated in that order in the text.[42]

The interrelation of the *mappae mundi* 'world maps', on the one hand, and geographical texts on the other, has been much discussed.[43] While the text of the *Imago mundi* is not illustrated, it is, in a number of manuscripts,

is a connection between medieval *mappae mundi* ('world maps') and the *Imago mundi* texts, Hiatt's observation is equally valid for both; Hiatt, 'Maps of Empires Past', p. 15.

41 The current type designation for these maps (T-O) derives from their description by Leonardo di Stagio Dati in the fifteenth century in his *La sfera*, 3.11; see Dati, *La sfera: Libri Quattro in ottava rima*, ed. by Enrico Narducci (Milan, 1865; reprinted Bologna, 1975); Enrico Narducci, ed., *La sfera: Libri Quattro in ottava rima* (Milan, 1865; reprinted Bologna, 1975). See also Roberto Almagià, *Planisferi, carte nautiche e affini dal secolo XIV al XVII esistenti nella Biblioteca Apostolica Vaticana*, Monumenta Cartographica Vaticana, 1 (Vatican: Biblioteca Apostolica Vaticana, 1944), p. 118; David Woodward, 'Medieval *Mappaemundi*', in *History of Cartography I: Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean*, ed. by J. B. Harley and David Woodward (Chicago and London: University of Chicago Press, 1987), pp. 286–370 (p. 301); and Wojciech Iwańczak, 'Borders and Borderlines in Medieval Cartography', in *Frontiers in the Middle Ages: Proceedings of the Third European Congress of Medieval Studies (Jyväskylä, 10–14 June 2003)*, ed. by O. Merisalo and P. Pahta, Textes et Etudes du Moyen Age, 35 (Louvain-la-neuve: Féderation Internationale des Instituts d'Études Médiévales, 2006), pp. 661–72 (p. 662 n. 2).

42 For discussion of the order, see Natalia I. Petrovskaia, 'La formulation tripartite du monde dans les encyclopédies et textes littéraires du Moyen Âge', in *La Formule au Moyen Âge IV / Formulas in Medieval Culture IV*, ed. by E. Louviot, C. Garcia, and S. Morrison, ARTeM Atelier de Recherche sur les Textes Médiévaux, 31 (Turnhout: Brepols, 2022), pp. 197–217.

43 See, for instance, Uwe Ruberg, '*Mappae mundi* des Mittelalters im Zusammenwirken von Text und Bild', in *Text und Bild: Aspekte des Zusammenwirkens zweier Künste in Mittelalter und früher Neuzeit*, ed. by Christel Meier and Uwe Ruberg (Wiesbaden: Ludwig Reichert, 1980), pp. 550–92; David Woodward, 'Medieval *Mappaemundi*', pp. 286–87; Patrick Gautier Dalché, 'De la glose à la contemplation: Place et function de la carte dans les manuscrits de haut Moyen Âge', in *Testo e immagine nell'alto medioevo: 15–21 aprile 1993*, Settimane di studio del Centro Italiano di Studi sull'alto Medioevo, 41 (Spoleto: Presso la sede del Centro, 1994), pp. 693–771; Patrick Gautier Dalché, 'Maps in Words: The Descriptive Logic of Medieval Geography from the Eighth to the Twelfth Century', in *The Hereford World Map: Medieval World Maps and their Context*, ed. by P. D. A. Harvey (London: BL, 2006), pp. 223–42; Margriet Hoogvliet, '*Mappae mundi* and Medieval Encyclopaedias: Image versus Text', in *Pre-Modern Encyclopaedic Texts*, ed. by Binkley, pp. 63–74; Silvère Menegaldo, 'Géographie et imaginaire insulaire au Moyen Âge, d'Isidore de Séville à Jean de Mandeville ', *Les Lettres romanes*, 66 (2012), 37–86; Bettina Schöller, 'Transfer of Knowledge: *Mappae Mundi* Between Texts and Images', *Peregrinations: Journal of Medieval Art and Architecture*, 4 (2013), 42–55; Iwańczak, 'Borders and Borderlines in Medieval Cartography', p. 665.

