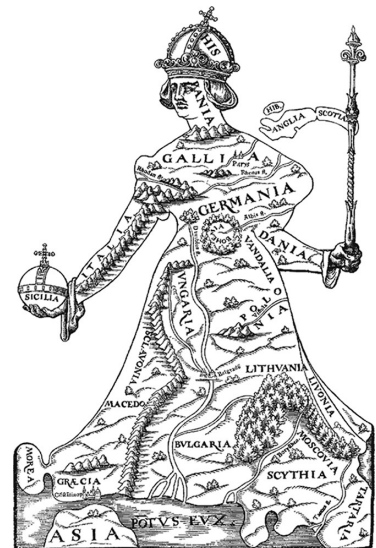**Mobility in the Early Middle Ages, and Beyond –**
Mobilität im Frühmittelalter und darüber hinaus

Europa im Mittelalter

—

Abhandlungen und Beiträge
zur historischen Komparatistik

Herausgegeben von Michael Borgolte,
Wolfgang Huschner, Benjamin Scheller
und Barbara Schlieben

Band 46

Mobility in the Early Middle Ages, and Beyond – Mobilität im Frühmittelalter und darüber hinaus

Interdisciplinary Approaches – Interdisziplinäre Zugänge

Edited by
Laury Sarti and Helene von Trott zu Solz

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Laury Sarti

1 Introduction. Interdisciplinary approaches to early medieval mobility

1.1 Early medieval mobility

Premodern travelling was fundamentally associated with various questions related to weather, health, itinerary, logistics, safety, and other uncertainties. A father from southern England, who pilgrimaged southward around 720 with his two sons, unexpectedly died in Lucca, while his sons later fell ill in Rome – presumably with malaria. Subsequently, only one brother, Willibald, boarded a vessel in Naples – it was an Egyptian slave ship bound for Ephesus. He was the sole member of the party to eventually reach Jerusalem, the original destination of the journey.[1] The absence of detailed road maps forced travellers to navigate their way using itineraries, topographical features (such as roads and rivers), mountains, or the stars, along with directions from others and the assistance of locals. An additional challenge could arise if the destination of the journey was mobile, as in the case of a Muslim ("Persian") delegation, whose members already encountered trouble finding Francia; finally, they reached it via Rome, sailing along the Italian coastline passing Campania, Tuscany, Liguria, and Burgundy. Even when nearing their destination, they were at pains to inquire about Charlemagne's current whereabouts. They eventually found him in Aachen, tired and exhausted after a year's journey with long detours.[2]

Letters offer a wealth of evidence related to medieval mobility. For instance, Alcuin of York – Charlemagne's Northumbrian advisor who left us with 311 epistles – mentions in a letter dated 801 and addressed to Æthelhard, the archbishop of Canterbury, that his addressee was supposed to travel to Rome to meet with Pope Leo III due to disputes regarding his position. On his way there, he was expected to visit Charlemagne's court. Not only was he to be accompanied by clerics on this journey (*ammone socios tuos, maximeque clericos*), but Alcuin also arranged it so that Æthelhard would be able to use his own saddle. The latter was presumably transported to England by the same servant (*puerum meum*) who subsequently accompanied the archbishop on his journey to Rome. Alcuin further suggested that this servant could deliver a letter to Tours, after their travels to Italy, announcing the archbishop's visit.[3] Around the same time, Alcuin wrote another letter, addressed this time to Charle-

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1 Huneberc, Vita Willibaldi 4. Ed. *Holder-Egger*. See also *Guth*, Die Pilgerfahrt (1982).
2 Notker, Gesta Karoli 2.8. Ed. *Haefele*.
3 Alcuin, Epist. 230. Ed. *Dümmler*.

Laury Sarti, Freiburg/Heidelberg

magne, in which he mentioned an unspecified request that had been conveyed to him by the same Æthelhard from Canterbury, alongside the minister Ceolmund of Mercia, and Torhtmund, a supporter of King Æthelred of Northumbria. Alcuin emphasised that these three individuals, along with their followers, had always supported him during his travels and that they should now be granted the same courtesy in the Frankish kingdom.[4] Upon Æthelhard's return to England, the latter had sent a letter to Alcuin, apparently without the two having met in Tours, which his Northumbrian correspondent nonetheless responded to.[5] These letters thus contain rare, detailed information and clues about more than ten short and long journeys undertaken by various groups for different purposes.

Mobility can be defined as the readiness and ability of an individual or group to move themselves and objects within a geographical space. It encompasses the combined readiness and ability, the frequency of such movements, and the distances covered within this context. Any attempt to investigate early medieval mobility beyond individual journeys – such as those referred to above – or the associated processes and their significance for our understanding of past societies, is limited by the scant information from written sources. Modern society was not only shaped by mobility but also largely dependent on it. The view of an early medieval world largely confined to the homeland has been increasingly challenged since an essay published in 1992 by Gerd Althoff.[6] In addition to the itinerant court (Germ. "Reisekönigtum"), which brought about the mobility of entire royal households with their servants and officials, being on the move was also an existence-sustaining activity for large swathes of the medieval elites as well as for other social strata. For the elites, the class the vast majority of surviving evidence refers to, mobility was an essential instrument through which to assert authority, not only inside their own centre of power. This did not only apply to kings. The mobility of rulers meant that large parts of the elite were in constant motion as well, travelling between their kingdom and the region in which they held a ruling function. Moreover, travelling was an activity that sustained the livelihood of many merchants, and a large proportion of skilled craftsmen as well as other groups. These mobility patterns can be studied relatively easily when it comes to the later Middle Ages, which offers a wide range of sources such as travel reports or private letters. However, any research focussing on the early Middle Ages needs to face the challenge of comparatively scarce written evidence, if at all – as we shall see, many surviving sources contain only brief or insufficient information, with few exceptions related to individual journeys.

The difficulties – as well as the possibilities – of investigating mobility in the early Middle Ages have been impressively demonstrated by Michael McCormick,

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4 Alcuin, Epist. 231. Ed. *Dümmler*.

5 Alcuin, Epist. 255. Ed. *Dümmler*.

6 *Althoff*, Vom Zwang (1992).

whose study on the origins of the European economy from 300 to 900 was published in 2001.[7] Mobility and travel in the Middle Ages are not new fields of research; the former is often associated with questions of migration in the context of the early Middle Ages, as is currently the case in the Tübingen DFG-collegium "Migration and mobility in late Antiquity and the early Middle Ages".[8] In recent decades, several edited volumes and monographs have also been published that deal with related topics. Relevant studies focus mainly on the later period, more accessible due to the significantly higher quantity and density of evidence. This has been covered, for example, in Claude Gauvard's essay collections on travelling and travellers,[9] by Marianne O'Doherty and Felicitas Schmieder's work on medieval modes of mobility in their respective contexts,[10] as well as a recent volume by Jenni Kuuliala and Jussi Rantala, which also includes studies related to Antiquity.[11] Other relevant publications include Shayne Aaron Legassie's comprehensive study on medieval travel[12] and Sarah Davis-Secord's monograph, which examines Mediterranean travel between the Muslim and the Christian worlds.[13]

Most studies inevitably deal with mobility within the context of rulership and the elites, which includes research on the itinerant court[14] and Volker Scior's recently-published habilitation thesis on messengers.[15] However, there is also sufficient material available for studying clerical mobility.[16] Worth mentioning are also three relevant dissertations published in the present series "Europa im Mittelalter", which include Dominik Waßenhoven's examination of the mobility of Norsemen through prosopographic studies;[17] Paul Predatsch's study of mobility in and around Carolingian Lucca;[18] and Philipp Winterhager's inquiry into clerical migrants moving from the Greek East to Rome.[19] These examples stand out as concerted attempts to centre the mobility of lower social strata in the early Middle Ages. Further pertinent work stems from research in archaeology and the natural sciences: these disciplines, which have made significant advancements in recent years, now offer important new means

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7 *McCormick,* Origins (2001).

8 See uni-tuebingen.de/fakultaeten/philosophische-fakultaet/fachbereiche/geschichtswissenschaft/forschung/dfg-kolleg-forschungsgruppe-migration-und-mobilitaet-in-spaetantike-und-fruehmittelalter (accessed: 06.03.2024).

9 *Gauvard* (Eds.), Voyages et voyageurs (1996).

10 *O'Doherty/Schmieder*, Travels and mobilities (2015).

11 *Kuuliala/Rantala*, Travel (2020).

12 *Legassie*, The medieval invention (2017).

13 *Davis-Secord,* Migration (2021).

14 E.g., *Bernhardt*, Itinerant kingship (2002); *Fütterer*, Wege und Herrschaft (2016).

15 *Scior*, Boten (2021).

16 See, e.g., *Luckhardt*, The charisma (2020).

17 *Waßenhoven*, Skandinavier unterwegs (2006).

18 *Predatsch*, Migration (2019).

19 *Winterhager*, Migranten und Stadtgesellschaft (2020).

to trace mobility beyond the scope of written evidence – in particular,[20] including developments in research on strontium isotopes[21] that have enabled new ways of tracking the migration of large groups and individuals. Archaeology has also proven valuable for the exploration of medieval roads and road networks, as evidenced by volumes edited by Rainer Christoph Schwinges and Thomas Szabó.[22] The same is true for new approaches from the digital humanities, historical geography and cultural landscape research, as addressed in a volume by Dietrich Denecke and Klaus Fehn.[23] All these different disciplines and related research have already led to genuine interdisciplinary contributions as evidenced by the excellent volume edited by Martin Freudenreich and Pierre Fütterer.[24]

1.2 Volume outline

The present methodologically-oriented volume gathers revised versions of contributions discussed during the international conference "Early medieval mobility – Interdisciplinary approaches", held in September 2022 at the Heidelberg Academy of Sciences as part of the WIN-Conferences.[25] I am deeply grateful to the *Heidelberg Academy of Sciences and Humanities* for their generous funding of the conference and for allowing a portion of the remaining funds – after several participants were unable to attend due to COVID and other unforeseen circumstances – to be reallocated towards the publication and the financing of professional proofreading. I would also like to express my sincere thanks to the editors of the series *Europa im Mittelalter* for including this volume in their distinguished collection. My gratitude also goes to Eva Locher and Laura Burlon of De Gruyter for their invaluable assistance and kind help in advancing the publication process. I would also like to express my appreciation to De-Gruyter for recommending the volume to the committee of the *Open Access Transformation Package*, an initiative financed through crowdfunding by 35 scientific libraries and launched by De Gruyter in 2020, which enabled the open-access publication of selected new releases in the field of history, including this volume as one of the nine chosen in 2024.[26]

20 See, e.g., *Groves* et al., Mobility histories (2013); *Pluskowski*, The archaeology (2013).

21 *Meijer*, Interpreting medieval mobility (2019).

22 *Schwinges*, Straßen- und Verkehrswesen (2007); *Szabó*, Die Welt (2009).

23 *Denecke/Fehn*, Wege (2005).

24 *Freudenreich/Fütterer* et al., WegBegleiter (2019). See also *Fischer*, Straßen (2014).

25 See hadw-bw.de/news/events/fruehmittelalterliche-mobilitaet-interdisziplinaere-zugaenge (accessed: 19.09.2024).

26 See degruyter.com/publishing/publikationen/openaccess/open-access-buecher/open-access-transformationspakete?lang=de (accessed: 19.09.2024).

The papers collected in this volume explore new questions and approaches to studying early medieval mobility, including text-based, archaeological, geographical, climatological, and digital approaches, exploring how they allow us to go beyond what the written evidence explicitly reveals. Besides studies on mobility itself, it includes treatments on the conditions under which any journey had to take place by examining, for example, travel landscapes and topography, road networks and other infrastructures, as well as the impact of climatic conditions on travel. The volume thus comprises a selection of papers with exemplary studies drawing on innovative approaches from the fields of history, archaeology, historical geography, digital humanities, and paleoclimatology. The methodologies utilised by the contributors include network analysis, prosopography, stylistic comparison of burial findings combined with multi-isotopic analysis, digital landscape analysis using Geographic Information Systems (GIS) and Light Detection and Ranging (LiDAR), and road reconstruction, geodata as means to create digital and interactive maps, and a combination of hermeneutic and statistical approaches. Many of these contributions include evidence from later periods, either to address questions insufficiently documented for earlier periods or because the methods discussed have so far only been applied to later evidence. The palaeoclimatological paper by Michael Kahle and Rüdiger Glaser, for example, uses a new database with relevant information gathered for the period 1000 – onwards to show how long-term shifts in climate dynamics and their impact on mobility and its infrastructure may be studied. This approach, however, still needs to be adapted to the relatively scant body of early medieval evidence in view of any future research. The same is true for the material and methodology discussed in Bart Holterman's paper.

The study of early medieval mobility thus presents numerous methodological challenges that require careful consideration and innovative approaches. Significant bias is already inherent in early medieval written sources, as in the aforementioned lack of references to non-elite individuals. Women are particularly underrepresented, making it difficult to analyse mobility patterns and related questions from a broader social perspective. The selective preservation of relevant information obscures the experiences of a large majority of the population. Furthermore, even where they do make relevant mentions, the sources are often less than explicit. Interpreting fragmentary evidence demands a cautious and nuanced approach that acknowledges the limitations of our knowledge, which is defined not only by the sources themselves but also by ambiguities related to relevant terminology or context. In light of these challenges, interdisciplinary collaboration emerges as a crucial tool for overcoming obstacles in advancing our understanding of early medieval mobility. Bringing together scholars from diverse disciplines, ideally in collaborative research projects focusing on a common topic, may allow us in the future to find complementary methodologies and perspectives, thereby creating new knowledge and developing more nuanced interpretations. Such collaboration would also allow for more comprehensive study of mobility in a specific area or between two defined places by including, for example,

the relevant travelling population, the paths they chose, the travel conditions they had to face in matters of infrastructure and weather, their potential travel speed, and the reasons behind any such movement. Combining different types of evidence and analysis using various disciplines will thus not only allow us to address new questions but also provide a more holistic understanding of mobility in the early medieval period.

The intention of this volume is to stimulate such interdisciplinary dialogue, hopefully finding new means of overcoming some of the limitations emerging from the scant evidence available. By exploring how early medieval mobility can be investigated beyond the information explicitly contained in the written sources, this volume aims to discuss the potential of interdisciplinary approaches in furthering our understanding of the significance, function, and execution of mobility in early medieval societies. To what extent do natural scientific and computer-assisted techniques enable the examination of infrastructure and travel landscapes, and how does the knowledge gained from these techniques relate to the information provided by written sources? How do innovative historical, archaeological, digital, and natural science methods allow us to better comprehend the conditions that characterised early medieval mobility, and the knowledge and material any traveller required to undertake short or long-distance journeys? What do we learn about the motives or constraints that led to the mobility of people or objects? And how do prosopographic studies and network analyses allow us to approach the needs and aspirations that drove such mobility? A deeper comprehension of the circumstances surrounding early medieval mobility allows us, not least, to grasp and value both the individual and collective accomplishments of every participant engaged in any form of exchange or connectivity within their broader context. As it is important to reflect on and be transparent about the possible limitations of any method, the subsequent contributions each include critical discussions of their respective approaches. Although this volume still considers the relative merits of different approaches in isolation as a way into studying these topics, it also invites its readers to further consider how these methods may be genuinely combined in the framework of cross-disciplinary collaboration to address questions that can only be investigated by integrating these different disciplines to explore new topics in a novel way. It thereby aims to open up new methodological approaches to an old field of research, galvanising new questions and ideas.

The following contributions are organised into two groups, each exploring distinct (yet interconnected) aspects relating to mobility during the transformative period now called the early Middle Ages. The first section, on the mobility of people and objects, provides a wide spectrum of reflections on the dynamic exchanges and migrations that shaped the medieval world. Marco Cristini shows how the study of sixth-century exotic gifts in the framework of diplomacy offers insights into state-driven cultural exchanges, the significance of certain cultural elements of prestige, and the long-term goals of diplomatic initiatives in the framework of interregional relations. Michel Summer's contribution re-evaluates the mobility of clerics between Ireland,

Britain, and Francia on the basis of written sources and archaeological evidence, challenging traditional historiographical frameworks by emphasising the complexity and diversity of their roles and interactions within political, ecclesiastical, and cultural contexts. Shigeto Kikuchi highlights how clerical and secular travellers in the Carolingian world balanced personal and official motives while navigating various risks and costs, demonstrating how they efficiently utilised their journeys to accomplish multiple tasks and purposes. This essay is followed by Tobias Gärtner's critical discussion of the potentials and limitations of archaeological evidence in studying the mobility of specific ethnic groups, using the example of the Frisians. By focusing on exiles in Iberia – which often involved relatively short distances of travel – Abel de Lorenzo Rodríguez underscores how it served as both a legal recourse and practical application of the law for various offenses (including murder, treason, and sexual misconduct), evolving into a form of enforced mobility. My own paper then explores the possibilities and drawbacks of using medieval letter collections as a lens through which to understand mobility. Using the example of Gerbert of Reims' letters, I argue how a quantitative approach can offer limited insights into high-born mobility despite the challenges of incomplete information. Russell Ó Ríagáin completes this section with an examination of the shifting patterns of mobility and related social and material practices in the context of the insular Scandinavian diaspora associated with Ireland and Britain. Drawing on three case studies, he offers insights into the interconnectedness of related populations. This section thus illuminates the complex nature of individual and collective movements across the different regions of early medieval Europe and its population.

The second section, on landscapes and infrastructure, delves into the physical and environmental factors influencing medieval mobility, whether by facilitating or hindering travel. It begins with the study by Michael Kahle and Rüdiger Glaser exploring the relationship between climatic conditions and mobility through hermeneutic interpretation and statistical analysis of historical documents which allow them to examine climate's impact on transportation routes, means, and resulting hazards. Pierre Fütterer analyses the settlement structure of a medieval royal landscape using Geographic Information Systems (GIS) and databases to scrutinise spatial structures and historical developments in Ottonian centres of authority. Irmela Herzog evaluates the challenges of using Least Cost Paths (LCP) to reconstruct medieval road networks in Germany, identifying appropriate waypoints and considering socio-cultural costs to address inaccuracies in historical maps and accounts. Anna Swieder then focuses on studying early medieval hollow roads (sunken roads created by the repeated passage of carts) on the Elbingerode plateau in the Middle Harz region, examining pathways discernible in the terrain by investigating crossroads and deserted village sites using ceramic finds, slag remains, and digital terrain data like LiDAR to retrace the exact course. A collectively authored paper by Wouter Verschoof-van der Vaart, Eva Kaptijn, Quentin Bourgeois, and Karsten Lambers showcases how the same technique may be used to study medieval transportation

routes. Within the framework of Citizen Science initiatives, LiDAR data is employed in the Heritage Quest project as a means of addressing challenges in manual analysis and mapping hollow roads in the Utrechtse Heuvelrug region of the Netherlands. Bart Holterman concludes this section with a discussion of the challenges and methodologies related to reconstructing maritime networks in premodern northern Europe, emphasising the potential of rutters and early modern sailing instructions for visualisation purposes, while highlighting obstacles such as changes in coastline and vessel size over time. Together, these studies offer a comprehensive overview of a large variety of novel approaches that are now available for the study of mobility, focusing not only on people but also on the infrastructural and environmental context in which related movements took place.

Overall, this volume aims to contribute to the advancement of current research on early medieval mobility as a fundamental aspect of human need and experience by providing a multifaceted exploration of the various dimensions that shaped the movement of people and objects during this transformative period. Through an interdisciplinary lens, the volume not only discusses the motivations and dynamics of individual journeys but also investigates the broader landscapes and infrastructural factors that influenced mobility. By incorporating innovative methodologies from fields such as history, archaeology, digital humanities, and paleoclimatology, the volume expands the scope of inquiry beyond the limitations of written sources, thus shedding new light on the complexities of early medieval travel. Through a diverse range of studies, this volume hopes not only to deepen our understanding of the mechanisms driving mobility but also underscores its profound significance for shaping medieval societies. Ultimately, by inviting readers to consider how these methodologies can be integrated to address new questions, the volume paves the way for continued exploration and discovery in the field of early medieval mobility.