accompanied by diagrams of the T-O *mappa mundi* type or wind schemas.[44] Like the synchronic representation of history in the *mappae mundi*, the geographical descriptions of Europe in the *Imago mundi* tradition cannot be divorced from the temporal references made within those descriptions. This is most striking where an extract of the *Imago mundi* text is incorporated into a narrative or historical text. The focus of the present book is therefore on the *chronotope* of Europe in the *Imago mundi* tradition.

The second and third important aspects of the *chronotope* for our purposes here are linked, and I discuss them together. Both derive from the specifics of Bakhtin's definition of the term, which is therefore worth quoting *in extenso*: 'We will give the name *chronotope* (literally "time space") to the intrinsic connectedness of temporal and spatial relationships that are artistically expressed in literature. This term [space-time] is employed in

44 At least seven manuscripts have T-O diagrams; Evelyn Edson, *Mapping Time and Space: How Medieval Mapmakers Viewed their World*, British Library Studies in Map History, 1 (London: BL, 1997), pp. 113, 182–83 n. 56. In Cambridge, Corpus Christi College MS 66 (s. XII), a detailed *mappa mundi* precedes the *Imago mundi*: see *Parker on the Web*, https://parker.stanford.edu/ (accessed 9 April 2024). It has links to the Hereford *mappa mundi*, connecting the *Imago mundi* to the cartographic tradition; Flint, ed., *Imago mundi*, p. 10; Michael W. Twomey, 'Honorius Augustodunensis', *Trade, Travel, and Exploration in the Middle Ages: An Encyclopedia*, ed. by John Block Friedman and Kristen Mossler Frigg, with Scott D. Westrem and Gregory G. Guzman (New York and London: Routlledge, 2000), pp. 259–61 (p. 260). In Exeter, Cathedral Library MS 3514 (s. XIII), p. 53, a *mappa mundi* follows the text; see Julia Crick, 'The Power and the Glory: Conquest and Cosmology in Edwardian Wales (Exeter, Cathedral Library, 3514', *Textual Cultures, Cultural Texts*, ed. by Orietta da Rold and Elaine Treharne (Cambridge: Brewer, 2010), pp. 21–42; and Natalia I. Petrovskaia, *Medieval Welsh Perceptions of the Orient* (Turnhout: Brepols, 2015), pp. 8, 11, and plate 1. An almost identical map is found in the Welsh-language Oxford, Jesus College MS 20 (s. XIV^2), f. 32v, which contains genealogies alongside narrative and religious texts; see Digital Bodleian https://digital.bodleian.ox.ac.uk/objects/93d67972-f107-40ee-a0a8-5327e827e812/ (accessed 27 February 2023); Diana Luft, Peter Wynn Thomas, and D. Mark Smith, eds, *Rhyddiaith Gymraeg 1300–1425* (2013) http://www.rhyddiaithganoloesol.caerdydd.ac.uk/cy/ms-home.php?ms=Jesus20 (accessed 27 February 2023). The French *Image du monde* contians T-O diagrams and it has been observed that its geographical section can be projected onto a *mappa mundi* with a slight adjustment of the T-shape; Chantal Connochie-Bourgne, 'Limites et diversités de l'Europe: Le parti pris par Gossouin de Metz (*Image du monde*, 1245)', in *De la Chrétienté à l'Europe: Actes du Colloque Orléans, mai 1993*, ed. by Bernard Ribémont (Orleans: Paradigme, 1995), pp. 49–62 (p. 54); cf. Chapter 4. The integration of illustrations in this text contrasts with the Latin tradition; Gossouin de Metz, *L'Image du monde, une encyclopédie du XIIIe siècle: edition critique et commentaire de la première version*, ed. by Chantal Connochie-Bourgne, unpublished PhD thesis, University of Paris, Sorbonne, Paris IV, 1999,p. 808, ll. 1845–46. Cf. references to accompanying illustrations in Isidore's *De natura rerum*, X.2, XI.1; Chet Van Duzer, 'A Neglected Type of Medieval Mappamundi and Its Re-imaging in the Mare Historiarum (BnF MS Lat. 4915, Fol. 26v)', *Viator*, 43 (2012), 277–301 (p. 281 n. 19).