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I Mobility of People and Objects

Marco Cristini

2 Exotic gifts and learned envoys. Sixth-century cultural diplomacy on the move

2.1 Introduction

Diplomacy has always been a fundamental part of the relationship between different political entities, but its study has been deeply influenced by the academic disciplines that have examined it. Broadly speaking, the history of diplomacy may be divided into two chronological sections, the ancient and medieval period on the one hand, and the modern period on the other, ranging from the Renaissance until the present day.[1] This division is relevant not only as far as chronology is concerned but also with regard to methodology, since there has been surprisingly little exchange of ideas and approaches between the research related to ancient and modern diplomacy.[2] Academic disciplines focussing on international relations, foreign policy analysis and diplomatic history are primarily interested in the nineteenth and twentieth centuries. A few studies reach as far as the Peace of Westphalia or even the fifteenth century, but ancient and medieval societies are for the most part almost entirely neglected.[3]

Researchers focussing on modern states usually trace the diplomatic activity back to a theoretical model or a recurring pattern of initiatives, which leads to a better understanding of the aims of both the governments and the envoys themselves. In contrast, the study of premodern diplomacy mostly relies on a traditional text-based approach by considering almost exclusively the written sources relating to an embassy or its outcome, which are examined by using the traditional tools of ancient and medieval history, such as source criticism, philological analysis or prosopography.[4] Even

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1 See the historical overview by *Black*, A History (2010). This traditional approach has been adopted – among others – in influential works by *Nicolson*, Diplomacy (1939), and *Kissinger*, Diplomacy (1994). A recent, notable exception is represented by *Malchow*, History (2020).
2 Few meaningful attempts have been made to bridge this gap, usually by international relations scholars. See e.g. *de Carvalho/Costa Lopez/Leira* (Eds.), Routledge Handbook (2021). In spite of these recent efforts, the "eternal divide" (*Lawson*, The Eternal Divide [2012]) between history – especially of the ancient and medieval world – and international relations still hampers attempts to achieve a fruitful cooperation between these disciplines.
3 See e.g., *Faucher*, Cultural Diplomacy (2016), according to whom the earliest cases of cultural diplomacy may be found in the seventeenth century, entirely ignoring the classical and medieval period.
4 The perspective of international relations scholars is summarised by *de Carvalho/Costa Lopez/Leira* (Eds.), Routledge Handbook (2021), 4: "historians engage with historical topics, select and interpret sources, and write histories in the context of conversations that, while may at some level resonate

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the birth of the so-called New Diplomatic History has not overly changed this situation, since it has merely encouraged scholars to take into account those historical approaches developed during the last decades (e.g. the linguistic turn, material culture, or gender studies).[5] Certainly, recent attempts to shift the focus to non-verbal communication, diplomatic gifts and rituals are beginning to offer new insights.[6] However, scholars continue to ignore the theoretical framework that is commonly used to analyse modern diplomacy, simply because it falls outside the traditional boundaries of ancient and medieval history. This paper attempts to bridge this gap and understand how far the concept of cultural diplomacy may be used to better understand sixth-century embassies and diplomatic gifts.

Before analysing this topic in more detail, some further preliminary notes are necessary to define "diplomacy" and "cultural "diplomacy". Nowadays, the term "diplomacy" is often used to refer to international relations in the late antique world,[7] although some scholars argue that it should preferably be applied only to relations between modern states.[8] It is true that some features of today's diplomatic activity were present during late Antiquity – suffice it to think of the papal apocrisary in Constantinople, who was similar to a modern ambassador –, yet these coincidences cannot overshadow the differences between modern diplomatic practice and the customs of ancient and medieval societies, where it is often difficult to find political entities that may be considered as states.[9] Major tools, procedures, and customs that form the basis of the modern idea of diplomacy have been elaborated mainly by European states over the last five centuries.[10] For instance, the gradual professionalisation of ambassadors, who came to be understood as representatives of a state and not of a single ruler, together with the formalisation of credentials, the establishment of permanent embassies, and the creation of public offices exclusively aimed at managing relations with other states, are primarily modern innovations. However, even if the

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with IR concerns, are still disciplinary-specific". For an introduction to late antique diplomatic practice, see *Gillett,* Envoys (2003), and *Becker/Drocourt* (Eds.), Ambassadeurs (2012).

5 *Watkins*, Toward a New Diplomatic History (2008).

6 See e.g. *Becker*, Verbal and Nonverbal Diplomatic Communication (2018), *Nechaeva*, Embassies (2014), and *Pohl*, Ritualized Encounters (2013).

7 Cf. e.g. *Chrysos*, Byzantine Diplomacy (1992), *Lee*, Abduction (2009), and *Brown*, "Charismatic" Goods (2018).

8 *Le Jan*, Les relations (2011), 13: "Le terme 'diplomatique' est apparu au XVIIe siècle et s'appliquait aux relations entre États, assurées par des missions confiées à des ambassadeurs ou des 'envoyés en mission'"; see also *Gillett*, Envoys (2003), 5.

9 Cf. e.g. *Moeglin*, Existe-t-il un ordre diplomatique (2011): the Middle Ages witnessed the gradual professionalisation of ambassadors, but they remained dilettantes. *Becker*, From Hegemony (2020), 30, writes about proto-diplomatic careers. Some historians consider the Roman Empire as a state, see e.g. *Flaig*, Den Kaiser (2019), 39–51 (with bibliography).

10 See *Black*, A History (2010), especially 43–45 (with bibliography). One can only study (modern) diplomacy from the fifteenth/sixteenth century onwards.

concepts of "state" and "diplomacy" are ill-suited to ancient and medieval societies, it does not follow that the methodological approaches developed by other disciplines cannot be borrowed to study the late antique world, especially since this is standard practice with regard to other topics. Let us think, for instance, of Marcel Mauss's theories of reciprocity and gift exchange, which are commonly applied to the late antique and medieval world, although based on early twentieth-century Polynesia.[11] If anthropology and sociology can contribute to the study of late Antiquity, there is no reason why we should neglect international relations and diplomatic history.

In ancient and modern societies, diplomacy, as Blockley puts it, includes both "direct communication, state to state" and "the art of managing the intercourse and adjusting the relations of states by negotiations".[12] In this paper, I will focus on specific aspects of the latter definition of diplomacy, since I will examine some initiatives sharing meaningful similarities with a political strategy commonly defined as cultural diplomacy.[13] First of all, however, it is necessary to outline the main features of cultural diplomacy. According to Goff, "cultural diplomacy springs from two premises: first, that good relations can take root in the fertile ground of understanding and respect. [. . .] Second, cultural diplomacy rests on the assumption that art, language, and education are among the most significant entry points into a culture".[14] Nowadays, the focus of cultural diplomacy is mostly on facilitating mutual understanding and offsetting stereotypes, and its efforts are often aimed at reaching as many individuals as possible.[15] In a mass society deeply influenced by newspapers, television, and social media, convincing public opinion with regard to a given topic is of paramount importance. However, cultural diplomacy was, and still is, mainly aimed at the elites or the ruling class in societies where public opinion matters little.

When turning from the addressees to the actors of cultural diplomacy, it is important to distinguish between cultural diplomats and private philanthropists. The for-

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11 *Mauss*, Essai (1925). See e.g. *Curta*, Merovingian and Carolingian Gift Giving (2006) with bibliography, *Nechaeva*, Embassies (2014), 163–165, and *Kustermans*, Gift-Giving (2021).

12 *Blockley*, East Roman Foreign Policy (1992), 1. Scholars of diplomatic activity have always been reluctant to systematically theorise its essential components (unlike those of international relations), see *Jönsson*, Theorising Diplomacy (2012).

13 For a brief history of the concept of cultural diplomacy, see *Faucher*, Cultural Diplomacy (2016), 375–378. A summary of cultural diplomacy in the contemporary academic and diplomatic world is offered by *Isernia/Lamonica* in Cultural Diplomacy (2016). See also *Gienow-Hecht/Donfried*, The Model (2010).

14 *Goff*, Cultural Diplomacy (2013), 419–420. Of course, the exact meaning of "culture" becomes crucial when dealing with cultural diplomacy, but the decades-long debate concerning this term cannot be summarised in a footnote. An acceptable working definition of culture is one offered by a practitioner of cultural diplomacy, namely *Arndt* in The First Resort (2005), xviii: "the complex of factors of mind and values which define a country or group, especially those factors transmitted by the processes of intellect, i.e., by ideas".

15 It is not always easy to distinguish between cultural diplomacy and public diplomacy, but the latter is often considered a subdivision of the former, see *Cull*, Public Diplomacy (2008), 33.

mer always act on a ruler's or government's behalf, usually knowingly but sometimes unknowingly, whereas the latter aim to foster their own agenda.[16] Although there are borderline cases, an initiative of cultural diplomacy usually requires that those travelling to foreign countries, whether welcoming foreign envoys or preparing an embassy, act on behalf of their government or sovereign, either in an official or unofficial capacity.

At the heart of every diplomatic initiative, be it a traditional negotiation or an attempt to win over the hearts and minds of a neighbouring nation, there is always a political goal, which ultimately consists in advancing the interests of a nation or ruler. There are different ways to achieve this purpose, yet – to quote Morgenthau – they "can be reduced to one of three basic types. A political policy seeks either to keep power, to increase power, or to demonstrate power".[17] As the next pages will show, sixth-century cultural diplomacy was often employed to achieve these goals.[18]

2.2 Two clocks to the Burgundians

After this theoretical introduction, it is now time to address late antique cultural diplomacy. The first case study concerns an embassy sent around 507 by Theoderic, king of the Ostrogoths, to Gundobad, king of the Burgundians.[19] Before his envoys left Ravenna, Theoderic sent a letter to Boethius, the famous philosopher, asking him to prepare a water-clock and a sundial to be sent to Gundobad as diplomatic gifts. The Burgundian king had heard of these clocks from his ambassadors and had requested them from Theoderic, who willingly obliged him. The opening of the letter is worth reading in full:

> I should not reject requests made by neighbouring kings to please their vanity, since a small expenditure can often purchase more than great riches. For sweetness and pleasure many times produce what weapons fail to do. May it then serve the state, even when I seem to play. For it is for this reason that I am looking for toys, to achieve a serious purpose by their means.[20]

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16 *Arndt*, The First Resort (2005), xviii: "cultural diplomacy can only be said to take place when formal diplomats, serving national governments, try [. . .] to advance national interests". See also *Ang/Raj Isar/Mar*, Cultural Diplomacy (2015).

17 *Morgenthau*, Politics (1948), 21. For a recent conceptual analysis of power in international relations, see *Baldwin*, Power (2016).

18 A history of cultural diplomacy from Antiquity to the present-day is still a major desideratum. A very brief outline (up to the French Revolution) can be found in *Arndt*, The First Resort (2005), 1–10.

19 For a general introduction to this embassy, see *Shanzer*, Two Clocks (1997).

20 Cassiodorus, Variae 1.45.1. Trans. *Barnish*, 20; original, Ed. *Fridh*: *Spernenda non sunt quae a vicinis regibus praesumptionis gratia postulantur, dum plerumque res parvae plus praevalent praestare quam magnae possunt optinere divitiae. Frequenter enim quod arma explere nequeunt, oblectamenta suavita-*

This document was actually written by Cassiodorus, a member of the senatorial aristocracy who worked at the court of Ravenna for more than thirty years and was often entrusted with the drafting of letters. It undoubtedly expressed concepts that were approved by the king.[21] Cassiodorus, and therefore Theoderic, comes very close to a modern conceptualisation of cultural diplomacy, showing that the underlying ideas of this approach to international relations were already present in sixth-century political communication. The juxtaposition of weapons and pleasure is especially interesting since, at the heart of cultural diplomacy, there is the attempt to pursue a foreign policy goal through attraction and not coercion.[22] Equally meaningful is the king's reference to his willingness to "play" and "look for toys", as it indicates that gifts and cultural exchanges were considered a crucial part of diplomatic activity. Of course, this has been true for centuries, but what matters here is that Cassiodorus does not merely report a case of gift-giving with diplomatic undertones. Rather, he also makes an attempt at theorising this practice.

Most undertakings of cultural diplomacy have both short- and long-term purposes. The former are usually connected with the initiative itself and have a limited scope. For instance, if the US embassy sponsored an exhibition of American art in Russia during the Cold War, the immediate aim was to allow Soviet citizens to better understand American art. However, there is usually a long-term objective as well, which cannot be fully appreciated if we are unaware of the historical background underpinning each initiative. Sticking to the aforementioned example, the US embassy aimed to counter Soviet propaganda and stress the positive aspects of the American way of life. This may have led some members of the Russian intelligentsia – or even the government – to adopt a less hostile stance towards the US, an objective that could have become quite relevant (for instance) in the aftermath of the Cuban Missile Crisis. Short- and long-term objectives can be found in Theoderic's letter as well. The king

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tis imponunt. Sit ergo pro re publica et cum ludere videmur. Nam ideo voluptuosa quaerimus, ut per ipsa seria compleamus.

21 The *Variae* have moved to the forefront of scholarly debate on sixth-century Italy during the last few decades. The traditional thesis proposes that this letter collection was published before 540 (without significant alterations) to serve as an epistolary model and to bear witness to the political importance assumed by rhetoric and style during the Ostrogothic kingdom. This claim has been challenged by *Bjornlie*, Politics (2013), who argues that the *Variae* was instead carefully edited (altering several documents) and published during Cassiodorus's stay in Constantinople in order to favour his return to the political fray in either Byzantium or Ravenna. Any changes that the letters underwent during the editorial process undoubtedly deserve the utmost attention, but Bjornlie's reconstruction has been met with considerable scepticism – see the reviews by *Wiemer* (2013), and *Heather* (2016) – since it does not take into due consideration what Cassiodorus writes in the preface of his work, namely that he was writing in order to provide future public servants with an epistolary model. Bjornlie's endeavours also overlook the true significance of Cassiodorus's conversion, which put an end to any desire to return to his previous life, as clearly shown by his religious works – and argued by *Cristini*, Oblivio (2022). For a more balanced account of Cassiodorus's aims, see *Giardina*, Cassiodoro (2006).

22 *Goff*, Cultural Diplomacy (2013), 420.

writes that "by obtaining and enjoying these pleasures, the Burgundians will experience a wonder which to me is a common-place".[23] The water-clock and the sun-dial are used to demonstrate the superiority of the Ostrogoths and inspire awe. This concept is clearly expressed at the end of the letter as well. When the Burgundians "have turned from their amazement", Theoderic remarks, "they will not dare to think themselves the equals of us, among whom, as they know, sages have thought up such devices".[24] To achieve this goal, it was paramount to rely on men like Boethius, who were willing and able to act as cultural diplomats, even if they did not take part in the embassy itself.

Theoderic was not interested in a mere display of wealth and technological prowess, however. In 507, the Franks were organising a military campaign against the Visigoths, who were allies of the Ostrogoths, and the Burgundians seemed willing to side with Clovis, even though Gundobad's son had married Theoderic's daughter.[25] Therefore, the Ostrogothic king tried to convince the Burgundians not to cast in their lot with his enemies. To this end, he organised both traditional embassies – attested by other letters – and an initiative of cultural diplomacy, in the hope of contributing to the wider success of his political strategy.[26] In this case, cultural diplomacy was aimed at keeping power – to use Morgenthau's conceptual model –, since Theoderic was trying to uphold the *status quo* in Gaul in the hope that retaining the loyalty of Gundobad may have dissuaded Clovis from declaring war upon the Visigoths.

2.3 Visiting philosophers and doctors at the court of Chosroes

In late Antiquity, learned envoys were as important for the success of an embassy as precious gifts, perhaps even more so, as indicated by several instances of embassies sent from the eastern Roman Empire to Persia. Sometime after 532, Emperor Justinian dispatched an envoy named Areobindus and a Syrian doctor named Uranius to the court of Chosroes.[27] Our only source about this embassy, namely the historian Agathias, was not on friendly terms with Uranius, whom he describes as a braggart, a

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23 Cassiodorus, Variae 1.45.2. Trans. *Barnish*, 20 (modified); original, Ed. *Fridh*: *quatenus impetratis delectationibus perfruendo, quod nobis cottidianum, illis videatur esse miraculum.*

24 Cassiodorus, Variae 1.45.12. Trans. *Barnish*, 23; original, Ed. *Fridh*: *quando fuerint ab stupore conversi, non audebunt se aequales nobis dicere, apud quos sciunt sapientes talia cogitasse.*

25 See most recently *Stadermann*, Restitutio (2020), 8–21.

26 Theoderic sent embassies to the Visigoths, Burgundians, Franks, and three other Northern peoples to avert the outbreak of the war. See Cassiodorus, Variae 3.1–4.

27 See PLRE 3. Ed. *Martindale*, 110 (Areobindus 3) and 1393 (Uranius). On doctors acting as diplomats, see *Blockley*, Doctors (1980).

drunkard, and a buffoon. This portrait might not be entirely honest, however, since the doctor was chosen to be part of an important embassy and managed to charm Chosroes, who was impressed by his knowledge of philosophy.[28] Agathias remarks that this was "the victory of ignorance among the ignorant",[29] yet he is forced to admit – with a tint of envy – that the Persian king "gave Uranius a huge sum of money, made him dine at his own table and accorded him the unprecedented honour of passing the cup to him. He swore on many occasions that he had never before seen his equal".[30] The aftermath of this embassy is noteworthy. Agathias reports that "when Uranius returned home Chosroes sent him the most delightful letters, in which he showed him all the respect of a disciple for his master. [. . .] Uranius managed, by dint of singing the praises of the barbarian king, to convince the general public with his portrayal of him as a man of learning".[31]

This episode is a case study of cultural diplomacy working both ways. Justinian decided to appoint a famous doctor who was well versed in the teachings of Aristotle and the Sceptics as his envoy, since he knew that Chosroes was deeply interested in both medicine and philosophy.[32] His strategy went according to plan, since the Persian king was fascinated by his learned guest. Agathias does not write whether or not this circumstance influenced the outcome of the embassy favourably, but it may well have done, since relations between the Persians and the Empire remained peaceful until 540. However, it is also possible that Chosroes purposely went out of his way to please and impress Uranius, undertaking his own initiative of cultural diplomacy that later proved to be highly successful.

Not unlike Theoderic's embassy to Gundobad, the diplomatic mission undertaken by Uranius had short- and long-term objectives. To clarify the latter, it is necessary to dwell briefly on another episode that occurred a few years earlier. Around 529, Justinian closed the Athenian Neoplatonic Academy, or at least prohibited some of its leading philosophers from teaching.[33] Seven of them decided to go to Persia, where they

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28 See *Cameron*, Agathias (1970), 104–105 and 122; *Frendo,* Agathias (2004).

29 Agathias, Historiae 2.30.1. Trans. *Frendo*; original, Ed. *Keydell*: οὐκ εἰδὼς ἐν οὐκ εἰδόσιν ἐνίκα, with an allusion to Plato, Gorgias 459b.

30 Agathias, Historiae 2.30.2–3. Trans. *Frendo* (modified); original, Ed. *Keydell*: χρημάτων τέ οἱ δωρή-σασθαι πλῆθος καὶ κοινῆς μεταδοῦναι τραπέζης καὶ ἀπάρ ξασθαι φιλοτησίας, οὔπω τοῦτο ἐπ' ἄλλῳ τῳ γεγενημένον, ἐπόμνυσθαί τε πολλάκις ἦ μὴν οὐπώποτε τοιόνδε ἄνδρα ἑωρακέναι. καίτοι πρότερον ἀρίστους ὡς ἀληθῶς ἐτεθέατο φιλοσόφους, ἐνθένδε ὡς αὐτὸν ἀφικομένους.

31 Agathias, Historiae 2.32.2–3. Trans. *Frendo* (modified); original, Ed. *Keydell*: τοιγάρτοι καὶ ἐνταῦθά οἱ ἐπανελ θόντι γράμματά τε κεχαρισμένα ἔστελλε καὶ διδασκάλῳ ἐχρῆτο. (. . .) τῷ πολλάκις ὑμνεῖν τὸν βάρβαρον καὶ δι' ἐπαίνου ποιεῖσθαι αὐτὸς δή που κατὰ τὸ μᾶλλον ἔπεισε τοὺς πολλούς, ὡς εἴη σφόδρα πεπαιδευμένος.

32 Agathias, Historiae 2.29.9, implies that it was Areobindus, Justinian's official envoy, who decided to bring Uranius with him, but it is unlikely that the choice of the envoys was reached without the emperor's approval.

33 See the seminal paper by *Cameron*, The Last Days (1969); more recently, see *Hartmann*, Geist (2002).

were warmly welcomed by Chosroes, but soon realised that he was not the philosopher-king he claimed to be and decided to return to the Empire. Chosroes inserted a clause into the treaty he was about to sign with Justinian, to the effect that the philosophers should be allowed to live in peace without being forced to convert to Christianity. Agathias reports that the Persian king made the observance of the treaty, the so-called "Eternal Peace", conditional on the implementation of this clause.[34]

Against this background, Uranius's embassy acquires a new significance. Justinian was eager to stress the fact that philosophy was held in high esteem at Constantinople, and possibly reassure Chosroes that he was complying with the provisions of the treaty. At the same time, the Persian king aimed to show that he was indeed a wise and learned man, since the hasty departure from Persia of the seven Neoplatonic philosophers who had previously found refuge there might have harmed his reputation of being a philosopher-king. To use Morgenthau's conceptual model again, the embassy served both Justinian and Chosroes to demonstrate power, which is represented in this case by their respect towards philosophy and its practitioners. This was a long-term objective of paramount importance, as it could guarantee the mutual observance of the Eternal Peace. Moreover, as Justinian showed an alarming inclination towards invading neighbouring kingdoms in the mid-530s, Chosroes deemed it advisable to be portrayed as a civilised, wise king, rather than as a violent barbarian.

A similar episode involving a doctor occurred a decade later. Procopius of Caesarea reports that a physician named Tribunus had cured Chosroes of a severe illness, and the king insisted that Justinian allow the doctor to stay with him for a year when the Persians began the negotiations for reaching a truce in 545. The emperor promptly obliged him and Chosroes was so satisfied with Tribunus's services that he granted the release of more than three thousand East Roman prisoners.[35] While in Persia, Tribunus reportedly convinced Chosroes to found a hospital.[36]

Once again, a doctor acted as a cultural diplomat and undertook a goodwill mission. However, the main focus of Tribunus's embassy is not philosophy, but medical knowledge, which Chosroes much appreciated. This allowed Justinian to stress the excellence of East Roman physicians and secure the release of many prisoners. Procopius's narrative is too short to determine whether the emperor had instructed Tribunus to ask for such a reward, but it may well have been that Chosroes was trying to win over Tribunus as he had done with Uranius, since willingness to honour a skilled physician was considered a mark of wisdom. This display of cultural diplomacy, not

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34 Agathias, Historiae 2.30–31. See *Nechaeva*, Seven Hellenes (2017).

35 Procopius of Caesarea, Bellum Persicum 2.28.8–11, Bellum Gothicum 4.10.11–16. Ed. *Dewing/Kaldellis*. See also *Blockley*, Doctors (1980), 96, and PLRE 3. Ed. *Martindale*, 1342 (Tribunus 2).

36 *Blockley*, Doctors (1980), 96, considers this information as certain, but Pseudo-Zacharias, Historia Ecclesiastica 12.7. Ed. *Greatrex*, 455, is not unequivocal since the initiative was seemingly taken following the advice of several doctors. Although Tribunus may well have been one of them, it remains uncertain.

unlike the one recounted by Agathias above, enabled both Chosroes and Justinian to demonstrate their power, consisting of either knowledge or the ability to appreciate its importance and reward its practitioners.

2.4 Relics and poems between Gaul and Constantinople

A further case study of two-way cultural diplomacy is represented by an embassy that emperor Justin II dispatched to Gaul during the first years of his reign, carrying a fragment of the True Cross.[37] According to Gregory of Tours, the relic had been requested by Radegund, a Thuringian princess who had married the Frankish king Chlotar I before becoming a nun, later founding an abbey at Poitiers.[38] Radegund possibly acted on behalf of Chlotar's heir, Sigebert, who took advantage of her contacts with the court of Constantinople. Justin II and his wife Sophia obligingly sent the relic to Gaul and, a few months later, received a learned Latin poem written by Venantius Fortunatus as a token of gratitude.[39]

These gifts conveyed messages that went well beyond the objects themselves. The Empire showed that he controlled Jerusalem and the most important relic of the whole Christian world, thereby stressing its hegemony over the post-Roman kingdoms. At the same time, the Franks indicated that Gaul still hosted learned men who were able to write elaborate Latin poems. The accession of Justin II in 565 was celebrated by a Latin panegyric written by Corippus, confirming the high esteem in which Latin poetry was held at the court of Constantinople.[40] A few years later, the emperor undoubtedly appreciated a poem thanking him by reporting that all regions of Gaul were singing his praises and that even far-away Britain had gladly joined the chorus.[41] Winning fame was the short-term purpose of the emperor and he was suc-

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37 Another fragment was sent to Rome, see *Brennan*, The Relic (2021).

38 See Gregory of Tours, Historiae 9.40. Ed. *Krusch*: *postquam Maroveus episcopatum urbis adeptus est, acceptis epistulis Sygiberthi regis, pro fide ac devotione Radegundis beata in partibus Orientis clericos distinat pro dominicae crucis ligno ac sanctorum apostolorum ceterorumque martyrum reliquiis. Qui euntes detulerunt haec pignora.* A later but more detailed account is offered by Baudonivia, De Vita Sanctae Radegundis 2.16. Ed. *Krusch*, 388–389. On Radegund, see *Pietri/Heijmans*, Prosopographie (2013), 1569–1584, especially 1575–1576 (the cross may have arrived at Poitiers in 568/569), as well as *Huber-Rebenich*, Prinzessin Radegunde (2009).

39 Venantius Fortunatus, Carminum Appendix 2. Ed. *Leo.* On Venantius's relationship with Sigebert and Radegund, see *Brennan*, The Career (1985), 59–63.

40 See *Smolak*, "Accept a Roman Song" (2019).

41 Venantius Fortunatus, Carminum Appendix 2.27–32. Ed. *Leo.* See also vv. 45–46, indicating that the whole world sung the emperor's praises: *Haec tua laus, princeps, cum sole cucurrit in orbe / quo genus est hominum huc tuus intrat honor.*

cessful, since the arrival of a fragment of the True Cross in Gaul was bound to spark much interest and increase the prestige of Constantinople.

However, cultural diplomacy usually had long-term goals as well, and this case is no exception. The Empire was facing a difficult situation when Justin II ascended the throne. Italy was still reeling from the devastations of the Gothic War, the Lombards loomed over its northern regions, the Avars threatened the Balkans, a fragile peace treaty with Persia could be violated at any time, and Africa had just been pacified.[42] Moreover, Justinian had embraced a form of Aphthartodocetism in his final years, thereby becoming heretic in the eyes of many western bishops.[43] Constantinople desperately needed allies, and the Franks may have proved willing to defend Italy or fight against the Lombards. Interestingly, Radegund dispatched her envoys to Constantinople only after receiving a message from Sigebert. As Widdowson and Esders have convincingly argued, the relic request was part of current Frankish-imperial diplomatic relations.[44] Justin hoped to increase his power – to borrow Morgenthau's conceptual model – by emphasizing that he could gift precious relics to his allies.[45]

On the other hand, Sigebert was busy consolidating his kingdom in the 560s. He married a Visigothic princess, repelled the attacks of the Avars, and occupied part of the territories ruled by his brothers.[46] It would have been unsurprising if he had taken advantage of Radegund's fame to open negotiations with Constantinople.[47] Venantius Fortunatus was close to Sigebert, thus he possibly wrote the poem to Justin II on behalf of both Radegund and the king. Cultural diplomacy was paramount for Sige-

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[42] For an overview of the history of the Empire under Justin II, see *Whitby*, The Successors (2000), 86–94.

[43] See *Capizzi*, Giustiniano (1994), 143–149, and most recently *Roggo*, The Deposition (2019). Justinian's theological decisions were harshly criticised by Nicetius of Trier, see Epistolae Austrasicae 7. Ed. *Gundlach*.

[44] *Widdowson*, Merovingian Partitions (2009), 13–14; *Esders*, Avenger (2014), 34–37. See also *Brennan*, The Relic (2021).

[45] See *Brennan*, The Relic (2021), 71: "It was a diplomacy that sought to influence and attract rather than coerce, negotiate or bargain. From a position of cultural dominance the emperor was able to bestow spiritual and artistic treasures in Gaul". Brennan sketches an accurate definition of late antique cultural diplomacy, but he does not take advantage of the theoretical framework offered by international relations studies for his analysis. See also *Esders*, Gallic Politics (2016), 436–437: the relics of saint Polyeuctus were transferred from Constantinople to Metz, the Austrasian capital, around the same time, possibly reaching Gaul together with the relics of the True Cross.

[46] *James*, The Franks (1988), 169–174. See also *Esders*, Avenger (2014).

[47] *Esders*, The Merovingians (2020), 353. It is likely that Radegund's first embassy carried the poem *De Excidio Thoringiae* (Venantius Fortunatus, Carminum Appendix 1. Ed. *Leo*) to Constantinople, a poem ostensibly written by the abbess herself and addressed to her cousin. Regardless of its actual authorship (Venantius probably wrote it, see *Wasyl*, An Aggrieved Heroine [2015]), the poem showed the culture of Sigebert's subjects, who were able to achieve a proficiency in Latin comparable to that of Corippus. It was possibly aimed at showing that Radegund deserved to receive the relic of the True Cross, see *Huber-Rebenich*, Prinzessin Radegunde (2009), 240–244.

bert, since he had to compete with his brothers for hegemony over Gaul. If he showed Justin II that he had poets capable of writing in faultless Latin at his service, he might be able to sway his support. Of course, this gift exchange was not enough to cause a major shift in foreign policy, but it could nevertheless pave the way towards making subsequent embassies or negotiations more effective.[48]

2.5 Sixth-century mobility of knowledge and cultural exchange

In all the case studies examined so far, the mobility of envoys and knowledge has played a role of paramount importance, which will now be assessed in more detail. Cassiodorus reports an episode of knowledge mobility involving two products of late antique technology – notably, he also relates that the clocks were sent to the Burgundians together with those who could operate them (*cum magistris rerum*).[49] Gundobad was interested not only in the objects themselves, but also in the expertise necessary for maintaining them, which would enable him to build other clocks. In contrast, the embassies of Uranius and Tribunus witnessed a mobility of pure knowledge, consisting first in philosophy and then in the medical sciences. If Tribunus did indeed contribute to the founding of a hospital in Persia, then the cultural exchange between Justinian and Chosroes bore fruit in less than a year. However, the embassy still does not lose its significance even if the hospital was established a few years later, since Tribunus surely shared his experience and skills with the Persian physicians he encountered.

With Radegund and Justin II, we face a different form of knowledge mobility, involving reliquaries and literature. Taking the latter as a starting point, it is likely that Venantius's poems were circulated at Constantinople (or at least within the court), thus contributing to the exchange of language and ideas between Latin poets living in Gaul and the imperial capital. The movements of manuscripts are famously challenging to track down, especially in the early Middle Ages, but the dispatch of books or poems, together with the movement of embassies, might explain the striking analogies that are sometimes found between the works of authors from different regions, who might have otherwise had few occasions to know each other's works.[50] Regard-

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48 Interestingly, Sigebert sent an embassy to Constantinople in 571, and obtained what he had asked according to Gregory of Tours, Historiae 4.40. Ed. *Krusch*.

49 Cassiodorus, Variae 1.45.2.

50 See e.g. *Cameron*, The Early Religious Policies (1976), 61, who puts forward the hypothesis that the members of Radegund's first embassy may have brought a copy of Corippus's panegyric to Gaul, which subsequently influenced Venantius's poetry. Another meaningful case of intertextual relations is represented by *Appendix Maximiani* 3 (celebrating Theodahad), which clearly imitates *Anthologia*

ing the reliquary, we do not know exactly what it looked like. However, the one donated by Justin II to the pope in the same period still survives, and its iconography was carefully conceived to express both the orthodoxy of the emperor and the legitimacy of his power.[51] By sending the reliquary to Rome, Justin II allowed the goldsmiths of the former imperial capital to admire and imitate it, thereby spreading the ideological messages conveyed by imperial munificence.

Mobility did not apply only to learned envoys and inanimate objects but also to the transport of exotic animals.[52] Often used as diplomatic gifts, the dispatch of elephants, giraffes, and tigers was another form of knowledge mobility, one that allowed common people and court members to see animals mentioned either by ancient authors or in the Bible. Embassies facilitated the circulation of knowledge between the leading members of different communities, thereby making cultural exchange more effective. Their mobility thus contributed to the shaping of an elite transnational culture shared by all the major political players in the post-Roman world.

2.6 Conclusion

Sixth-century international relations can – and indeed should – be analysed using the theoretical framework of cultural diplomacy. Ancient rulers and writers were familiar with a pragmatic approach to the fundamental aspects of cultural diplomacy, and they even attempted to theorise it, as Cassiodorus demonstrates. In late Antiquity, it was fully understood that an aspect of an embassy's importance consisted in the ability to excite the admiration of foreign rulers and dignitaries. Both diplomatic gifts and envoys were chosen with this goal in mind.

However, approaching the study of ancient and medieval history through the lens of cultural diplomacy presents the historian with at least three other promising future developments that cannot be ignored here. Firstly, cultural diplomacy can be used to differentiate between state-driven cultural exchange and other, perhaps less formalised, forms of knowledge transfer. This perspective may be particularly relevant for scholars dealing with cross-cultural communication or the intermingling of political and religious ideas. Secondly, cultural diplomacy enables us to understand what aspects of late antique culture really mattered. This kind of diplomatic initiative relies on attraction, not coercion. Studying successful episodes of cultural diplomacy

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Latina 215 R = 206 SB (celebrating Hilderic). It is likely that the latter text reached Italy together with the embassies that followed Hilderic's accession to the throne, and subsequently inspired an Italian author who was writing a panegyrical poem for Theodahad. On the relationship between these poems, see *Mastandrea*, Un elogio (2003).

51 *Brennan*, The Relic (2021), 52–58.

52 See *Nechaeva*, Embassies (2014), 198–204, and e.g. *Gatier*, Des giraffes (1996), for a case study.

can point out what objects, animals or disciplines were esteemed or looked for in a given historical context. Thirdly, cultural diplomacy indicates that the choice of an envoy or diplomatic gift was part of a broader political communication strategy, often connected with previous embassies. Therefore, the nature of the gifts as well as the skills of the envoys can shed light on the long-term goals of the embassies. These are usually overshadowed by their short-term objectives, which are often the only ones clearly discernible during the negotiations. However, they can prove to be more beneficial in understanding the foreign policy of a ruler.

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Michel Summer

3 Studying the networks and the mobility of clerics between Ireland, Britain and Francia (c. 640–750)

The mobility of clerics between Ireland, Britain and Francia in the early Middle Ages left many traces both in the form of archaeological remains and written sources.[1] They testify to the foundation of monasteries, the emergence of saints' cults and the production of charters, letters and manuscripts which accompanied these developments. Some of these traces can appear marginal in the literal sense of the word: the manuscript carrying the shelf mark Paris, Bibliothèque nationale de France, Latin 10837 (see Figure 3.1) – today known as the *Calendar of St Willibrord* – contains a short note which was added in 728 to the margin of folio 39ᵛ. The text recapitulates the career of the Northumbrian missionary Willibrord (d. 739) and records that he came to Francia in 690 "from across the sea" (*ueniebat ultra mare in Francea*). The note was probably composed by Willibrord himself, now bishop of Utrecht, at his own monastic foundation of Echternach in modern Luxembourg.[2] Although the note does not contain any specific reference to Northumbria or the monastery of Rath Melsigi in Ireland, from where Willibrord left for the continent, the indication that he had arrived in the Frankish kingdom[3] from far away appears to have been of crucial importance to the author in the composition of his brief "biography". Mobility, both on a local and supra-regional scale, constituted a basic precondition for the career of individuals like Willibrord – clerics of (sometimes but not exclusively) high social status who engaged in missionary activity and who could also assume the positions of abbot and/or bishop, thereby furthering the establishment or expansion of ecclesiastical infrastructure in their respective areas of influence.[4] Female clerics, in turn, were

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1 I thank Sihong Lin for his helpful comments and corrections.

2 Paris, BnF, Latin 10837, fol. 39ᵛ, online: gallica.bnf.fr/ark:/12148/btv1b6001113z/f91.item (accessed: 07.03.2024); for the transcription of the note see Calendar. Ed. *Wilson*, 13; *Story*, Bede, Willibrord (2012), 797–799.

3 *Reimitz*, Histories, (2023), 35–44. The Merovingian realm was divided into several kingdoms in the course of the sixth century, of which Austrasia, Burgundy and Neustria were the most important entities. In the following, I use "Frankish kingdom" or "Francia" to denote the entire Merovingian realm, as it was increasingly perceived by contemporary elites as a single political entity (*regnum Francorum*) from the seventh century onwards.

4 *Palmer*, Anglo-Saxons (2009), 183–187.

Michel Summer, Heidelberg
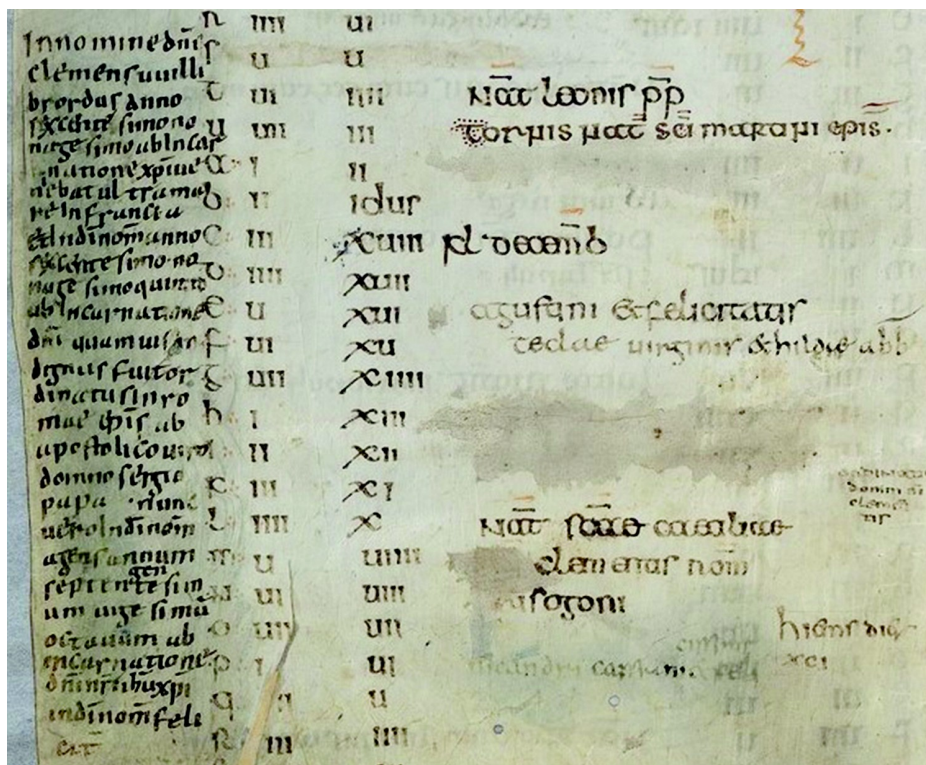
Figure 3.1: Marginal note in Paris, Bibliothèque nationale de France, Latin 10837, fol. 39ᵛ. Source: Bibliothèque nationale de France, gallica.bnf.fr/ark:/12148/btv1b6001113z/f91.item (26.04.2024).

able to use the same channels of communication and travel routes that existed between Ireland, Francia and Rome to create their own networks as nuns, pilgrims and abbesses.[5]

In addition to the written evidence related to the mobility of clerics, archaeological sources and network analyses have increasingly been integrated into historical studies.[6] As the methodological scope of the articles in the present volume demonstrates, the study of early medieval mobility benefits from an interdisciplinary approach which incorporates both the methods and findings of the natural sciences. Yet, as shown by the recent debate on the contribution of DNA and isotope analyses to the study of late antique and early medieval migration, archaeological remains and other data gathered from neighbouring disciplines are ultimately no more "objective" than

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5 See, for example, Sancti Bonifatii et Lulli epistolae 3–4. Ed. *Tangl*. In a letter sent to Abbess Adela of Pfalzel (d. after 732/33), Abbess Ælfflæd of Whitby (d. 714) asks her to support another Northumbrian abbess on her journey to Rome; *Nolte*, Peregrinatio (2007), 149–153.

6 *Hillner/MacCarron*, Female networks (2021), 31–40; *Schulze-Dörrlamm*, Einwanderung (2022).

the written sources on which historians rely. Their interpretation depends on the respective research questions, which are in turn influenced by the historiographical framework(s) and preconceived assumptions with which we approach our sources.[7] Therefore, in this chapter, I want to take a step back methodologically and reflect on the study of early medieval mobility as based on the available written sources. In what follows, I will take as my example the movement of clerics between Ireland, Britain and Francia between the mid-seventh and mid-eighth century.

Given the restrictions of the present format, I limit the term "mobility" to the physical movements of persons across longer distances, homing in on the following question: to what extent is our knowledge of clerics' mobility in the above-mentioned period shaped by, firstly, modern historiographical discourses and, secondly, by the extent and nature of the surviving written sources? The first part focuses on the alleged dichotomy between an "Irish" missionary movement on the one hand and an "Anglo-Saxon" one on the other, as it was perceived by historians in the late-nineteenth and twentieth centuries. In the second part, I reconsider the supposed "divide" between these two groups by looking at common patterns which characterise the mobility of clerics in the period under consideration. Finally, using the example of Willibrord and the foundation of Echternach in 697/98, I briefly address the question of how Insular clerics integrated and adapted on the continent, while again considering the potential uses and limits of the available source material.