mathematics, and was introduced as part of Einstein's Theory of Relativity'.[45] One important point that arises from this description is that the *chronotope* reflects the unexpected similarity between medieval and modern conceptualisations of space-time (an apparent paradox). Einstein's articulation of the theory is more physical than mathematical, but Bakhtin's description of space-time as first and foremost a mathematical concept is accurate. The idea of relative time was given mathematical form by Henri Poincaré around the same time as Einstein and by Hermann Minkowski a little earlier.[46]

There is a tendency in the history of physics to skip from Aristotle directly to Galileo and Newton as a continuum of scientific thought.[47] From the perspective of of mathematics and physics as modern disciplines, this historical account is accurate, as early modern theorists relied on Aristotle but not on medieval thought. However, from the perspective of historical study this results in a distortion, since the medieval period becomes a blip in the story ('dark' ages invisible in the narrative, much like 'dark' matter is in the universe). One wonders as a consequence whether a focus on philosophical conceptualisation rather than mathematical and physical description of space might not yield an alternative continuum of conceptual thought between the makers of the *mappae mundi*, on the one hand, and Minokwski, Poincaré, and Einstein on the other, wherein Galileo and Newton – whose theories are based on the idea of absolute time – would be the blip?

I make this observation here because it is an extension into the broader history of science (relating to space) of the comment made by J. B. Harley in relation to the history of cartography. Disucussing the prioritisation of scientific progress in accuracy in the history of mapmaking, Harley writes:

45 Bakhtin, 'Forms of Time', p. 84; emphasis and brackets (including square brackets) are Bakhtin's.

46 As Sir Roger Penrose points out, Einstein was not the first to propose the idea; Penrose, *The Road to Reality: A Complete Guide to the Laws of the Universe* (London: Vintage Books, 2005), pp. 383, 406; cf. Stephen Hawking, *A Brief History of Time: From the Big Bang to Black Holes* (London: Bantam, 2016), p. 23. Note that, given what we know of the conceptualisation of space-time on medieval maps, one might perhaps take issue with the notion that in the pre-modern period as a whole, 'Time was completely separate from and independent of space'; Hawking, *A Brief History of Time*, p. 21.

47 See, for instance, Penrose, *Road to Reality*, pp. 383–90. Compare Bülent Atalay, *Math and the Mona Lisa: The Art and Science of Leonardo da Vinci* (New York: HarperCollins and the Smithsonian Institution, 2006), p. 55. His statement 'Science [...] has progressed in fits and starts, its course sometimes entirely retrograde in direction' is followed by a reference to the 'reinvention' of science in the Renaissance and the beginning of a union between science on the one hand and technology on the other in the seventeenth century (ibid.). The implication appears to be that the Middle Ages represented a step backwards in terms of what is considered scientific progress.

> Taken alone, however, this aspect fails to provide a balanced view of the developments of maps in history. It assumes a linear historical progression and, moreover (somewhat anachronistically), assumes that accuracy of measurement and comprehensiveness were as important throughout the past as they have been in the modern period.[48]

The point I am making here differs somewhat from Harley's, because it is less of a critique and more of a health warning. A map is always an approximation, and a map made for the history of physics might justifiably skip some landmarks crucial for the history of geography.[49] I would suggest that the similarity between the four-dimensional space-time of the theory of relativity and the unified nature of medieval space-time which becomes visible by virtue of Bakhtin's *chronotope* concept might be one such landmark.[50] It can help us to understand the *Imago mundi* and the texts discussed in this book if we think of medieval space also as four-dimensional.