3.1 The mobility of Insular clerics in modern research

Mobility was already a characteristic trait of clerics in late Antiquity. However, the arrival of religious men and women from Ireland and Britain in the Frankish kingdom between the sixth and ninth centuries had a distinct impact on the social and cultural developments of the period in question. This is reflected, above all, in the rise of hagiographical texts and the foundation of monasteries from Frisia to northern Italy.[8] The movement of people between these three regions relied on and encompassed many forms of mobility and communication, from trade networks to diplomatic missions.[9] Throughout the late nineteenth and early twentieth centuries, historians often perceived these contacts through the "lens" of Europe's "Christianisation" following the alleged collapse of late antique culture triggered by the fall of the western Roman Empire. As Peter Brown put it, this traditional narrative saw the "age of

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7 See *Geary,* Herausforderungen (2020), 22–29; *Meier/Patzold*, Gene (2021), 111–121.

8 *Brown*, Rise (³2013), 219–247.

9 *Drauschke*, Search (2010), 27–37; *Edmonds*, Practicalities (2009), 141–147; *Loveluck/O'Sullivan*, Travel (2016), 28–34; *Pestell*, Kingdom (2018), 205–217; *Picard*, De gente Scottorum (2020), 389–395.

migrations" that characterised the fourth and fifth centuries followed by the "age of missions", which culminated in the establishment of the Carolingian Empire in 800 and the restoration of a shared Christian culture north of the Alps.[10] This development has long been connected with two names in particular: the first is that of Columbanus of Luxeuil (d. 615), who arrived in Merovingian Burgundy from Ireland around 590. The second is that of the West Saxon Boniface (d. 754), whose continental career intersected with the rise of the Carolingian dynasty in the first half of the eighth century.[11]

In both modern historiography and popular memory, the men and women who arrived in Francia from Britain and Ireland have been primarily remembered as "missionaries", that is, heroic individuals who advanced the spread of Christianity in the border regions of the Merovingian world.[12] The ideal of the *peregrinatio pro Christo*, which entailed leaving one's homeland to attain a greater proximity to God, as well as the missionary incentive laid out in the gospels were often the primary motivations for clerical mobility, especially in Britain and Ireland.[13] At the same time, many of the most prominent representatives of the so-called *irofränkische Mission* spent much of their continental careers *within* the borders of the Frankish world after their arrival – Columbanus and Boniface being no exception. Even in the northeast of the Frankish kingdom, in Austrasia and along the Rhine, missionaries were in many cases interacting with societies that had already been Christianised for at least several generations. Contrary to the notion of an "age of missions", preaching among non-Christian communities was not the only factor that determined the mobility of Insular clerics on the continent. The foundation of monasteries, the development of an ecclesiastical infrastructure, participation in religious debates and political conflicts, the production of manuscripts and pilgrimages are just some of the many activities in which they partook, irrespective of their origin.[14]

In modern historiography, there has nevertheless been a tendency to divide these movements into two groups: the first one is the "Irish" mission or, as it is sometimes called in German scholarship, *irofränkische Mission* of the late sixth and seventh centuries.[15] The second is traditionally summarised under the label of the "Anglo-Saxon" mission and its origins often dated back to Wilfrid of York's (d. 710) brief (and probably involuntary) stay in Frisia in 678.[16] Modern assessments of these two groups and

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10 *Brown*, Rise (³2013), 4–5.

11 On Columbanus see *O'Hara*, Introduction (2018), 1–5; *Schieffer*, Winfrid-Bonifatius (²1972), first published in 1954, remains one of the most influential depictions of Boniface's life. For a more recent attempt to assess Boniface's career see *Aaij/Godlove* (Eds.), Companion (2020).

12 On the term "mission" and its application to the early Middle Ages see *Wood*, Mission (2016), 135–137.

13 *Johnston*, Exiles (2016), 41–47.

14 *Bully/Picard*, Mensa (2017), 136–139; *Fox*, Metz (2018), 212–218; *Hen*, Milites (1999), 17–20.

15 For a more recent overview see *Picard*, De gente Scottorum (2020), 395–401.

16 The most influential narrative remains that of *Levison*, England (1946), 45–93.

evaluations of their impact on religious, political and cultural developments in Francia have varied greatly across the past two centuries.[17] In an article first published in 1912, the German medievalist Wilhelm Levison (1876–1947) concluded that, in comparison with the "Anglo-Saxons", the Irish missions represented but an "episode" in the "history of the occident", albeit an important one. According to Levison, the Irish fell short of the significance of the Anglo-Saxons because of their lack of "organisation".[18]

What does this supposed lack of organisation relate to? In his seminal 1946 publication *England and the Continent in the Eighth Century*, Levison did not repeat his earlier statement concerning the impact of the Irish missions. Yet, in his influential assessment of the careers of Wilfrid, Willibrord and Boniface, Levison highlighted two factors which allegedly distinguished the "English" missions from their predecessors.[19] The first was the close contact both Willibrord and later Boniface kept with the papacy. Willibrord's consecration as *arch*bishop of the Frisians in 695 by Pope Sergius I (687–701) appeared especially groundbreaking to Levison. The second factor was the cooperation between Willibrord, Boniface and the ancestors of Charlemagne, most notably Pippin II (d. 714) and his son Charles Martel (d. 741), in establishing new ecclesiastical infrastructure in Frisia, Hesse, Thuringia and Bavaria. Levison and subsequent scholars perceived in the combination of these two factors the origin of the later alliance between Pippin III (d. 768) and the papacy, which laid the foundation for the creation of the Carolingian Empire. Within the historiographical framework of a Merovingian "dark age", which was only overcome by the so-called "Carolingian Renaissance" and the religious reforms of the eighth century, the "English" missionaries, therefore, appear to have acted in a more "systematic" and ultimately successful way than the heirs of Columbanus.[20]

3.2 Common patterns of mobility and intersections between different groups

The alleged division between these two groups also found its way into contemporary maps. In his influential 1965 publication *Frühes Mönchtum im Frankenreich*, German historian Friedrich Prinz (1928–2003) argued that, from the outset, the "Anglo-Saxons"

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17 See, for example, *Honée*, St. Willibrord (2000), 17–23; *Wood*, Irish I (2015), 173–180.

18 *Levison*, Iren (1912), 263: "An geschichtlicher Bedeutung steht die Wirksamkeit der Iren, an den Folgen gemessen, ohne Zweifel hinter der der Angelsachsen zurück und stellt in der allgemeinen Geschichte des Abendlandes doch nur eine Episode dar".

19 Levison uses the terms "English" and "Anglo-Saxon" interchangeably throughout his text; on the term "Anglo-Saxon" and its application to the early Middle Ages see *Tinti*, Europe (2021), 3–5.

20 *Levison*, England (1946), 50–69; for the persistence of this narrative see, for example, *Neu*, Willibrord (2021), 7–9.

allied themselves "exclusively to the Austrasian Carolingians".[21] At first glance, the distribution of monasteries across Austrasia in the late seventh and early eighth centuries appears to confirm Prinz's statement: the most important foundations were either situated in the Pippinids' area of influence, namely the Meuse area, or established in the context of the arrival of Willibrord's group (Echternach, Kaiserswerth, Susteren, Utrecht). Prinz concluded that the contrast between the dense network of monasteries in Neustria (especially in the Paris area) and the lower number of foundations in Austrasia reflected a border between the Merovingian and the early Carolingian areas of influence, as well as between the sphere of Luxeuil and that of the "Anglo-Saxon Benedictines" supported by Charlemagne's ancestors.[22]

The question remains whether we can draw such sharp lines, both in geographical terms and as regards personal networks, between those individuals that appear in our sources as missionaries and monastic founders. It is for this reason that I suggest that we refocus on the period between the middle of the seventh and the beginning of the eighth centuries, as a means of loosening the fixation on the arrival of Columbanus and Boniface as the 'cornerstones' of two successive missionary movements. Rather than anticipating a linear development which resulted in the formation of a new 'Carolingian' ecclesiastical and political landscape, common patterns of mobility between different groups should be taken into account here. In what follows, I want to consider two examples of Irish clerics who arrived in Francia before 700, but did not belong to the network of Luxeuil founded by Columbanus. In each case, we are primarily dependent on hagiographical sources to reconstruct their activities. Above all, I wish to reassess the arguments put forward by Levison and Prinz and analyse to what extent the texts in question contain evidence for contacts with the Frankish political elite and the papacy before Willibrord's arrival in 690.

The first example is that of the brothers Fursa (d. *c.* 649) and Fóillán (d. 655/56), who arrived in Francia from Ireland via East Anglia between 642 and 649. Fursa was first welcomed by the Neustrian mayor of the palace, Erchinoald (d. *c.* 660), and upon his death buried in the church he had himself founded in Péronne on the River Somme. For reasons unknown, Erchinoald expelled his brothers Fóillán and Ultán shortly afterwards and their group found refuge in Austrasia. In 655 or 656, Fóillán was assassinated after he had left the monastery of Nivelles.[23] The monastery had been established four years earlier by Itta (d. *c.* 652), the wife of Pippin I (d. 640), on the advice of Bishop Amandus of Maastricht (d. *c.* 676/79).[24] Through the later venera-

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21 *Prinz*, Mönchtum (²1988), 194–195: "Während die Iren, wie wir gesehen haben, sowohl in merowingischen als auch in karolingischen Klöstern zu finden sind, verbünden sich die Angelsachsen von Anfang an ausschließlich mit den austrasischen Karolingern."

22 *Prinz*, Mönchtum (²1988), 140–151.

23 *Wood*, Fursey (2016), 1–5. Owing to reasons of space, I will not deal here with the potential involvement of Fóillán's family in the exile of the Merovingian prince Dagobert (II, d. 679).

24 Vita Geretrudis 1–2. Ed. *Krusch*.

tion of its first abbess, Gertrude (d. *c.* 659), it developed into an important centre of hagiographical writing; it is from these texts, two of which were written within a generation of Fursa and Fóillán's death, that we are able to gain some knowledge of their lives.[25]

Significantly, in all of the three texts, the issue of mission or Christianisation is barely touched upon. By contrast, the accounts focus on the activity of the clerics in Ireland, East Anglia and, later, Francia. The *Transitus beati Fursei* or *Vita prima* describes how Fursa was welcomed upon his arrival by Erchinoald and the king of Neustria, Clovis II (637–59). Already in East Anglia, Fursa had been able to access the court of the king.[26] The *Virtutes Fursei*, which are of a slightly later date, are especially interesting in this regard: not only do they mention that Fursa baptised Erchinoald's son, they also make reference to a quarrel that broke out over the body of one of Fursa's companions, between the mayor of the palace and neighbouring dukes.[27]

Access to the political elite is also a feature of the (minor) *Passio* of Kilian, a more mysterious figure, who, according to the ninth-century text, reached Thuringia from Ireland in the late seventh century, where he was received by the Duke Gozbert. At the instigation of the duke's wife, Kilian and his companions were allegedly martyred around 689.[28] While the circumstances of his death are certainly based on hagiographical conventions, his early presence in the Würzburg area is intriguing: only a few years later, Willibrord and his monastery of Echternach received donations of property by Gozbert's son, Heden (d. after 717).[29] While Boniface's disciples later tried to depict Thuringia as a pagan enclave before the saint's arrival around 719, the Echternach charters suggest that Willibrord had already encountered an ecclesiastical foundation in the first decade of the eighth century, making the earlier presence of Insular churchmen in the area all the more plausible.[30]

As far as concerns potential contact with the papacy prior to Willibrord's arrival, the *Passio Kiliani* also contains the noteworthy detail that the newcomers left Thuringia for Rome shortly after their arrival in order to secure the blessing of Pope Conon (d. 686–87) for their undertaking. Furthermore, the author of the *Passio* underlines the

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25 The *Transitus beati Fursei* and the so-called *Additamentum Nivialense de Fuilano* were probably written in the late 650s at the monasteries of Péronne and Nivelles, respectively. Another source, the *Virtutes Fursei*, was composed in the ninth century. Krusch's edition leaves out the central part of the *Transitus*, which describes the many visions experienced by Fursa. On the dating of the *Transitus* see *Hamann*, Vita Fursei (2004), 283; on the dating of the *Additamentum* see *Fouracre/Gerberding*, Merovingian France (1996), 307; on the dating of the *Virtutes*, see *Ó Riain*, Vies (1986), 405–13.

26 Vita Fursei 7–9. Ed. *Krusch*; see also Bede, Historia ecclesiastica 3.19. Ed. *Colgrave/Mynors*.

27 Virtutes Fursei 10, 14–19. Ed. *Krusch*.

28 Passio Kiliani 10. Ed. *Levison*; on the dating of the *Passio* see *Schäferdiek*, Kilian (1996), 461–463.

29 Geschichte, nos. 8, 17, 26. Ed. *Wampach.*

30 Willibald, Vita Bonifatii 5–6. Ed. *Levison*; see *Werner*, Iren (1982), 281–293.

fact that the group had already taken the decision to travel to Rome before their departure from Ireland.[31] It is precisely this episode which scholars have dismissed as an embellishment of the Carolingian author in his attempt to emulate Willibald's *Life* of Boniface (*c.* 754–68).[32] While we are indeed dealing with a text that was written after the creation of the *Vita Bonifatii* and the ascension of the Carolingians, we should not forget that there is evidence of contact between Rome and the southern Irish churches in particular before the end of the seventh century, which is not least indicated by the delegation that travelled to Rome in the context of the so-called Easter dispute around 640.[33] In addition, we find the same motif, for example, in the ninth-century *Life* of Pirmin (d. *c.* 753/ 55), the founder of Reichenau Abbey. Although Pirmin was not from Ireland himself and the text originated at a similarly late date, its basic authenticity is not doubted.[34] The sources related to Fursa and Fóillán, on the other hand, do not contain any evidence of a journey to Rome. Nevertheless, the seventh-century *Life* of Gertrude mentions that the abbess sent envoys to Rome to collect books and relics from the city and to invite "learned men" from "across the sea" to Nivelles.[35] Whether the latter passage refers specifically to Ireland is open to conjecture, but it attests to the high degree of mobility of the monastic community. The *Virtutes* also record that Fursa travelled back and forth between East Anglia and Francia with some frequency.[36]

3.3 Between integration and confrontation? Some remarks on the nature of the sources

This brief overview suggests that the mobility of the Irish clerics arriving in Francia between the death of Columbanus and the arrival of Willibrord was determined by factors similar to those that shaped the activity of Boniface and his followers. Access to and support of the political elite were important prerequisites for achieving greater freedom of movement within and beyond the borders of the Frankish realm. The clerics under consideration here also appear to have shared a common cultural and geographical horizon, in which Rome formed an important node. At the same time, evi-

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31 Passio Kiliani 4–5. Ed. *Levison*.

32 See *Schäferdiek*, Kilian (1996), 474–476.

33 Cummian's Letter, 4–7. Ed. *Walsh/Ó Cróinín*.

34 Vita Pirminii 3–6. Ed. *Holder-Egger*; *Antoni*, Leben (²2005), 10–17.

35 Vita Geretrudis. Ed. *Krusch*.

36 Virtutes Fursei 14. Ed. *Krusch*; mobility between Francia and East Anglia is also attested through the career of Bishop Felix of Burgundy (d. 647/48), who was active in the region under King Sigebehrt according to Bede, Historia ecclesiastica 2.15. Ed. *Colgrave/Mynors*. I thank Sihong Lin for pointing this out to me.

dence is for the large part restricted to works of hagiography, which sometimes date to the later Carolingian era and thereby considerably distort our perception of conditions in the seventh century. To further reflect on the problem of the available sources I want to briefly consider the example of Willibrord.

Born in Northumbria and educated in Ireland, Willibrord is one of the few individuals of the late seventh and early eighth centuries whose career connects Ireland, Britain, Francia and Rome. Regarding an alleged divide between an "Irish" and an "Anglo-Saxon" mission, Willibrord is very much an "in-between" figure and his career demonstrates that the above-mentioned labels are in many ways unsuitable to characterise his activity between Ireland and Rome.[37] His arrival in Francia in 690 took place in the context of political conflicts which saw the rise to power of Pippin II and, finally, Charles Martel as *de facto* rulers of the Frankish kingdom. Yet, the modern impression of Willibrord as a "harbinger of Frankish power" in Frisia or a "vassal" of the early Carolingians, as Arnold Angenendt (1934–2021) put it, is very much shaped by the nature of the surviving evidence.[38] On the one hand, the sources for Willibrord's life are more abundant and diverse than those for Fursa, Fóillán and Kilian. On the other hand, this diversity of these sources presents us with new challenges. In Willibrord's case, we must rely on a fragmented corpus of hagiographical texts originating from a later date – the most prominent being several chapters in Bede's (d. 735) *Historia ecclesiastica gentis Anglorum* of 731 and Alcuin's (d. 804) *Vita Willibrordi* of *c.* 796 – and the charters from Echternach, which only survive in the *Liber aureus* compiled at the monastery between the late twelfth and early thirteenth centuries.[39]

At the same time, the disparate nature of these sources offers new starting points for analyses of Willibrord's mobility since the comparison between the hagiography and the charters reveals different layers of his itinerary. While the writings of Bede and Alcuin offer a 'macro' view on Willibrord's biography, stressing his Insular background, his mission to Frisia and his journeys to Rome in order to secure the pope's approval and collect relics, the charters reveal different networks of lay and ecclesiastical landowners in the areas of the Meuse, the Moselle and even Thuringia who donated their property either to Willibrord or one of his foundations.[40] It remains difficult to establish whether the drawing up of a charter was in each case preceded by a public gathering in which the bishop participated.[41] Therefore, the distribution of donations as recorded in the *Liber aureus* should probably be regarded as an indica-

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37 *Palmer*, Anglo-Saxons (2009), 183–185.

38 *Angenendt*, Willibrord (1973), 79, 109.

39 Alcuin, Vita Willibrordi. Ed. *Levison*; Bede, Historia ecclesiastica 3.13, 5.10–11. Ed. *Colgrave/Mynors*; the *Liber aureus* (Gotha, Forschungs- und Landesbibliothek, Memb. I 71) is only partially edited in Monumenta Epternacensia. Ed. *Weiland*, 11–72; for the edition of the earliest charters, see Geschichte. Ed. *Wampach*.

40 Geschichte, nos. 1–41. Ed. *Wampach*; *Summer*, Vassal (2024), 143–152.

41 See *Costambeys*, Aristocratic community (1994), 43–47.

tion of the extent of Willibrord's network rather than as a reflection of his itinerary. Nevertheless, the charters remind us that the descriptions of Willibrord's supra-regional mobility form part of Bede and Alcuin's respective hagiographical and missionary narratives, and that regional and local movements also played a significant role in shaping the sphere of Willibrord's influence.

This observation, in turn, raises questions about how Insular clerics were able to establish themselves as political and ecclesiastical actors on a regional or local scale. The authors of hagiographical texts typically highlight their protagonists' struggles against "pagans", or the support they received from the king, the mayor of the palace or the pope for their missions. Charter evidence however, such as that from Echternach, reveals unique and often fragmentary traces of the network on which individuals such as Willibrord relied within the borders of the Frankish kingdom.[42] It remains difficult, though, to assess how these two levels of mobility were connected in each case and precisely what preconditions allowed Insular clerics to move between different political, geographical and cultural spheres. In Willibrord's case, the above-mentioned *Calendar* from Echternach provides further insight into the process of adaptation that took place within his circle after the foundation of the monastery in 697/98. The contemporary manuscript records the names and feast days of saints and clerics from across the Insular world, Francia and the Roman tradition, thus reflecting the ability of the monastic community at Echternach to integrate themselves into their new continental environment.[43] In this context, it is significant that the *Virtutes* of Fursa mention that the Irish clerics brought relics of Saint Patrick alongside those of two other Irish saints, Beoán and Meallán, with them to Francia, while the body of one of Fursa's companions became a relic itself and an object of contest between the Frankish dukes. It appears that relics could be perceived as cultural "markers" but that they also quickly became part of the ecclesiastical horizon of the Frankish communities who received them; certainly, it is no coincidence that the earliest mention of Saint Patrick's feast day can be found in the *Life* of Gertrude of Nivelles. Notably, the saint's name also features prominently in Willibrord's *Calendar* in the early eighth century.[44]

3.4 Conclusion

This brief overview reveals a number of overlaps between the respective careers of Fursa, Fóillán, Kilian and Willibrord. As a newcomer on the Frankish ecclesiastical stage, one of Willibrord's first actions was to travel to Rome in order to receive the

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42 *Werner*, Lütticher Raum (1980), 139–158.