This brings me to my third point. Bakhtin's use of modern mathematical concepts as epistemic tools for analysis of literary phenomena provides inspiration for the approach taken here in my use of fuzzy sets as an analytical model. In order to introduce this model, I start by explaining the primary problem it seeks to address: the problem posed by the idea of (linear) boundaries between geographical regions.

The issue of geographical boundaries of Europe in the Middle Ages and their perception have been the focus of increasing attention recently.[51] This

48 Harley, 'The Map and the Development of the History of Cartography', p. 3. (My interpolation is in square brackets; the parentheses are Harley's.) Cf. also P. D. A. Harvey, 'Medieval Maps: An Introduction', in *History of Cartography I*, ed. by Harley and Woodward, pp. 283–85.

49 Omissions can be, but not always are deliberate; see the fundamental discussion in J. B. Harley, 'Silences and Secrecy: The Hidden Agenda of Cartography in Early Modern Europe', *Imago mundi*, 40 (1988), 57–76.

50 The unified reading of space-time in the medieval context is crucial to Georg Jostkleigrewe's explanation of the mysterious apparent shift in Europe's boundaries in the medieval French *Image du monde*; Jostkleigrewe, 'L'espace entre tradition et innovation: La géographie symbolique du monde et son adaptation par Gossouin de Metz', in *Construction de l'espace au Moyen Age: Pratiques et représentations. XXXVIIe Congrès de la SHMES. Mulhouse, 2–4 juin 2006* (Paris: Publications de la Sorbonne, 2007), pp. 369–78. I discuss this in detail in Chapter 4.

51 For instance, Baumgärtner and Kugler, eds, *Europa im Weltbild des Mittelalters*; Bernd Schneidmüller, 'Die mittelalterichen Destillationen Europas aus der Welt', in *Europa in der Welt des Mittelalters: Ein Colloquium für und mit Michael Borgolte*, ed. by Tillman Lohse and Benjamin Scheller (Berlin: De Gruyter, 2014), pp. 11–32, with reference to the *Imago mundi* on p. 14; Klaus Herbers, 'Europa und seine Grenzen im Mittelalter', in *Grenzräume und Grenzüberschreitungen im Vergleich: Der Osten und der Westen des mittelalterlichen Lateineuropa*, ed. by Klaus Herbers and Nikolas Jaspert, Europa im Mittelalter, 7 (Berlin: Akademie Verlag, 2007), pp. 21–41. Note

coincides with an increase in appreciation of the geographical information carried by both geographical texts and *mappae mundi*. Consequently, discussions of medieval boundaries, geographical and otherwise, have become progressively nuanced.[52] There is a greater awareness of the fact that medieval borders were not always clearly fixed or defined.[53] For example, as Giles Constable observes, as 'an intellectual construct existing territorially only as a western extension of the Asiatic land-mass', Europe is an illustrative 'example of the uncertainty of medieval frontiers'.[54] The connection between these concepts and the separation of 'self' and 'other' is not simple, as Constable points out.[55] Constable further urges us to 'question the paradigm of the Middle Ages as a period filled with frontiers and boundaries'.[56]

It has also been argued recently that the concept of the border as a political boundary or frontier in the linear sense, separating different cultures,

that Herbers departs from a discussion of geographical concepts and boundaries into discussion of political frontiers and an overview of historiography relating to the socio-politico-cultural concept of Europe.

52 For examples of nuanced approaches, see John Block Friedman, 'Cultural Conflicts in Medieval World Maps', in *Implicit Understandings: Observing, Reporting, and Reflecting on the Encounters between Europeans and Other Peoples in the Early Modern Era*, ed. by Stuart B. Schwartz (Cambridge: Cambridge University Press, 1994), pp. 64–95; Sharon Kinoshita, *Medieval Boundaries: Rethinking Difference in Old French Literature* (Philadelphia: University of Pennsylvania Press, 2006); Neil Cartlidge, ed., *Boundaries in Medieval Romance* (Woodbridge: Boydell & Brewer, 2008); David Abulafia and Nora Berend, eds, *Medieval Frontiers: Concepts and Practices* (New York and Abingdon: Routledge, 2016).