43 On this aspect, see now *Summer*, Willibrord (2024), 99–180; on the *Calendar* more generally see *Warntjes*, Origins (2021), 134–135.

44 Calendar 5. Ed. *Wilson*; Vita Geretrudis 7. Ed. *Krusch*; Virtutes Fursei 19. Ed. *Krusch*.

blessing of Pope Sergius I and to collect relics for the dedication of churches in his field of activity.[45] In modern scholarship, Willibrord's arrival has often been perceived as a "watershed" in the ecclesiastical history of the Frankish world, paving the way for Boniface and the ecclesiastical reforms of the eighth century. Yet, a comparison with his Irish predecessors on the continent shows similar patterns of adaptation, integration and conflict. Two particular aspects stand out here: firstly, the ability (and need) of these clerics to travel and communicate over great distances and, secondly, their rapid access to the political elite and their integration into the communities they encountered on the continent. It is, however, more difficult to assess the preconditions of their mobility. Did the most prominent individuals belong to the political elite? And does this also apply to their (often unnamed) companions as well as the members of the monastic communities they established? Determining the duration of the processes of integration is equally problematic, as the authors of hagiographical texts tend to contract or invert the chronology of events to create a coherent narrative.[46] Accordingly, we must assume more complex and longer phases of cultural adaptation and negotiation, which would have varied from case to case. Ian Wood argued that the attraction which figures such as Fursa and Fóillán exerted on the Frankish elite resulted from their status as "outsiders".[47]

I believe that Wood's observation can be refined even further, and that the roles Insular clerics assumed on the continent depended on the respective contexts of their activities. In cases where they had to secure backing from the papacy in order to strengthen their position within the Frankish Church – for example, in the context of establishing new episcopal sees in the border regions of the Frankish kingdom – their status as "outsiders" probably played a greater role in their self-identification and external perception than in, for instance, situations where they dedicated churches in the Frankish countryside – acting as bishops or abbots of the nearby ecclesiastical centres. Ultimately, we should aim to distinguish between the different contexts in which Insular clerics were mobile on the continent and to determine the factors that enabled and influenced their mobility. Studying the mobility of clerics between Ireland, Britain and Francia thereby allows us to gain a better understanding of the societies they encountered and the role(s) they played in the political, ecclesiastical and cultural developments of their time. At the same time, in applying new methods and findings from neighbouring disciplines to the surviving sources, we must also remind ourselves of the historiographical frameworks with which we approach these texts. Importantly, this entails reassessing the notion of the "age of missions" – according to which linear processes of Christianisation were the only incentive or context for the mobility of clerics in early medieval northwest Europe between the sixth and ninth centuries.

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45 Bede, Historia ecclesiastica 5.10. Ed. *Colgrave/Mynors*.

46 *Summer*, Vassal (2024), 142–145.

47 *Wood*, Irish II (2016), 214.

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Shigeto Kikuchi

4 Motivations and purposes of travel in the Carolingian age

4.1 Introduction

As in modern times, people in the Carolingian age travelled for various purposes. However, travelling in the early Middle Ages involved additional difficulties and risks. It not only cost time and money, a long absence could also entail unwanted troubles at home. Besides, travellers could expect to encounter various dangers on their way, such as robbery or harsh weather conditions. All this obviously did not keep people from hitting the road. Every individual likely had a primary purpose for their travels, whether engaging in trade, embarking on a pilgrimage, or fulfilling tasks or missions assigned by their ruler, master, or senior. Achieving these objectives likely served to offset some of the costs and risks associated with their journeys.

Our knowledge of early medieval travel is based on previous works on this topic. Besides general works on medieval travel, such as those of Norbert Ohler,[1] and surveys on travellers and mobility in the early Middle Ages, such as those by Étienne Renard[2] and by Gergory I. Halfond,[3] there are studies on specific themes concerning early medieval travellers.[4] These works focus on why, where, and how early medieval people journeyed.

A closer look at the testimonies offered by the historical sources suggests that people usually did not travel for a single purpose, i.e. that one trip could be motivated by multiple reasons. However, as the sources tend to focus on the motive that is most relevant to its author – for example, hagiography being mainly interested in religious travel purposes –, mentions of the complete set of motives related to a specific trip are the exception.[5] The intention of this paper is to show how comparing various sources allows us to prove that assigning multiple purposes and motivations to a sin-

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1 *Ohler*, Reisen ([4]2004). See also *Schmitz-Esser*, Travel (2015). This work was supported by JSPS KAKENHI Grant Numbers JP19KK0014, JP19H00546, JP24K04300, and JP24K00129.

2 *Renard*, Sur la route (2019).

3 *Halfond*, Transportation (2009).

4 For example, *Bruand*, Voyageurs et marchandises (2002), 117–153; *Türck*, Christliche Pilgerfahrten (2011). Despite its title, *McCormick*, Origins (2001), deals with various kinds of travellers in the early medieval Mediterranean world. *Luckhardt*, Charisma of distant place (2020), 22–53, makes a useful survey of "practicalities of early medieval travel".

5 Cf. *Bruand*, Voyageurs et marchandises (2002), 126; *Luckhardt*, Charisma of distant place (2020), 26, 45.

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gle journey was a common phenomenon, and that, if such missions were successful, several aims could be achieved with just one trip.

Focusing on the theme of multiple motivations among travellers is not a novel approach.[6] Courtney Luckhardt emphasised the religiously motivated activities of travellers alongside other "secular" motivations by stating:

> While the religious behavior of a slave, messenger, or trader might seem incidental, the power afforded to any individual through their association with a distant holy place was central to medieval people's understanding of the power of God. Expanding the definition of religious travellers to people with a variety of motivations for travel is necessary because of the way that movement from place to place formed a fundamental part of people's conceptions about power and holiness in the period.[7]

Luckhardt emphasises the importance of expanding the concept of religious travellers to include individuals with various motivations for travelling.[8] A more comprehensive study of the various motivations of travel and how they were combined, however, is still lacking. This is the purpose of the present study. It discusses the multiple factors and motives that were associated to early medieval travels by considering the relation between voluntary purposes and motivations emerging from requests and mandates.[9] To this end, the following will analyse a kind of travel economy and explore how it was achieved, by considering different networks of people and information in the Carolingian age. For a better understanding of travel purposes and motivations, this chapter first focusses on journeys undertaken with religious purposes and then on those with political tasks.

4.2 Travels in a religious context

Carolingian society was not as mobile as ours, yet we can assume that a considerable number of people were on the move. We can refer, for instance, to short trips taken by peasants to local markets to sell their farm surplus and/or to buy necessities, al-

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6 It is true that listing up various types of travellers in the Frankish world, *Halfond*, Transportation (2009), 1558–1562, speaks of "a variety of purposes" that prompted or motivated travelling, which "need not have been mutually exclusive, and, indeed, often were not". However, what he discusses is not the multiple motivations of a single traveller, but rather the common routes, technology, and infrastructure employed for travels with various motivations.

7 *Luckhardt*, Charisma of distant place (2020), 3. Cf. ibid. 198: "(R)eligious travel was not separate from other kinds of movement, but rather amplified and mirrored by them."

8 Cf. *Chélini*, Die Wallfahrten (2002), 115: "Außerdem war die Wallfahrt zur gesellschaftlichen Gewohnheit geworden, und jeder Ortswechsel entwickelte sich zu einer Art Wallfahrt, falls sich am Wege Heiligengräber befanden."

9 I do not deal with those who unwillingly left home – such as refugees, prisoners of war, or slaves – because it is difficult to find their multiple motivations or purposes for their movement.

though they also would have gone there by order of their secular or ecclesiastical lords on other occasions.[10] Likewise in an economic context, long and short journeys were voluntarily taken by merchants and traders, whose travels were fundamentally motivated by commercial intentions.[11] However, Courtney Luckhardt asserts that, despite their economic motivations, these merchants may have "also prayed at the tomb of a saint or behaved as pilgrims" during their travels, therefore their commercial journey could also be partially motivated by the quest for religious salvation.[12]

Among these religiously motivated journeys, we must mention those undertaken by missionaries and pilgrims. Missionary activities often had a twofold motivation. Carolingian texts, for instance, often refer to Carolingian monarchs commissioning missionaries to Christianise people in regions such as Saxony. Meanwhile, hagiographic sources – such as the various *vitae* of Anglo-Saxon missionaries on the continent – tend to emphasise their intrinsic motivation, their inner desire for the mission. This motivation, to leave home and follow the sacred mission, was bound to the concept of *peregrinatio* and the wish to convert their Saxon relatives on the continent – who had remained heathens – to Christianity.[13]

Peregrinatio was also used to refer to "pilgrimage". We can find traces of those who travelled to visit sacred sites for prayer on both regional and transregional scales in the Carolingian sources.[14] Besides pilgrimage forced or motivated by the need to repent, such travels could be undertaken voluntarily as devotional journeys. Even criticism of – or opposition to – pilgrimages from churchmen may prove the spontaneity of most pilgrimages. Since Late Antiquity, for example, long-distance pilgrimages, such as those directed to Rome and Jerusalem, were occasionally criticised because they detracted from the honour that would have been due to local holy places. Pilgrims seemingly preferred to choose distanced holy sites, as they appeared holier and more profitable from a religious perspective. In addition, those who left their home to make a new life in another place under the guise of pilgrimage (such as

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10 *Bruand*, Voyageurs et marchandises (2002), 143–149; *Renard*, Sur la route (2019), 8–9.

11 For merchants, traders, and their travels, see *Bruand*, Voyageurs et marchandises (2002), 117–125; *McCormick*, Origins (2001), 571–679.

12 *Luckhardt*, Charisma of distant place (2020), 3.

13 *Padberg*, Mission und Christianisierung (1995), 61-68; *Mehdorn*, Prosopographie der Missionare (2021), 358–359. This kind of motivation for the sacred mission was based on the order of Jesus to his disciples, namely the Great Commission to evangelise the world. The motivation of missionaries to follow this order could be summoned up eschatologically, since they believed that apostolic preaching to the gentile nations was necessary because of the coming end of the world and that any corresponding endeavours would be successful because God had prepared the gentiles to turn away from idolatry and accept the preaching. Thus, in such a framework of thought about salvation history, gentiles were prepared for conversion through divine work, and the missionaries responded to the divine plan of salvation through their obedience to the Great Commission. *Padberg*, Mission und Christianisierung (1995), 41–48.

14 For pilgrimage in early medieval Europe, see *Chélini*, Die Wallfahrten (2002).

those women who left to become prostitutes in distant towns) were frequently criticised.[15]

Although spiritual motives prevailed, pilgrims could combine this aim with additional purposes or tasks, thus the motivation of a pilgrim for travel did not need to be purely religious. Einhard in his *Vita Karoli*, for example, reported that many nobles who pilgrimaged from Francia to Rome visited Carloman, the retired mayor of palace, in Monte Soratte.[16] Even though not clearly described, we cannot ignore the possible political significance of such visits.[17] Noble pilgrims could also be commissioned to convey messages between regions north and south of the Alps. A traveller could be appointed with such an additional task during his or her journey – for instance when Pope Stephen II entrusted a pilgrim with a letter addressed to King Pepin of the Franks to tell the king about his plan to visit him in Francia.[18]

Another, rather unusual, example helps us to further understand the manifold purposes of a single pilgrim. In the late 860s, a monk called Bernard, probably from northern Francia, travelled from Rome to the Holy Land with some companions he met in Rome – the monks Theudemund of San Vincenzo al Volturno and the *Hispanus* Stephen. Bernard later wrote a travel record titled *Itinerarium*, which may be read as a guidebook addressed to other pilgrims heading to the Holy Land.[19] Comparable travel groups were customary for such pilgrims.[20] The presence of travel companions may have assisted a traveller in several ways. For Bernard, the presence of Theude-

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15 *Constable*, Opposition to pilgrimage (1979), esp. 125–131.

16 Einhard, Life of Charlemagne 2. Ed. *Sot/Veyrard-Cosme/Bellarbre*, 6.

17 Cf. *Schieffer*, Die Karolinger (⁵2014), 57. Although they do not deal with Carolingian examples, the following studies on early medieval royal pilgrimages from Britain and Ireland to Rome demonstrate how these journeys were often combined with political concerns. *Pengelley*, Rome (2010), 134–152; *Thomas*, Three Welsh kings (2020).

18 Le Liber Pontificalis 94.15. Ed. *Duchesne*, 444. A bishop of Brescia, probably Antonius, sent a letter to his colleague bishop, perhaps Salomon II of Konstanz, to ask about the political situation in the East Frankish kingdom, especially about the question who among the sons of Louis the German would rule the kingdom of Italy. Following his questions, he wrote: "I hope that you wish to reliably inform me about the safety of your holiness and that when your men are travelling to Rome or others are seeking Italy for their needs, you should instruct them to divert to me, and I will afford them with some assistance in your honour." We may assume the answer from Salomon to Antonius could be entrusted to one person under his jurisdiction who travelled to Italy, particularly embarking on a pilgrimage to Rome. Collectio Sangallensis no. 39. Ed. *Zeumer*, 421: *De sospitate sanctitatis vestrae certum me reddere velitis et vestris Romam pergentibus seu reliquis pro sua necessitate Italiam petentibus intimate, ut ad me divertant, et in vestro honore eis aliqua impendam subsidia.* This letter is transmitted only in an anonymised form. Cf. Epistolae variorum 798–923, no. 144. Ed. *Schröder*, 325–326.

19 Itinerarium Bernardi Monachi 1. Ed. *Ackermann*, 115.

20 However, it was not always easy for a traveller to find travel companions. For example, a priest named Hruodrad got permission from an anonymous chorbishop in his diocese to travel to Rome, perhaps for a pilgrimage. He could not find companions promptly, as indicated in a letter by Einhard. Einhard then wrote to a bishop (also anonymous) to intermediate. Einhard begged his pardon for the delay in Hruodrad's travel who still had a strong will to achieve it. Thus, Einhard asked for the bish-

mund, a monk from San Vincenzo al Volturno, could have been particularly important since this abbey lies between Rome and S. Michele al Gargano – a major route used by many pilgrims including Bernard and his companions. Theudemund was probably familiar with the region and may have been a helpful guide in finding accommodation among the local hospices or other institutions, or in the abbey itself.

Bernard mentioned a single church in southern Italy that they visited on their way to Jerusalem: the church dedicated to the Archangel Michael on Monte Gargano. They visited this famous destination belonging to the Michaeline pilgrimage on their way from Rome via Bari to Taranto, from which point they sailed to Alexandria.[21] Although Bernard described the vegetation of the mountain, the character of the church building, and its furnishings, their visit to Monte Gargano may be interpreted as a necessary task in terms of a convenient travel route rather than solely due to their devotion to the Archangel.[22] The reason is that Bernard clearly stated at the beginning of his report that their motivation to travel abroad was their desire to see the holy places in Jerusalem,[23] a statement suggesting this was their primary motivation. It was only after achieving their main goal in the Holy Land that, on their way back home, they visited a place called *Mons Aureus* in southern Italy.[24] From there, the pilgrims travelled further north to Rome and parted ways. Bernard only headed home, however, after visiting several churches in Rome and the monastery of Mont-Saint-Michel in north-western France.[25]

Thus, after accomplishing a journey motivated by their initial purpose to visit the Holy Land, Bernard appears to have pursued another purpose on his return trip, namely his desire to see other holy places. A closer examination of his *Itinerarium* allows us to further clarify his secondary motivation. His mentions of Monte Gargano and Mont-Saint-Michel suggest that Bernard also intended to visit sacred places in veneration of the Archangel Michael: his *Itinerarium* is bookended by a visit to the former at the beginning and the latter at the end of his pilgrimage. The other ecclesiastical institutions Bernard visited in *Mons Aureus* and Rome may likewise be associated with the veneration of St. Michael. Researchers have identified the crypt with seven altars in *Mons Aureus* which Bernard describes with a cave in Olevano sul Tusciano, an area renowned for its veneration of St. Michael.[26] Regarding Rome, Bernard describes the city's sacred topography as follows: St. John's basilica in the Lateran in

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op's permission to travel once again. Einhards Briefe no. 8. Ed. *Grabowsky* et al., 86–87. For permission for clerks and monks to travel, see below.

21 Itinerarium Bernardi Monachi 2–5. Ed. *Ackermann*, 116–117.

22 Cf. *Arnold*, Footprints of Michael (2013), 90–91, 113.

23 Itinerarium Bernardi Monachi 1. Ed. *Ackermann*, 115: (. . .) *volentes videre loca sanctrorum, que sunt Ierosolimis.*

24 Itinerarium Bernardi Monachi 20. Ed. *Ackermann*, 125.

25 Itinerarium Bernardi Monachi 21–22. Ed. *Ackermann*, cc. 125–126.

26 *Avril/Gaborit*, L'Itinerarium (1967), 281–293; Itinerarium Bernardi Monachi 64–65. Ed. *Ackermann*.

the east of the city, St. Peter's in the west, and numerous relics scattered throughout the city.[27] The relic collections in the Lateran Basilica (*Sancta sanctorum*) included those of the Archangel Michael.[28] If Bernard traversed between the eastern and western parts of the city, he would have likely encountered another site of veneration for St. Michael along the banks of the Tiber river, where Castel Sant'Angelo is located today.[29]

Thus, although Bernard does not explicitly express this in his book, we may deduce his devotion to the Archangel from his visits to these four sites of veneration: Monte Gargano, *Mons Aureus*, Rome, and Mont-Saint-Michel.[30] This secondary motivation remains concealed behind the primary purpose of his pilgrimage as stated in the opening sentences of his *Itinerarium* – perhaps because this primary purpose could be shared with a broader audience of potential readers in comparison with his devotion to the Archangel.

Moreover, Bernard's *Itinerarium* leads us to another theme for discussion. In the initial segment of his travel narrative, Bernard mentioned that he obtained permission from Pope Nicholas I for his pilgrimage before departing Rome with his companions.[31] This procedure was not uncommon. Since Late Antiquity, lower clerics and monks were required to obtain travel permission from their bishops or abbots. This was a crucial preparatory step because they were forbidden from travelling without permission by canons and the monastic Rule of St. Benedict. This practice persisted into the Carolingian era, with legislative prohibitions against unauthorised travel.[32] In

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27 Itinerarium Bernardi Monachi 21. Ed. *Ackermann*, 125.

28 *Maskarinec*, City of saints (2018), 133–136.

29 For this veneration place, see *Shwartz*, Gargano comes to Rome (2013). There was another church dedicated to Archangel Michael near Rome whose dedication date, September 29, had been celebrated in Rome since the fifth century. According to two eighth-century versions of the text so-called *Martyrologium Hieronymianum*, this church stood at the sixth milestone of the *Via Salaria*, which ran northeast from Rome. Since Bernard and the others walked southeast from Rome to Monte Gargano and came back from the south, they may not have visited this church. AASS Nov. 2 Pars 1, III Kal. Oct., 127 (f. 121c); Commentarius perpetuus in martyrologium Hieronymianum. Ed. *Delehaye/Quentin*, 532–533; *Dubois*, Les martyrologes (1978), 29–31; *Arnold*, Footprints of Michael (2013), 79–80.

30 Bernard visited several places in the Holy Land, which were related to biblical episodes concerning anonymous angels. These angels were, however, not to be identified with the Archangel. Itinerarium Bernardi Monachi 7, 9, 11, 13, 17. Ed. *Ackermann*, 119–124.