53 Giles Constable, 'Frontiers in the Middle Ages', in *Frontiers in the Middle Ages*, ed. by Merisalo and Pahta, pp. 3–28 (p. 9). However, as Constable remarks, clear demarcation through 'verbal mapping' would have been present in, for instance, charters (ibid.). Some medieval maps of Europe, such as that in Ralph Higden's *Polychronicon*, have been shown to emphasise internal over external boundaries; see Eckhardt, 'One Third of the Earth?': 'This impetus towards representational map-making gives less recognition to the continents; Europe's constituent elements may be visible, but the perimeters are unmarked, and continental identities as such are effaced by other structural patterns' (p. 324). Some, such as the map of the *Liber Floridus* (*c.* 1120) of Lambert of Saint-Omer, preserved in Ghent, University Library MS 92, f. 241v, seem to use natural boundaries (such as mountains and rivers) to separate out individual regions; see discussion in Camille Serchuk, 'Gaul Undivided: Cartography, Geography and Identity in France', in *Mapping Medieval Geographies: Geographical Encounters in the Latin West and Beyond*, ed. by Keith Lilley (Cambridge: Cambridge University Press, 2013), pp. 175–200 (pp. 192–94); the map is reproduced on p. 193.

54 Constable, 'Frontiers', p. 7.

55 Constable, 'Frontiers', p. 6. Since this text and its vernacular versions are occasionally accompanied by T-O maps, as mentioned above, the lack of a focus on boundaries within the textual version of the geographical description brings into question the assumption regarding the prominence of such boundaries in the pictorial representations also.

56 Constable, 'Frontiers', p. 6.

originated in thirteenth-century Spain, post-dating the origins of the T-O tradition and the *Imago mundi*.[57] The fact that, as we shall see, most of this text's vernacular adaptations date to the thirteenth century and later makes the issue of boundaries relevant to their discussion as an idea potentially emerging in that period. In this book, I will take this line of thought further, bringing into the field two mathematical concepts – 'set' and 'fuzziness' – and argue that the borders of Europe in *Imago mundi*–based texts are difficult to define because they are not there yet.[58] They are fuzzy areas occupying indeterminate space between described areas.[59]

'Fuzzy' is used here as a technical term and is key to understanding how geographical composition works in the *Imago mundi* tradition. Its advantage is that it allows for plurality of meaning. Fuzzy sets are useful for describing categories that do not have clean lines of separation, and areas without tidy boundaries. In *Transforming Europe* this applies not only to geographical descriptions of Europe but also to categories of *Imago mundi*–based texts (discussed in Chapter 2). Fuzzy sets are therefore a concept used heavily in this book to help us make sense of the material.

Sets, as defined by Paul R. Halmos, 'have *elements* or *members*. An element of a set may be a wolf, a grape, or a pigeon. It is important to know that a set itself may also be an element of some other set'.[60] It is useful to think of the geographical regions described in *Imago mundi* and its adaptations as sets which have components, rather than, as one might instinctively do – under the influence of later cartographic habits – as sharply delineated geometric areas. Indeed, in the transformative translation processes of 'Europe' mapped in this book, shifts in the set's membership make it is more useful to think of the region not in terms of the traditional kind of set (to

57 For more, see Nora Berend, 'Preface' to *Medieval Frontiers*, ed. by Abulafia and Berend, pp. x–xvi (p. xii). According to Berend, cartographically, linear frontiers start to emerge from the fourteenth century onwards; ibid., p. xiii. See also Constable, 'Frontiers'.