31 Itinerarium Bernardi Monachi 1. Ed. *Ackermann*, 115.

32 Cf. Rule of Benedict, 67.7 Ed. *Holzherr/*Trans. *Thamert*, 517: *Similiter et qui praesumpserit claustra monasterii egredi vel quocumque ire vel quippiam quamvis parvum sine iussione abbatis facere*; Admonitio generalis 3. Ed. *Mordek/Zechiel-Eckes/Glatthaar*, 186: *Item in eodem concilio necnon et in Antiocheno simul et in Calcidonense, ut fugitivi clerici et peregrini a nullo recipiantur nec ordinentur sine commendaticiis litteris et sui episcopi vel abbatis licentia*; So-called "Frankfurt capitulary", in: MGH Conc. 2.1, no. 19 Ed. *Werminghoff*, 169: *De clericis: nequaquam de ecclesia ad aliam ecclesiam transmigrentur neque recipiantur sine conscientia episcopi et litteras commendatitias, de cuius diocesia fuerunt, ne forte discordia exinde veniat in ecclesia. Et ubi modo tales reperti fuerint, omnes ad eorum ecclesiam redeant, et nullus eum post se retinere audeat, postquam episcopus aut abbas suus eum recipere vol-*

some instances, the granting authority extended beyond the traveller's direct supervisor, as is evidenced in Bernard's case. When permitted, clerics and monks travelled for religious, educational, or scholarly purposes. The journey of the young monk Lupus, the future abbot of Ferrières, to Fulda for study can be classified in this category.[33]

A formal document granting such permission is an *epistola formata*. An *epistola formata* served as both a passport and a letter of recommendation issued by the bishop of the diocese of origin to a travelling cleric. This letter was addressed, for example, to the other bishop in whose diocese the cleric wished to pursue his future career. The sending bishop stated that he granted the cleric's wish and released him from his duties, asking the addressee to receive the concerned cleric, and, if necessary, to ordain him as a priest. A cleric also had to request an *epistola formata* from his bishop when embarking on a pilgrimage.[34]

Thus, any priest or monk who wished to travel on a voluntary basis first had to obtain his or her superior's permission. However, the reason for a cleric's move from one diocese to another was not always explicitly mentioned in an *epistola formata*. For example, a priest from Worms, allegedly "inspired by Divine Grace" (*inspirante divina gratia*), according to one such letter, wished to be transferred to Mainz. Any reference to his possible ambition for promotion in Mainz is lacking in the letter, which has been preserved as an anonymised *formula*. This priest, the beneficiary of this letter, was probably motivated to travel by another reason than promotion because he had already been ordained a priest in the Diocese of Worms.[35] Another cleric, named Egilbertus, also wanted to transfer from Worms to Mainz. In his case, the *epistola* given to him at least does contain a vague reference to his motive for transfer: "because it seems convenient for his own benefit" (*pro quibusdam commoditatibus propriae utilitatis*). As Bishop Samuel of Worms requested Archbishop Otgar of Mainz to accept Egilbertus, if he regarded it as worthy to "promote Egilbertus to ecclesiastical orders",[36] we may assume that Egilbertus' "benefit" was his promotion from the priesthood to a higher dignity.

In other cases, the transfer of a priest from one diocese to another was demanded by a superior's orders, as evidenced in such an *epistola formata* indicating that a bishop sent one of his clerics to another diocese since a priest was required to serve

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uerit. Et si forte senior ignorat, ubi suum requirere debet clericum, cum quo fuerit, ipse eum sub custodia retineat et non permittat eum vacare aliubi, usque dum domino suo restituatur.

33 Loup de Ferrières, Correspondance no. 1. Ed. *Levillain*. Vol. 1, 6; *Kikuchi*, Herrschaft (2021), 716.

34 Formulae extravagantes II, no. 13. Ed. *Zeumer*, 559. A priest also needed an *epistola formata* when he wished to enter a monastery or visit his relative. Formulae extravagantes II, no. 14. Ed. *Zeumer*, 559–560. For *epistolae formatae*, see *Morelle*, Sur les "papiers" du voyageur (2009); *Patzold*, Presbyter (2020), 74–84.

35 Epistolae variorum 798–923, no. 8. Ed. *Schröder*, 15–17.

36 Epistolae variorum 798–923, no. 20. Ed. *Schröder*, 38–39: *si meritis augescentibus dignum sanctitas vestra iudicaverit, ad ordines ecclesiasticos provehendi.*

in a local church. For example, Amalar of Trier wrote an *epistola formata* to an arch-bishop, possibly Heistulf of Mainz, at the request of a certain *confrater* Odomacrus, who had a church in the latter's diocese and lacked priests for pastoral care. Amalar then absolved a cleric named Richard from his canonical obligation to stay at his place and permitted him to be ordained in the other diocese. In this case, the travel-ling cleric thus received promotion; however, neither his motivation nor his own in-tention is considered by Amalar in his *epistola formata*. Although we do not know whether Richard had hoped for this promotion, the date of his ordination is recorded in the sole manuscript which transmits this *epistola formata*, suggesting that he benefitted from this transfer.[37]

In some cases, the cleric's motivation is more clearly specified in an *epistola for-mata*. In the middle of the ninth century, for example, Archbishop Theutgaud of Trier wrote to the West Frankish King Charles the Bald, requesting "all" the ecclesiastical dignitaries, and "all" the faithful of his kingdom to support Hegilo – a priest from the diocese of Trier who wished to visit the sites of saints in that kingdom. Thus, Hegilo's motive to travel appears to have been a pilgrimage. However, his trip's purpose was not limited to this. Theutgaud further wrote that Hegilo "wanted to visit you more freely and intimately" (*ad vestram praesentiam liberius ac familiarius accedere va-leret*). This plural form of address ("you" [*vos*]) seems to refer to both the king and the West Frankish ecclesiastical dignitaries to whom this letter was addressed. There are two ways of interpreting this passage. Hegilo may either have hoped for a promotion of his career in the West or have been commissioned with a "diplomatic" task by one of his superiors. This *epistola*, however, does not refer to Hegilo's intention for the "requested" meeting.[38] Thus, we can observe here either a traveller with twofold mo-tivation, or one led by private and official purposes. In any case, Hegilo's case is an-other example of a religious traveller with multiple motivations to undertake a spe-cific journey.

4.3 Travels in a political context

Having examined religious travels with multiple motivations, I shall now focus on po-litical journeys. These were usually undertaken on behalf of a superior and, in this sense, may be defined as "mandated" journeys. However, travellers within a political context could be motivated by additional personal motives, relating either to business or private aims.

Firstly, kings and emperors travelled constantly to effectively govern their realm. This ruling system is usually referred to as "itinerant kingship" or "Reisekönigtum".

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37 Cf. Epistolae variorum 798–923, nos. 9, 27. Ed. *Schröder*, 17–20, 51.

38 Epistolae variorum 798–923, no. 31. Ed. *Schröder*, 61–63.

Through this practice, rulers could efficiently communicate with their magnates, regional elites and – at least occasionally – with their populace. Additionally, kings and their royal courts could manage their finances effectively during their travels, thanks to agricultural produce from royal estates scattered across their domains and the provision of short-term accommodation by ecclesiastical institutions.

However, Carolingian monarchs did not journey throughout their entire kingdom; instead, their movements were concentrated in some core regions.[39] This restriction of the royal itinerary was supplemented by the movements of secular and ecclesiastical elites travelling between their home regions and the royal court, as well as within the districts under their jurisdiction. Delegating authority and power to royal kin and travelling elites was crucial for the Carolingian royal government, a devolution that is particularly evident in the activities of the royal agents known as *missi dominici*.[40]

In addition to these elites, messengers carrying oral and written messages were on the move and often played significant roles in maintaining long-distance communication channels within the vast kingdom. Both "official" (or political, or administrative) and "private" messages were exchanged through these messengers.[41] Furthermore, diplomatic envoys travelled on a larger geographical scale between the Frankish kingdom, the papacy in Rome, the Byzantine imperial court, the Patriarchate of Jerusalem, and the court of Abbasid caliphs.[42] This form of royal governance – alongside repeated military campaigns that expanded the kingdom – relied on the maintained Roman roads and (particularly in the newly integrated eastern regions) expanded networks of roads,[43] while rivers and seas also facilitated mobility.[44]

People travelling on behalf of the royal government did not necessarily undertake their journey at their own expense (otherwise, they might have been demotivated!). In the case of the royal *missi* and other envoys, for example, who travelled to accomplish tasks commissioned by the king, the latter also made provisions for these journeys. These *missi* were provided with so-called *tractoria*, documents ensuring that

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39 *Werner*, Missus – Marchio – Comes (1980), 193–194; *Gravel*, Distances, rencontres, communications (2012), 52–62.

40 For royal *missi*, see *Kikuchi*, Herrschaft (2021).

41 For messengers in the early Middle Ages see *Scior*, Boten im frühen Mittelalter (2021).

42 *Borgolte*, Gesandtenaustausch (1976); *Bieberstein*, Gesandtenaustausch (1993); *Nerlich*, Diplomatische Gesandtschaften (1999); *Hack*, Codex Carolinus (2006–2007). The Carolingian age is famous for the fact that popes travelled north of the Alps for the first time. Their purpose was to visit Carolingian monarchs for various reasons. *Engelbert*, Papstreisen (1993).

43 *Renard*, Sur la route (2019), 8; *Gravel*, À la recherche des routes (2022). Of course, on these roads – as well as on rivers and seas – people travelled not only for governmental purposes.

44 *Ohler*, Reisen ([4]2004), 239–241; *Halfond*, Transportation (2009), 1557–1558. Compare *Ohler*, Reisen ([4]2004), 81–107.

they would be accommodated and provisioned at the cost of the royal fisc. They also stood under special royal protection during these missions.[45]

Apart from such financial and legal support, political travellers had to prepare for their journeys in the same way as other travellers for their own purposes. For instance, in order to accomplish a mission in a region where an individual was unable to communicate with others in his or her mother tongue, a traveller either had to learn a relevant language or be accompanied by an interpreter.[46] Relevant examples of learning materials in the Carolingian period include the so-called *Kassel Glossaries* (*Kasseler Glossen*) and the so-called *Paris Conversations* (*Altdeutsche Gesprächen*). Both contain Latin and vernacular texts and are particularly interesting in the context of early medieval mobility as they contain phrases in dialogue form.

The *Kassel Glossaries*, supposedly written in the early ninth century in Bavaria, comprise lists of Latin and Old Bavarian vocabulary and phrases.[47] They are transmitted in a Bavarian manuscript produced in the first quarter of the ninth century. This manuscript in Quarto (Universitätsbibliothek Kassel, Landesbibliothek und Murhardsche Bibliothek der Stadt Kassel, Ms. theol. 24) contains the canon law collection *Dionysio-Hadriana*, as well as some further sources on the practice of penance, and the vernacular text *Exhortatio ad plebem christianam*.[48] The *Exhortatio* was written in Latin and Old High German to serve local priests, who did not have sufficient knowledge of Latin, as a model sermon. It was probably composed in the framework of Charlemagne's endeavour to promote basic religious education in the vernacular, as suggested by the reference to the emperor's order (*dominationis nostrae mandatum*).[49] Regardless of whether Archbishop Arn of Salzburg, the early ninth-century imperial representative in Bavaria, was indeed involved in its production,[50] the inclusion of the *Kassel Glossaries* and the *Exhortatio* in this manuscript suggests that either the producer, the holder, or the user of this manuscript was genuinely interested in translations between Latin and Old High German (or Old Bavarian). Moreover, whether the target language was Old Bavarian, as many scholars believed, or Latin, as suggested recently by Florian Kragl,[51] it is clear that the *Kassel Glossaries* contain phrases that were useful during travels outside one's own language area. They include phrases such as "Who are you?", "Where are you from?", "What were

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45 *Kikuchi*, Herrschaft (2021), 24–33. Cf. *Bruand*, Voyageurs et marchandises (2002), 125–126. Compare these four paragraphs above with *Ohler*, Reisen (⁴2004), 234–258.

46 Cf. *Ohler*, Reisen (⁴2004), 143–145.

47 For these glossaries see *Penzl*, "Gimer min ros" (1984), 395–400; *Penzl*, Stulti sunt Romani (1985); *Bergmann* (Ed.), Althochdeutsche und altsächsische Literatur (2013), 225–227.

48 *Bergmann* (Ed.), Althochdeutsche und altsächsische Literatur (2013), 225.

49 Text and German translation: *Hellgardt* (Ed.), Vom St. Galler Abrogans (2022), 1270–1275. For this text see *Kikuchi*, Herrschaft (2021), 199 and the further literature cited in n. 624.

50 For him *Kikuchi*, Herrschaft (2021), 399–409. For the possibility that Arn was involved in the production of the *Exhortatio* see *Diesenberger*, Predigt und Politik (2016), 177.

51 *Kragl*, Deutsch/Romanisch (2015), 306–312.

you searching for?", "We were searching for what we needed", and "What was your need?".[52] As the contents of the manuscript suggest that its user was either a bishop who had to manage his diocese and discipline priests, or a priest who had to provide pastoral care in his parochial church, the travels it presupposes are those of a priest mandated by his bishop to go outward to achieve commissioned tasks.

The second piece is the *Paris Conversations.* It consists of marginal notes which can be found on fols. 1[r], 2[v], and 3[r] of the manuscript Paris, Bibliothèque Nationale de France, MS. Lat. 7641 and on fol. 50[v] of the manuscript Vatican, Bibliotheca Apostolica Vaticana, Cod. Regin. lat. 566, which originally belonged to the Paris manuscript as its first page. The main text on these folios is the so-called *Abavus-glossary*, with entries from Latin to Latin. The manuscript was probably compiled in the early ninth century, with notes likely added by a scribe from the region of Sens at the end of the ninth or the beginning of the tenth century.[53] Kragl recently challenged the view – held by earlier scholars – that these marginal notes represent a copy of a Latin–to–Old High German–phrasebook for travel. According to him, these notes were not copied from such a phrasebook but were instead written down by a native Romance-speaking monastic novice while learning the German language.[54] Regardless of which opinion holds true, it is important to note that this text contains phrases that could have been used or heard during travels for the benefit of one's superior: "From which land (*patria*) do you come?" – "I was in Francia", "What were you doing there?" – "I was sent there (*missus fui*)", and so on.[55]

Therefore, both the *Kassel Glossaries* and the *Paris Conversations* provide insights into model conversations that Carolingian learners of a foreign language would have learned and practiced. One of the scenarios in which they might have used these phrases was during conversations on a journey, a presumption that is indeed reflected in the model phrases. In some sense, we may say learning a foreign language was motivated by the learners' wish or need to travel. However, more significant is the fact that both texts imply these phrases were meant to be used in the context of mandated journeys, which could involve learning a foreign language. In these cases, learning a foreign language belonged to the preparation required for mandated travels, expenses the travellers had to bear by themselves. In what follows, I will inquire whether this kind of cost was compensated. Due to the limitation of our sources, I will only be able to discuss journeys executed in the context of royal services.

According to Laurent Jégou, mobility was a significant characterisation of Carolingian elites. Besides travelling for personal purposes – such as acquiring or reading

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52 Text and German translation of the *Kassel Glossaries*: *Hellgardt* (Ed.), Vom St. Galler Abrogans (2022), 92–96.
53 For this text, *Bischoff*, Study of foreign languages (1961), 217; *Penzl*, "Gimer min ros" (1984), 395–400; *Bergmann/Stricker* (Eds.), Althochdeutsche und altsächsische Glossographie (2009), 927–937.
54 *Kragl*, Deutsch/Romanisch (2015), 293–305.
55 Text and German translation: *Hellgardt* (Ed.), Vom St. Galler Abrogans (2022), 97–120.

manuscripts, visiting teachers or friends – ecclesiastical and lay elites also travelled within and outside the Frankish kingdoms to participate in royal governance.[56] As emerges from the above, such travels may be characterised as "mandated", or even "obligatory", which includes, for instance, the journeys of *missi dominici.*

However, elites travelling to participate in general assemblies or to visit the royal court were not only driven by a sense of duty as agents of the royal government but also by the opportunities presented during such an occasion, whether that meant receiving rewards like privileges or land estates or communicating with other members of the elite.[57] These represented additional motivations for royal agents during their "business trips" which must have been more relevant in cases of long diplomatic journeys, be it to Rome or elsewhere. Although royal envoys were not only financially and logistically supported but also legally protected by their kings, they nonetheless pursued personal goals alongside conducting royal business. They could also anticipate some additional positive "side-effects" emerging from their business trips, such as those stemming from networking opportunities with fellow envoys and "business-partners" in their respective destination places. Their travels could also strengthen existing friendships with contacts they may have met in person or communicated with by letter– either before or after such travels.

The case of Amalar of Trier, who repeatedly travelled in the royal service, is a case in point. The most famous of these journeys was his diplomatic mission to Constantinople in 813, when he was accompanied by his fellow *missus*, Peter of Nonantula, the pair developing a friendship during their journey. Upon returning home, Peter requested Amalar to send him a treatise on liturgy, which Amalar had written during their diplomatic mission.[58] This illustrates that envoys in royal service did utilise their free time, such as long sea voyages, for personal pursuits. During his travels, Amalar also collected information on liturgy and encountered local practices, knowledge that he later used in his works and treatises on liturgy.[59]

Some envoys were entrusted by their friends with tasks to be conducted at their destination. For instance, Alcuin entrusted Angilbert of St-Riquier with a letter to be handed over to Pope Hadrian during Angilbert's journey to Rome, also requesting Angilbert to bring back precious relics as gifts.[60] When Abbot Adalhard of Corbie and Bishop Bernharius of Worms travelled to Rome as Charlemagne's *missi*, Archbishop Richulf charged them with his letter as well as a gift for Pope Leo III. Through this

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56 *Jégou*, Déplacements (2010), 224.

57 *Depreux*, Lieux de rencontre (1998); *Mersiowsky*, Urkunde in der Karolingerzeit (2015), 543–782.

58 Amalarii Episcopi Opera. Ed. *Hanssens*, 229. For Amalar and Peter see *Kikuchi*, Herrschaft (2021), 365–371, 765–767.

59 *Vedriš*, Amalarius' stay (2018), 288.

60 Compare Alcuini sive Albini epistolae, nos. 11, 27. Ed. *Dümmer*, 37, 68–69.

letter, Richulf petitioned the pope for the relics of St Caesarius. Leo III granted his wish, providing Bernharius with the relics.[61]

It was also possible for royal *missi* sent to Rome to petition for and obtain papal privileges for their institutions, such as diocesan churches and monasteries. As I have argued elsewhere, a significant portion of ninth-century papal privileges were issued only when Carolingian monarchs were involved in the issuing process in some way, whether actual or fictional. Royal interventions are attested for Fulda, Corbie, and other ecclesiastical institutions. This may be because such royal involvements served as a guarantee for the credibility of the supplicants or the content of the petitions. Royal envoys and *missi*, as representatives of the royal court who travelled over the Alps, could have the opportunity to directly petition for privileges concerning their own interests when they met with a pope.[62] Fulrad of St. Denis, who visited Italy several times as *missus* of Pippin III, obtained two privileges from Pope Stephen II for his abbey in February 757 during his visit to Rome.[63] Another relevant case is that of Adalgar of Autun, who was sent by Charles the Bald to Italy in November 876 and February 877. On each occasion, he obtained a papal privilege for his episcopal church of Autun.[64]

Carolingian interest in Roman-Christian Antiquity provides another lens through which to understand the actions of *missi* sent to Rome. As Florian Hartmann's recent article demonstrates, the Franks collected and copied Roman epigraphs found in Italy, as evidenced by some manuscripts which survive from the north of the Alps, containing collections of those epigraphs.[65] As I argued elsewhere, it must be emphasised that the production of these collections was related to the activities of Frankish envoys, or *missi dominici*, in Italy. For example, collections of Roman inscriptions were made in monasteries such as St-Riquier, Corbie, and Lorsch, whose abbots – Angilbert, Adalhard, and Adalung – are known to have served as royal or imperial representatives in Italy.[66] Thus, Frankish envoys were simply one possible channel through which Italian Roman cultural heritage and papal authority could be disseminated beyond Rome. These results were a possible "side-effect" of any such travel in royal service.

In this context, we must also mention the manuscript *Codex Einsidlensis 326* (Einsiedeln, Bibliotheca Monasterii Ordinis Sancti Benedicti 326). Apart from a sylloge of Roman antique inscriptions, it contains the famous description of crossing routes of

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61 Epistolae selectae pontificum Romanorum, no. 9. Ed. *Hampe*, 67–68. For Adalhard and Bernharius, *Kikuchi*, Herrschaft (2021), 312–318, 442–443.

62 *Kikuchi*, Authority at a distance (2023), 18–23.

63 *Kikuchi*, Herrschaft (2021), 528–531; *Kikuchi*, Authority at a distance (2023), 19.

64 *Kikuchi*, Herrschaft (2021), 302–306.

65 *Hartmann*, Karolingische Gelehrte (2015).