58 François de Medeiros observed this lack of boundaries in the *Image du monde* and Brunetto Latini's *Trésor*, both part of the *Imago mundi* family; *L'Occident et l'Afrique* (*XIIIe–XVe siècle*)*: Images et représentations* (Paris: Éditions Karthala and Centre de Recherches Africaines, 1985), p. 70 n. 23. Cf. Connochie-Bourgne, 'Limites et diversités', p. 59 n. 6. Compare also Ralph W. Brauer on medieval Arabic geography, in *Boundaries and Frontiers in Medieval Muslim Geography* (Philadelphia: American Philosophical Society, 1995). Brauer's findings are summarised nicely in James A. Miller's review in the *International Journal of Middle East Studies*: Brauer 'finds that their world was not one of abrupt political lines, but, rather, focused on capital cities and centres of power, identity, and control' (pp. 439–40).

59 I draw here on Lefebvre's concept of space as a social and cultural production, where space needs to be experienced in order to be constructed; *The Production of Space*, pp. 26, 31, 34–35.

60 Halmos, *Naïve Set Theory* (Princeton, NJ: Princeton University Press, 1960), p. 1. Emphases Halmos's.

which things either belong or do not belong) but rather as a fuzzy set, for which membership is a question of gradation.[61] Fuzzy sets were developed in mathematics originally as a model for non-determinate data, that is, where the issue of whether entities belong to a set is not a binary decision (yes or no) but expressed in degrees.[62] Lotfi A. Zadeh, who first introduced the concept, defines the fuzzy set thus: 'a "class" with a continuum of grades of membership'.[63] Although it has as yet found no wide application in the humanities (though it is used in social sciences), fuzzy set theory offers a flexible epistemic tool which allows for rigorous analysis of seemingly disordered and non-uniform material.[64]

Because the fuzzy set is a concept created to help construct a framework that 'provides a natural way of dealing with problems in which the source of imprecision is the absence of sharply defined criteria of class membership rather than the presence of random variables', to quote Zadeh again, it is particularly useful to think of the areas of the world (e.g. Europe) in the *Imago mundi* texts as fuzzy sets, which might have intersections ('the intersection of *A* and *B* is the *largest* fuzzy set which is contained in both *A* and *B*', where A and B are fuzzy sets themselves).[65] This also provides a useful paradigm for phenomena that have been observed by previous scholars. As Heffernan points out, 'the medieval order was based on multiple loyalties and complex allegiances operating in an overlapping and essentially a-spatial fashion', with the result that any 'idea of compartmentalized political space was, therefore, somewhat alien to the medieval Christian worldview'.[66] Thus, the medieval map, visual or textual, cannot easily draw linear political

61 For an accessible introduction to the concepts of a traditional type of set, with its strict dichotomy of members and non-members, and fuzzy set, which allows for degrees of membership, see Witold Pedrycz and Fernando Gomide, *An Introduction to Fuzzy Sets: Analysis and Design* (Cambridge, MA: MIT Press, 1998), pp. 3–8.

62 The use of the concept of the 'fuzzy set' borrowed from mathematics in relation to medieval geography is inspired by David Abilafia's use of the term – without reference to mathematics – in relation to boundaries. Abilafia writes: 'Fuzzy boundaries may be less obvious in the twenty-first century; but they certainly are ever-present'; Abulafia, 'Introduction' to *Medieval Frontiers*, ed. by Abulafia and Berend, p. 17. The concept of the fuzzy set was developed by Zadeh and subsequently developed into a more general form of fuzzy logic by Joseph Giguen; for an introduction to fuzzy logic and a comparison with traditional, binary logic, see e.g. Merrie Bergman, *An Introduction to Many-Valued and Fuzzy Logic: Semantics, Algebras and Derivation Systems* (Cambridge: Cambridge University Press, 2008), esp. pp. 2, 9, 117, for definitions.

63 Zadeh, 'Fuzzy Sets', p. 339.

64 Termini, 'On Some "Family Resemblances"', pp. 42–43 for quotation and discussion of Lofti Zadeh's querying the situation in an interview.