66 *Kikuchi*, Authority at a distance (2023), 16.

the City of Rome, the so-called *Itinerarium Einsidlense*.[67] Michael I. Allen recently argued that this description of routes and sites worth visiting in the City of Rome may have been written by Einhard, who visited during a royal service. If this is true, then Einhard recorded geographical information that had caught his interest during his business trip. This could be influential for another journey –namely the travel taken to Rome by his monk, Ratleik, to acquire relics. Ratleik may have been able to prepare himself for his *furta sacra* using the geographic information provided by the *Itinerarium*, which bore fruit in the form of the *Translatio sanctorum Marcellini et Petri* to Seligenstadt.[68] We may count this episode as another example of positive "side-effects" emerging from business trips executed by royal agents. Similarly, other royal *missi* sent to Rome and Constantinople could obtain relics and bring them back to their home institutions.[69]

Another journey by Fulrad is likewise worth mentioning here. According to the author of the *Translatio sanci Viti*, Fulrad – driven by his deep religious devotion to saints, – begged King Pippin for his permission to travel to Rome and bring back saints' relics. The king not only allowed him to go, "but also thanked him for such a longing" (*sed et gratias pro tali desiderio retulit*). Fulrad then travelled with his lay relative to Rome, returning with the relics of St. Alexander, St. Hippolytus, and St. Vitus.[70] Although this hagiographic text does not mention it clearly, Stoclet suggested that Fulrad's journey could be related to one of his travels to Rome executed in the context of royal service.[71] Whether this is the case or not, we can suppose Fulrad's repeated travels to Italy made it possible for him to negotiate with popes over translations of Roman relics to Francia. The most suggestive clue is his stay in Rome in 756 as the representative of Pippin. At that time, Fulrad was active (alongside a Roman deacon, Paul) in negotiations between the Roman Church and the Lombards. This Paul was the brother of Pope Stephen II and would eventually succeed him as Paul I, under whose pontificate translations of Roman relics was widely permitted.[72] Their acquaintance may thus have played a role in Fulrad's negotiation with the pope over the translation of relics.

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67 On this codex, see Einsiedler Inschriftensammlung und der Pilgerführer. Ed. *Walser*; *Del Lungo*, Roma in età carolingia (2004). For the *Itinerarium Einsidlense*, *Santangeli Valenzani*, "Itinerarium Einsidlense" (2014).

68 *Allen*, Pilgrims on earth (2016).

69 As mentioned above, Angilbert was requested by Alcuin to obtain relics in Rome during his travel as the royal representative. On such occasions he could obtain other relics for his own abbey of St. Riquier. Furthermore, Angilbert stated in his *De ecclesia Centulensi libellus* that his abbey possessed other relics which royal envoys brought back from Constantinople. Chronique de l'abbaye de Saint-Riquier 9. Ed. *Lot*, 61–62.

70 Translatio sancti Viti 2. Ed. *Irene Schmale-Ott*, 32, 34.

71 *Stoclet*, Autour de Fulrad (1993), 367.

72 Cf. *Smith*, Old saints (2000), 320–322; *Kikuchi*, Herrschaft (2021), 528–530.

4.4 Conclusion

People in the Carolingian era travelled despite various risks and costs. Each traveller had a principal motive, whether voluntary or mandated. However, to compensate for these drawbacks, travellers could act "cost-effectively" on their way. The sources tell us that travellers regularly used occasions emerging from their trips to serve different tasks or purposes. This means that a single journey could be motivated by multiple factors. These additional tasks and motivations were not always personal. Indeed, the evidence refers to a wealth of cases where they were assigned by others, be it their superiors or friends. This is particularly evident in the cases of royal envoys. Although financially and logistically supported and legally protected by the king, they also pursued their own goals during their journey besides merely carrying out royal business. Thus, personal and official motivations could be combined in a single journey and those travelling in an official capacity could also expect some positive "side-effects" from their business trips. As shown by the evidence discussed in this chapter, certain forms of travel-economy were clearly realised in the Carolingian age. By demonstrating the multifaceted nature of early medieval travel undertaken by individuals, and exploring the relevant motivations and purposes of these journeys, this chapter has hopefully facilitated a fuller understanding of the significance and impact of mobility in the Carolingian world.

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5 Friesen in der Fremde? Zur Mobilität friesischer Händler im Spiegel der Keramikfunde

5.1 Theoretische Vorbemerkungen

Der vorliegende Beitrag möchte versuchen, die Möglichkeiten des Erkennens von Mobilität beziehungsweise Migration im frühen Mittelalter an einem Einzelbeispiel aus der archäologischen Keramikforschung zu diskutieren. Mobilität und Migration sind auch in der Archäologie intensiv behandelte Themen, und es ist hier nicht der Platz, auch nur ansatzweise die verschiedenen Aspekte in der aktuellen Diskussion oder gar den Gang der Forschungsgeschichte hinreichend darzulegen.[1] Archäologische Funde und insbesondere auch Keramik werden für das frühe Mittelalter immer wieder als Argumente angeführt, wenn es um den Nachweis von Migrationen, also das dauerhafte Verbleiben von Personen(-gruppen) in einer Zielregion, geht, etwa im Fall der slawischen Expansion in das östliche Mitteleuropa, der Zuwanderung der Awaren in das heutige Ungarn oder die Übersiedlung von Personenverbänden vom Kontinent nach Britannien im 5./6. Jahrhundert. Mobilität, bei der nur ein zeitlich begrenzter Ortswechsel stattfindet, wird deutlich seltener thematisiert. Tritt in einer Region eine fremd anmutende Keramik auf, für die eine Entstehung vor Ort nicht anzunehmen ist, dann kann dieses Erscheinen auf Mobilität von Personen oder auf eine Migration zurückzuführen sein. Fremde können bei einem zeitweiligen Aufenthalt diese Gegenstände zurückgelassen haben, oder Einheimische haben sie nach einem zeitweisen Aufenthalt in anderen Regionen mitgebracht. Probleme bereitet der Archäologie die Unterscheidung beider Phänomene mithilfe des Fundmaterials. Die in anderen Wissenschaften gängige Festlegung, die Mobilität und Migration gegeneinander abzugrenzen versucht, indem auf die Absicht der Person, nach einer gewissen Zeit zurückzukehren, rekurriert wird, ist für Archäologinnen und Archäologen wenig hilfreich, da diese Absicht anhand des Fundmaterials nicht erkennbar wird. Die Begriffe Mobilität und Migration werden daher bisweilen synonym gebraucht.[2] Auch die Dauer des Aufenthalts in der Fremde ist eine archäologisch nur schwer zu bestimmende Größe, die am dabei entstandenen Fundniederschlag in aller Regel nicht zuverlässig abzulesen

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1 Zur Geschichte der archäologischen Migrations- und Diffusionsforschung im englisch- und deutschsprachigen Raum, vgl. *Oyen*, Material culture (2017); *Prien*, Archäologie und Migration (2005), 29–37; *Trigger*, History of Archaeological Thought (²2008), 211–214; 217–223; 235–240; 246.
2 *Burmeister*, Archaeology Migration Research (2019), 232; *Stauch*, Validierung (2016), 193–194.

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ist. Liegen nur wenige Keramikgefäße vor, könnten diese auf einen kurzzeitigen Aufenthalt Fremder hindeuten oder aber auf Immigranten, die bald nach ihrer Ankunft verstarben oder Keramik des Zielgebiets übernahmen. Liegen größere Fundmengen vor, etwa im Fall der Urnengräberfelder Ostenglands aus dem 5./6. Jahrhundert, dann ist man geneigt, dauerhafte Zuwanderungen größerer Personenverbände anzunehmen. Die Beurteilung hat aber verschiedene weitere Aspekte als nur die reine Fundmenge zu berücksichtigen, insbesondere die Möglichkeit des Austauschs mit den Einheimischen (Akkulturation/Assimilation).

Zudem ist noch an die grundsätzliche Einschränkung zu erinnern, dass die Objekte, seien es nun Keramikgefäße, Fibeln oder Waffen, nur dann als Sachzeugen für einen Migrations- oder Mobilitätsvorgang zur Diskussion gestellt werden können, wenn sie außerhalb ihres eigentlichen Verbreitungsgebiets gefunden werden. Ein Residenzwechsel, der innerhalb eines Verbreitungsgebiets oder eines „Kulturraums" stattfand, bleibt archäologisch unsichtbar.[3]

Grundsätzlich ist beim Auftreten fremden Fundmaterials nicht nur nach Mobilität oder Migration zu fragen, sondern es ist zu prüfen, ob nicht auch andere Ursachen in Frage kommen. Zuvorderst können möglicherweise Handelsaktivitäten für ein Verbreitungsbild verantwortlich zu machen sein. Es wurde hervorgehoben, dass allein anhand der Anzahl fremder Funde bereits eine diesbezügliche Einschätzung möglich sei, sofern der Forschungsstand dies erlaube. Einzelfunde fremder Herkunft werden als Nachweis für Mobilität angesehen, während größere Fundmengen mit Handelsbeziehungen in Verbindung gebracht werden, insbesondere, wenn die Fremdgüter auch noch in weiteren Regionen auftauchen und damit in einem so weiten geografischen Raum streuen, dass Migration als Erklärung für das Verbreitungsbild unwahrscheinlich wird.[4] Bei konzentrierten, räumlich enger einzugrenzenden Vorkommen *können* aber auch Migrationen für das Fundbild verantwortlich sein. Außerdem kann ein Ideen- oder Technologietransfer zugrunde liegen,[5] etwa wenn fremd anmutende Keramik von einheimischen Töpfern vor Ort imitiert wird oder als Innovation Drehscheibenware neben eine bislang übliche handgeformte Keramik tritt. Diese Adaption fremder Elemente kann nur über den Kontakt von Personen zustande kommen. Hierbei können Vorstellungen und Technologien von Nachbarregion zu Nachbarregion weitergegeben werden, womit keine oder nur eine minimale Mobilität verbunden ist, oder über größere Distanzen direkt vermittelt werden, was nur unter der Annahme von Mobilität oder Migration von (zumindest einzelnen) Personen denkbar ist.

Im Fall der Keramik kann ein genauerer Blick auf die Machart beziehungsweise die Qualität der Funde helfen, sich zwischen den Erklärungsmöglichkeiten Migration/ Mobilität oder Handel zu entscheiden. Hierbei kommt die Trennung zwischen Grob-

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3 *Brather*, Ethnic Identities (2008), 164; *Burmeister*, Migration (1996), 13; *Fehr*, Friedhöfe (2012), 319; *Stauch*, Validierung (2016), 193.

4 *Quast*, Communication (2009), 17.

5 *Quast*, Communication (2009), 1–7.

und Feinkeramik zum Tragen.[6] Die grobe, einfache Keramik ist im Frühmittelalter üblicherweise nur mit der Hand, also ohne Zuhilfenahme einer Töpferscheibe, hergestellt worden. Diese Gefäße sind oft nachlässig geformt, weisen Unregelmäßigkeiten auf und besitzen oft keine oder kaum Verzierung.[7] Sie wurden im „Hauswerk", also entweder tatsächlich in jedem Haushalt oder von einer handwerklich begabten Person für einen kleineren Abnehmerkreis gefertigt, etwa eine Siedlungsgemeinschaft oder auch mehrere, benachbarte Siedlungen.[8]

Die Feinkeramik zeichnet sich in der Regel durch eine Herstellung auf der Töpferscheibe aus. Deren Anwendung scheint professionellen Handwerkern vorbehalten geblieben zu sein, die für einen größeren Abnehmerkreis arbeiteten. Dabei muss es keineswegs immer zu einer weiträumigen Verbreitung der Produkte gekommen sein, wie das Beispiel der Haithabu-Drehscheibenware des 10. Jahrhunderts zeigt, die fast ausschließlich in diesem frühstädtischen Handels- beziehungsweise Zentralort an der Schlei gefunden wurde und auf zeitgleichen, auch gut untersuchten Plätzen bislang nur äußerst selten aufgetreten ist.[9]

Die auf der Drehscheibe hergestellte Feinkeramik konnte als begehrtes Luxusobjekt, wie das für die in ihrer Qualität herausstechenden Tatinger Kannen des 8./9. Jahrhunderts angenommen werden kann,[10] oder als robuste Gebrauchskeramik in großen Mengen (Mayener Keramik)[11] natürlich auch in den weiträumigen Handel gelangen. Für das Verbreitungsbild der in einem großen geografischen Raum in Nordwesteuropa streuenden früh- bis hochmittelalterlichen Drehscheibenkeramiken aus dem Köln-Bonner-Raum werden verschiedene Erklärungen diskutiert. In Anbetracht großer Fundmengen, wie sie zum Beispiel aus Dorestad vorliegen, geht man von einem Geschirrhandel aus, wobei dieser Ort auch als Etappenstation für den Weitertransport in den Nordseeraum zu verstehen ist.[12] Als ein Endpunkt für den Absatz rheinischer Keramik gen Osten wurde Haithabu angesehen, da im anschließenden Ostseeraum diese Waren deutlich seltener auftreten. Dorthin sollen sie im Rahmen des

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6 *Prien*, Archäologie und Migration (2005), 311–312.

7 Vgl. aber die von Hand aufgebauten und verzierten Urnen und Gebrauchsgefäße Norddeutschlands, der Niederlande sowie Ostenglands im 5./6. Jahrhundert, die wohl von den Familien der Siedlungsgemeinschaften für den Eigenbedarf hergestellt worden sind (*Hills/Lucy*, Spong Hill [2013], 164–168). Unter ästhetischen Gesichtspunkten könnte diese auf vormittelalterliche Traditionen zurückgehende Keramik auch als Feinware angesprochen werden.

8 Zu mutmaßlichen kleinregionalen Absatzgebieten handgefertigter verzierter Keramik der Merowingerzeit, vgl. *Châtelet*, La céramique (2002), 169; 177, Abb. 152; *Koch*, Mannheim (2007), 180; 196; 345.

9 *Hüser/Frederiks/Segschneider*, Borgsumburg (2022), 160, Abb. 8; *Majchczack*, Rolle der nordfriesischen Inseln (2020), 232. Die Haithabu-Drehscheibenware ist zugleich ein gutes Beispiel für den archäologischen Nachweis einer Handwerkermigration, worauf hier nicht näher eingegangen werden kann, vgl. *Lüdtke*, Einheimische Keramik (2013), 38–44.

10 *Stilke*, Tatinger Ware (2001), 260–261; 264; *Giertz*, Karolingerzeitliche Funde (2014), 225–226.

11 *Grunwald*, Produktion (2015).

12 *Sanke*, Gelbe Irdenware (2001), 281; 295; 382.

allgemeinen Handels eher beiläufig gelangt sein.[13] Man vermutet, dass sie zum Besitz der Kaufleute zu zählen sind, die hierin ihren Proviant oder andere Dinge für die Reise verpackt haben.[14] Zu den am weitesten im Osten gelegenen Fundorten gehört Alt-Ladoga, ein in der Karolingerzeit gegründeter Handelsplatz. Die Fragmente von Badorfer Ware werden dort als Reste von Gebrauchsgeschirr aus dem Haushalt interpretiert.[15] In Ribe gefundene Gefäße weisen teilweise Rußspuren auf, was zweifellos auf den Gebrauch am Herd hinweist.[16] Ob zugereiste Händler oder Einheimische sie als Kochgefäße nutzten, ist aber kaum sicher zu entscheiden. Darüber hinaus wurde überlegt, ob insbesondere in den amphorenartigen Transportbehältern (Reliefbandamphoren) eine Emballage, zum Beispiel für den rheinischen Wein, gesehen werden muss, zumal andere Formen, die eigentlich zum geläufigen Repertoire der rheinischen Werkstätten zählten, unterrepräsentiert sind.[17] Allerdings scheint der Wein vielmehr in großen Holzfässern gehandelt worden zu sein, wie sekundär als Brunneneinfassungen verwendete Exemplare aus Haithabu nahelegen.[18]

Während die Feinkeramik somit für den Nachweis von Händlermobilität beziehungsweise Handelsnetzwerken, nicht aber von Migration geeignet erscheint, ist die handgefertigte Grobkeramik anders zu beurteilen. Da nahezu in allen Regionen Tonvorkommen vorhanden sind, die zur Herstellung von Keramik genutzt werden können, macht ein Import einfachen Gebrauchsgeschirrs ohne jeden ästhetischen Anspruch und ohne besondere Qualitätsmerkmale keinen Sinn, weil vergleichbare Produkte vor Ort kostengünstiger gefertigt werden können. Wenn keine qualitativen Vorteile auszumachen sind und man auch eine Funktion als Transportbehälter ausschließen kann, dann muss es sich bei der an einem Fundplatz geborgenen Grobkeramik, die einen fremden Eindruck macht, entweder um von Migranten mitgebrachtes Geschirr oder um von ihnen vor Ort in gewohnter Manier hergestellte Gefäße handeln. Insbesondere, wenn diese fremde Ware in größeren Mengen auftritt, wird damit eine Zuwanderung als Ursache sehr wahrscheinlich.

Man hat bei der Diskussion um die Nachweisbarkeit von Migrationen bezüglich des kulturellen Habitus der Zuwanderer einen inneren von einem äußeren Bereich unterschieden.[19] Die einfache Haushaltskeramik gehört hierbei zum Innenbereich der Kultur, für den ein längeres Festhalten an Gewohntem charakteristisch ist, während der Außenbereich stärkeren Einflüssen der autochthonen Bevölkerung unterliegt, sodass es hier schneller zu Akkulturationserscheinungen kommt. In der Tat lässt sich

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13 *Hübener*, Keramik (1959), 176–177.

14 *Janssen*, Importkeramik (1987), 132–136.

15 *Grigorjeva*, Archaeological evidence (2021), 41.

16 *Feveile*, Vikingernes Ribe (2010) 23–24.

17 *Sarfatij*, Tiel (1999), 197; *Weidemann*, Importkeramik (1970), 51.

18 *Jankuhn*, Haithabu (1986), 152.

19 *Burmeister*, Migration (1996), 16–17; *Gulyás*, Ethnical identification (2021), 140–141; *Prien*, Archäologie und Migration (2005), 45.

etwa für Gräber des 6./7. Jahrhunderts aus Wenigumstadt (Landkreis Aschaffenburg) beobachten, dass zugezogene Gruppen, die offenbar zusammen mit der einheimischen Bevölkerung auf einem Gräberfeld bestatteten, über drei Generationen an ihrer handgefertigten, verzierten Keramik festgehalten und diese mit in die Gräber gegeben haben, bevor in der Folgezeit die vor Ort übliche Drehscheibenware übernommen wurde.[20] Die fremde Herkunft der in den fraglichen Gräbern bestatteten Personen konnte über Isotopenanalysen bestätigt werden,[21] womit der Zeigerwert der handgefertigten, mit ihren Dekoren nach Norddeutschland oder England verweisenden Keramik für das Erkennen von Migrationen unterstrichen wird.

An diesem Fallbeispiel wird deutlich, dass die Fragen der Migration und der ethnischen Interpretation von Fundmaterial eng miteinander verbunden sein können, möchte man hier doch spontan annehmen, dass in den Gräbern zugewanderte Sachsen begraben liegen, die beziehungsweise deren Familien möglicherweise über England ihren Weg in den alamannischen Raum gefunden haben. Die Problematik der ethnischen Deutung wird in der Forschung bis heute kontrovers beurteilt. Nach der für den deutschsprachigen Raum wegweisenden Arbeit von Sebastian Brather aus dem Jahr 2004, in der die Möglichkeiten der ethnischen Interpretation sehr stark eingeschränkt beziehungsweise oft gänzlich negiert werden und die breite Resonanz erfahren hat („Freiburger Schule"),[22] ist die Preisgabe der ethnischen Deutung zugunsten einer demgegenüber nur auf soziale und wirtschaftliche Strukturen abzielenden Forschung in jüngerer Zeit wieder stärker kritisiert worden.[23] Die auf eine rein strukturgeschichtliche Perspektive fokussierte Archäologie sieht sich neuerdings auch mit den Ergebnissen der im Aufschwung begriffenen biowissenschaftlichen und archäogenetischen Forschung konfrontiert, was in der Archäologie wie auch in der Geschichtswissenschaft bereits zu Abwehrreaktionen geführt hat, die vor einem „Rückfall in den Biologismus des 19. Jahrhunderts"[24] beziehungsweise dem „Gral der Migrationsforschung in Gestalt der Paläogenetik"[25] warnen.[26]

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20 *Stauch*, Wenigumstadt (2004), 104–124. Kritisch hierzu, aber mit wenig überzeugenden Argumenten, *Masanz*, Brandbestattungen (2010), 364–366.

21 *Stauch*, Validierung (2016), 208–212.

22 *Brather*, Ethnische Interpretationen (2004).

23 *Curta*, Elephant (2013); *Gulyás*, Ethnical identification (2021), 149–150.

24 *Brather*, Alteritäten (2020), 92.

25 *Prien*, Völker – Wanderungen (2022).