65 Zadeh, 'Fuzzy Sets', p. 339; see p. 341 for intersections. Emphasis in the original text.

66 Heffernan, 'The Changing Political Map', p. 144.

boundaries, because each space might have different overlapping connections to surrounding spaces. We return to the notion of overlap in Chapter 4, where we discuss the fuzziness of the boundary between Europe and Africa, which shifts between the *Imago mundi* and its French adaptation.[67]

Fuzzy sets represent the most experimental aspect of this book. The concept is used to explain one aspect of the flexibility that accounts for the success and popularity of the geographical description provided by the *Imago mundi.* Another aspect of this flexibility is the timeless nature of the text's geography. We also will look at the changes made to the text by its adaptors, specifically those dictated by the cultural and political context of adaptation. In framing the narrative I draw on the time-honoured Dantean model used by some of the more distant relatives of the *Imago mundi*, such as Fazio degli Uberti's *Dittamondo*, and take Ariosto's Ruggiero as our guide on the journey through this textual tradition. We will also see in Chapter 5 that this idea of the text's audience figuratively journeying through the text is reflected in both the structure and the terminology of several of the texts in this family. Let us now turn to our itinerary.

A Roadmap for this Book

Ruggero's deceptively simple act of displacement in the passage quoted at the start of this Introduction, and the surprising interpretative difficulties it carries, will be our guide in this book. We will ask what *tutta l'Europa* ('all of Europe') meant to medieval readers, using a Latin geographical encyclopedia as our case study.

The five chapters of this book are organised into two parts of the book. Part I introduces the material. This is necessary because this is the first study to look at the multilingual tradition of the *Imago mundi* as a whole. Chapter 1 introduces the notion of a medieval 'encyclopedia', the *Imago mundi*, its origins, and its contents. In Chapter 2 we will examine the texts that transmitted this knowledge across a wide geographic, cultural, and linguistic range with an overview of the text's vernacular translations and adaptations.

Part II builds on this foundation to explore why it is that the encyclopedia introduced in Chapter 1 gave rise to the massive tradition outlined for the reader for the first time in Chapter 2. The three chapters in Part II thus focus on three reasons why I think the Latin text became so incredibly popular.

67 See pp. 111–21.

The three Chapters in this Part can be broadly labelled as Time, Space, and Movement. Chapter 3 is *Time*, and examines the marked archaism of the *Imago mundi*, expressed by its use of Roman provincial nomenclature for territories that had long since acquired different denominations. This archaism is inherited by most of the text's adaptations, though some update information regarding particular areas.[68] We then examine the construction of the geographical model in Chapter 4 (*Space*), where fuzzy sets are used to make sense of several problematic aspects of the tradition. We will explore how our tendency to describe geographical entities by delineating their borders is sometimes at odds with the fuzziness of medieval texts. In this, too, Ariosto's Ruggiero helps us. In the passage quoted at the beginning of this book, the English word 'bounds' with its implications of a border(line) translates the Italian *segno* ('sign'), which refers to the Pillars of Hercules, marking the end of explored territories. My point here is not to question the accuracy of the translation but to highlight the potential space between the text and translation that tantalisingly opens up possibilities for new interpretative frameworks, such as the one introduced in Chapter 4.

Chapter 5 explores how some of the vernacular translations and adaptations of the *Imago mundi* reorder the text to walk the reader through the world (almost literally). I call this image of walking the reader through the text the 'hodoeporical descriptive technique'. We will examine the routes by which the readers are taken through the various territories described in the different geographical texts. We will conclude with a glimpse into the tradition's post-medieval future, returning to the early modern world of Ariosto and his Ruggiero.

Let us now turn to Chapter 1 and our starting point, the *Imago mundi* and the idea of a medieval 'encyclopedia'.

68 Flint, ed., *Imago mundi*, pp. 14–18.