26 Es scheint notwendig, trotz der wohl noch bestehenden *epistemologischen Beziehungsprobleme zwischen Populationsgenetik und Archäologie* (*Samida*, Molekularbiologie und Archäologie [2021], 57), auf breiter, interdisziplinärer Basis und unter beständiger Methodenreflexion diese neueren Ansätze mit aller notwendigen interpretatorischen Umsicht in die historisch-archäologische Forschung zu integrieren, wie es im Fall der Gräberfelder von Collegno und Szólád geschieht (vgl. *Freeden/Vida/Winger*, Fremde Freunde [2020], 99–112; *Geary*, Use of Ancient DNA (2019), 49–60; *Geary*, Herausforderungen [2020], 53–58). Aktuell stellt sich die Aufgabe, die durchaus anregenden naturwissenschaftlichen Ergebnisse, die aber immer nur einen Teil der historisch relevanten Fragen beleuchten und zur Frage

Vor dem Hintergrund der scharfen Kontroverse um die Möglichkeiten der ethnischen Interpretation von archäologischen Funden und Befunden wurde angeregt, diese Problematik von der Frage der Migration insoweit abzukoppeln, als dass die Ethnizität der wandernden Individuen zunächst gar nicht interessieren müsse. Es sei möglich, Zuwanderungen in der archäologischen Überlieferung zu erkennen, ohne auf die problematische ethnische Zugehörigkeit der Migrantinnen und Migranten eingehen zu müssen.[27] Dies erscheint als ein gangbarer Weg, mit dem zum Beispiel der viel diskutierten Zuwanderung des 5./6. Jahrhunderts nach England nachgegangen werden kann, bei der auch die Keramikfunde eine große Rolle spielen.[28]

5.2 Keramik als Indikator für Mobilität und Migration friesischer Händler?

Eine markante Erscheinung des Nordseeküstenraums im Frühmittelalter ist die Muschelgrusware (Abbildung 5.1).[29] Ihre Produktion begann im letzten Drittel des 8. Jahrhunderts und setzte sich bis zum 10. Jahrhundert fort.[30] Sie ist besonders häufig zwischen Ems und Weser anzutreffen, wo sie bisweilen als ausschließlich verwendete Keramik im Sinne einer Haushaltsware (Grobkeramik) gelten kann (Abbildung 5.2). In

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von Migrationen Einiges, zu ethnischen Identitäten hingegen nichts aussagen können („there is no Gothic or Lombard gene"; *Geary*, Political Identity [2018], 41), in den methodisch-theoretischen Diskurs in der Archäologie einzubetten.

27 *Brather*, Ethnizität und Mittelalterarchäologie (2011), 165; *Burmeister*, Migration (1996), 13; *Fehr*, Friedhöfe (2012), 318; *Prien*, Archäologie und Migration (2005), 42; *Quast*, Communication (2009), 8. In vergleichbarer Weise verzichten auch die Protagonisten der jüngsten genetischen Untersuchungen zu den Gräberfeldern von Collegno und Szólád auf ethnische Zuschreibungen für die auf archäologischem und paläogenetischem Wege erkannten Gräbergruppen. Ob die hier Zugewanderten als „Langobarden" bezeichnet werden können, bleibt zunächst zurückgestellt, gleichwohl ist der „Migrationshintergrund" zahlreicher Individuen offensichtlich, vgl. *Geary*, Use of Ancient DNA (2019), 51; 57; 60.

28 Im Hinblick auf die Erkennbarkeit von Zuwanderern im archäologischen Fundgut und dessen ethnische Ansprache vgl. etwa die Extremposition von *Harland*, Ethnic Identity (2021), 234, der zwar Migration als Ursache für das Auftreten von fremden Fibeln und anderem Fundmaterial in Ostengland nicht leugnet, im Zuge einer fundamentalen Ablehnung der ethnischen Interpretation eine eindeutige Identifikation von Immigranten und ihren Nachkommen aber sehr stark relativiert. Bezüglich der Keramik, vgl. auch *Fitzpatrick-Matthews*, Defining Fifth-century Ceramics (2016), der eine Adaption fremder, „Anglo-Saxon ceramic forms" durch einheimische Töpfer annimmt.

29 Dem Rohton wurden bei dieser Keramikgruppe während der Aufbereitung zerkleinerte Muschelschalen beigeschlagen. Diese so genannte Magerung ist für ein Gelingen des Keramikbrandes unerlässlich, da bei gewöhnlichen unaufbereiteten Tonen die Gefahr besteht, dass die Gefäße beim Brand Risse bekommen oder sich verformen. Bei anderen Keramiksorten wurden anstelle der Muschelschalen zerkleinerte Gesteine unterschiedlicher Art, Sand oder anderes beigemischt.

30 *Brorsson*, Pottery (2010), 31; *Stilke*, Muschelgrusware (2001), 196–198.

diesem Gebiet liegt mit Hesel im Landkreis Leer auch der einzige bislang bekannte Produktionsort.[31] Weiter nordöstlich bis zu den nordfriesischen Inseln sowie in Richtung Westen bis zum Rheindelta finden sich ebenfalls noch hohe Anteile in den Fundkomplexen (20–40%), wobei hier Unsicherheit besteht, ob auch in diesen Regionen eine Herstellung vorausgesetzt werden darf oder ob es sich hier bereits um „importierte" Objekte handelt.[32] Auffällig ist ein inselartiges Vorkommen im Münsterland. Es wurde in Zweifel gezogen, dass die dort getätigten Funde tatsächlich eine echte Muschelgrusmagerung besitzen.[33] Möglicherweise liegt auch eine Gesteinsmagerung mit Muscheleinschlüssen vor, wie es bereits für Haithabu beobachtet wurde.[34]

Abbildung 5.1: Randfragment eines Topfes aus Muschelgrusware, gefunden im Hafen von Haithabu (nach *Lüdtke*, Einheimische Keramik [2013], 36, Abb. 9).

Die Funde der Muschelgrusware außerhalb ihres engeren Verbreitungsgebiets werden üblicherweise als Beleg für die Anwesenheit friesischer Händler gewertet, deren

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31 *Bärenfänger*, Vier Gehöfte (1994), 54; 64.

32 *Stilke*, Muschelgrusware (2001), 192–195.

33 *Bergmann*, Grangienwüstung (2007), 64; *Stephan*, Studien (2000), 75.

34 *Hübener*, Keramik (1959), 190; *Schindler*, Entwicklungstendenzen (1959), 70. Es fällt zudem auf, dass die Ware in Haithabu offenbar nur im 9. Jahrhundert vorkommt (ebd., 72), während sie in Friesland auch noch im 10. Jahrhundert produziert wurde. Vgl. ferner die mit Kalkstein gemagerte „Muschelgruskeramik" aus Luxemburg (*Schiermeyer*, Untersuchungen [2015], 42).
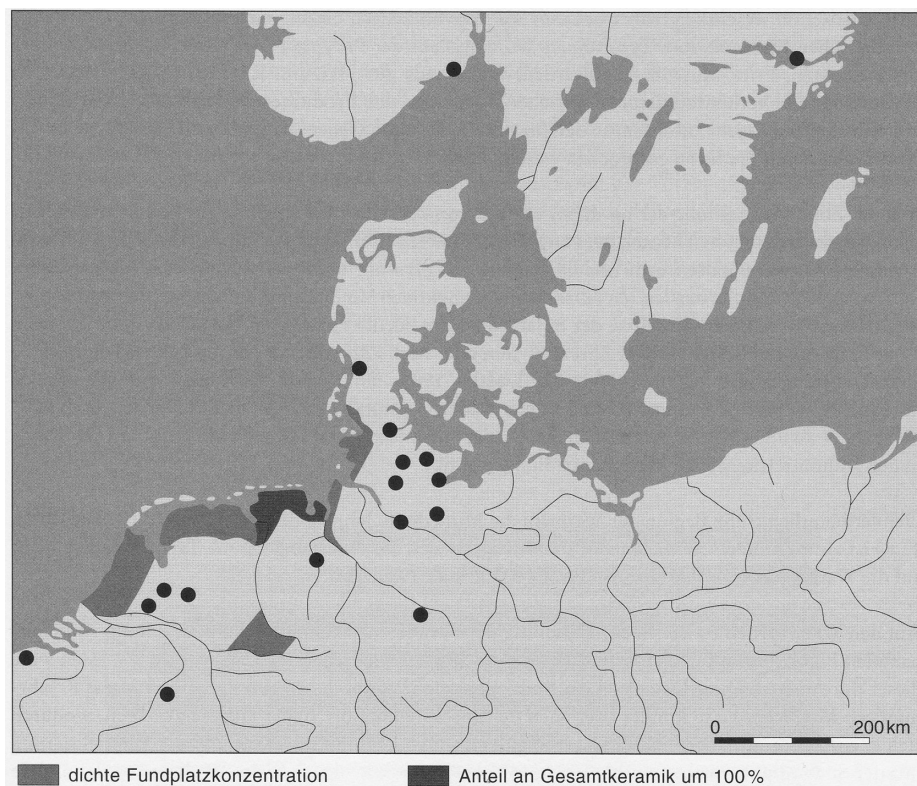
Abbildung 5.2: Verbreitungskarte der Muschelgrusware (nach *Sanke*, Muschelgrusware [2001], 195, Abb. 18).

„Haushaltsgeschirr" sie darstellen sollen.[35] Dafür könnte zunächst die Beobachtung sprechen, dass diese Keramik außerhalb Frieslands meist nur an den Handelsorten selbst und kaum im Umland auftritt.[36] Die Überlegung, dass die Muschelgrustöpfe als Grobkeramik selbst das Handelsgut waren, wird üblicherweise abgelehnt.[37] Gegen eine Deutung als Haushaltsgeschirr der Friesen könnte das Verteilungsbild der Funde in Münster sprechen, wo sich die Muschelgrusware in der Siedlung weit verteilt. Hier scheinen nicht nur zugezogene Händler, sondern große Teile der Bevölkerung diese Keramik genutzt zu haben. Zudem tritt die Ware auch in zahlreichen Siedlungen im weiteren Münsterland auf.[38] Dieses Argument entfällt freilich, sollte es sich in diesen

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35 *Ellmers*, Nachweis (1993), 273–274; *Halle*, Brema (2016), 240–241; *Stilke*, Muschelgruskeramik (2001), 194.

36 *Feveile*, Emporia and town (2012), 117.

37 *Brorsson*, Pottery (2010), 92; *Röber*, Keramik (1990), 92; *Stilke*, Muschelgrusware (2001), 194.

38 *Gärtner*, Quedlinburg (2019), 457–458, mit weiterer Literatur.

Fällen wie vermutet gar nicht um eine Keramik mit Muschelgrus-, sondern mit Gesteinsmagerung handeln. Diese Gefäße stünden dann nicht mehr mit den Friesen in Zusammenhang, sondern wären anderer Provenienz und in Gebieten mit Kalksteinvorkommen hergestellt worden.

An der These, dass die Muschelgrustöpfe das Gebrauchsgeschirr der reisenden Händler gewesen sind, müssen dennoch Zweifel angemeldet werden, wozu Beobachtungen an Fundmaterial von den nordfriesischen Inseln Anlass geben. Auf den Inseln wurde die Ware in größeren Mengen gefunden. Naturwissenschaftliche Analysen haben nun mit großer Gewissheit ergeben, dass zumindest die in der Studie untersuchten Fragmente von Gefäßen stammen, die nicht in Nordfriesland hergestellt worden sind.[39] Bei der Anzahl der Funde insgesamt ist es wenig glaubhaft, dass die Muschelgrustöpfe nur als Haushaltskeramik der Händler auf die Inseln gekommen sein sollen. Daher wurde nun doch ein Handel mit den Gefäßen angenommen, sodass man von einem Bedarf an dieser optisch auffälligen Keramik als einfache Gebrauchsware bei den Inselbewohnern ausgeht.[40] Bereits Heiko Steuer rechnete damit, dass die Gefäße selbst als Handelsgut in größeren Mengen von der südlichen Nordseeküste aus nach Eiderstedt, bis nach Haithabu und darüber hinaus gelangten.[41]

Aber war die Muschelgrusware tatsächlich ein ostfriesischer Exportschlager? Ein Vorteil der Gefäße mit Muschelgrusmagerung war offenbar, dass die Töpfe bei thermischer Beanspruchung am Herdfeuer nicht so schnell Risse bekommen und zerspringen wie das übliche Geschirr.[42] Man muss sich jedoch fragen, warum mit Muschelgrus gemagerte Gefäße nicht auf den nordfriesischen Inseln selbst hergestellt worden sind. Dort waren inklusive des Marschentons, der auch bei den Muschelgrusgefäßen von der südlichen Nordseeküste verwendet wurde, alle notwendigen Rohstoffe in ausreichendem Umfang vorhanden. Sollte den Nutzern die wohl nur mäßig höhere Beständigkeit der Muschelgrustöpfe am Herdfeuer bewusst gewesen sein, dann müsste man einen Export in Regionen erwarten, wo nicht in den erforderlichen Mengen auf Muscheln als Magerungsmaterial zurückgegriffen werden konnte, also am ehesten weiter im Binnenland, wiewohl auch dort Fluss- und Teichmuscheln häufiger gewesen sein werden, als wir das heute gewohnt sind. Dies ist aber gerade nicht der Fall. Wenn die nordfriesischen Inselbewohner ein Bedürfnis nach vermeintlich „friesischer" Muschelgruskeramik gehabt haben sollten (über eine Rolle als „Identitätsmarker" möchte ich hier nicht spekulieren), dann hätten sie nicht auf teures Importgeschirr zurückgreifen müssen, sondern sie wären in der Lage gewesen, selbst die gewünschten Gefäße zu töpfern. Will eine Interpretation als Ausstattung des Händlerhaushalts und als eingehandelte Gebrauchsware somit nicht einleuchten, bleibt zu überlegen, ob wir in den Muschelgrustöpfen nicht doch Transportbehälter sehen müssen. Diese These wurde bislang nur äu-

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39 *Struckmeyer*, Naturwissenschaftliche Analysen (2020).

40 *Majchczack*, Rolle der nordfriesischen Inseln (2020), 270.

41 *Steuer*, Südsiedlung (1974), 152; *Steuer*, Keramik (1979), 82; 85–86.

42 *Struckmeyer*, Naturwissenschaftliche Analysen (2020), 317.

ßerst selten und eher zaghaft vertreten,[43] kann aber mit den Untersuchungen in Nordfriesland weiter an Plausibilität gewinnen. Es bleibt freilich das Problem, dass wir nicht wissen, welches Gut mit den Töpfen verhandelt worden sein könnte. Die aus den Schriftquellen bekannten Güter des Friesenhandels kommen hier nicht in Frage.[44] Ellmers führte an den Küsten gewonnenes Salz als mögliches Handelsgut an, das in den Muschelgrustöpfen transportiert worden sein könnte.[45]

Bei der Betrachtung der Verbreitungskarte zur Muschelgruskeramik fällt schließlich auf, dass sie am Niederrhein und weiter südlich nahezu völlig fehlt, obwohl diese Gegend in den Schriftquellen als wichtiger Aktionsraum von aus Friesland stammenden Händlern erkennbar wird. Im 9. Jahrhundert sind für Duisburg, Mainz, Köln und Worms „Friesenkolonien" bezeugt,[46] ohne dass wir von diesen Plätzen eine für diese Zeit in Friesland geläufige Keramik kennen.[47] Friesische Händler gelangten den Rhein aufwärts bis nach Straßburg, wobei sie sich dort auch nur aufgehalten haben könnten, ohne sich niedergelassen zu haben.[48] Im archäologischen Fundgut der Rheinlande zeigen lediglich die Funde von im Nordseeraum geprägten Münzen (Sceattas) des 7./8. Jahrhunderts einen auf Handel basierenden Austausch auch mit dem friesischen Gebiet an, bevor die Produktion der Muschelgrusware begann.[49] Wenn man weiterhin annehmen möchte, dass die Muschelgrusware doch zum Haushaltsgeschirr der Händler gehört hat, was für den Ein-

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43 *Brorsson*, Pottery (2010), 92. Er möchte daneben auch die Möglichkeit nicht ausschließen, dass die Muschelgrusware an Handelsorten außerhalb Frieslands lediglich die Besuche der friesischen Händler anzeigt; er hält es also offenbar wiederum für denkbar, dass wir hier deren „Haushaltsgeschirr" vor uns haben. So auch schon *Ellmers*, Bedeutung (1986), 59.

44 Die *Pallia/Saga fresonica*, vermutlich Bernstein sowie vielleicht auch Sklaven wurden in das fränkische Reich verhandelt, während im Gegenzug Wein, Holz, Getreide und, archäologisch fassbar, Mühlsteine aus Mayener Basaltlava und Keramik nach Friesland gelangten (*Ellmers*, Bedeutung [1986], 13; *Volquartz*, Friesische Händler [2017], 103–114). Der erste, zu 679 schriftlich belegte friesische Händler handelte in London mit Sklaven. Die schriftlichen Quellen, die auf einen von Friesen getragenen Sklavenhandel auch entlang des Rheins hindeuten, scheinen nicht bis ins Letzte über Zweifel erhaben, ebd. 110–113. Zur Distribution der Mayener Mühlsteine vgl. *Wenzel*, Distribution of querns (2020), 224–228. Dass karolingerzeitliche Mayener Keramik und Mühlsteine zusammen gen Norden verhandelt worden sind, könnte ein leider nur flüchtig beobachteter und daher etwas unsicherer Fund aus Lüttingen belegen, wo im Rheinuferbereich im Zuge von Bauarbeiten 1957 entsprechende Funde zusammen mit Holzresten wohl eines Schiffs getätigt worden sind; vgl. *Grunwald*, Produktion (2015), 204; *Hinz*, Einige niederrheinische Fundstellen (1962), 235–237.

45 *Ellmers*, Bedeutung (1986), 59.

46 *Ellmers*, Bedeutung (1986), 44; *Verhulst*, Handel (1985), 390; *Volquartz*, Friesische Händler (2017), 126; 131–134.

47 In der älteren Literatur genannte Belege bedürfen der Überprüfung, vgl. *Ellmers*, Bedeutung (1986), 59. Die auch von Ellmers angeführten Funde aus Echternach dürften der kalkgemagerten Irdenware aus Luxemburg zuzurechnen sein; vgl. *Metzler/Zimmer/Bakker*, Ausgrabungen (1981), 352–353. Zu Funden aus Haffen bei Xanten vgl. *Neuffer-Müller*, Siedlung (1978), 490; 492.

48 *Volquartz*, Friesische Händler (2017), 136.

49 *Ellmers*, Bedeutung (1986), 45; *Saal*, Darum (2016), 170; *Schulze-Dörrlamm*, Gräber mit Münzbeigabe (2010), 370 Abb. 18. Die Ansicht, dass der Fund einer Sceattamünze die Anwesenheit eines friesischen

zelfund nicht falsifiziert werden kann, dann gilt dies ganz sicher nicht für diejenigen Friesen, die entlang des Rheins ihre Geschäfte machten. Möchte man die Gefäße als Verpackungen für Handelsgut werten, dann wurde in ihnen eine Ware transportiert, die im Rheinland nicht auf Interesse stieß. Sollte dies tatsächlich Salz gewesen, so lagen für das Rheinland andere Salzquellen näher. Salzgewinnung an der Rheinmündung ist für die Karolingerzeit schriftlich belegt,[50] womit auch die in dieser Region gefundenen Muschelgrustöpfe kaum auf importiertes Salz zurückgehen dürften, und auch im Binnenland gab es Salzvorkommen, die bereits in der Merowingerzeit ausgebeutet wurden (Soest, Bad Nauheim).[51] Ebenso leuchtet für Nordfriesland ein Salzimport aus dem Süden wenig ein. Eine frühmittelalterliche Salzgewinnung wurde für diesen Raum mehrfach angenommen, ist aber noch nicht nachgewiesen. Zumindest besaß man hier spätestens seit dem späten 12. Jahrhundert, belegt durch *Saxo Grammaticus*, ebenfalls eine eigene Torfsalzproduktion, die sich bis ins 18. Jahrhundert gehalten hat.[52] Schließlich ist auch für Ostfriesland selbst eine Salzproduktion erst seit dem Spätmittelalter zu belegen, wenngleich die Anfänge in viel früherer Zeit gesucht werden.[53] Dass in den Muschelgrustöpfen tatsächlich Salz transportiert worden ist, wird man somit kaum hinreichend belegen können. Denkbar wäre zudem, dass hier Nahrungsmittel unbekannter Art transportiert worden sind, doch kommen wir dabei über Spekulationen vorerst nicht hinaus.

Man muss somit resümieren, dass im zentralen friesischen Siedlungsgebiet die Muschelgrusware die übliche Gebrauchskeramik war. Darüber hinaus wurden Töpfe dieser Ware wahrscheinlich als Transportbehälter für ein noch nicht näher bekanntes Handelsgut verwendet. Da man voraussetzen muss, dass die Friesen spätestens seit um 800 kein „Monopol" für den Transport von Waren im östlichen Nordseeraum besessen haben und Händler anderer ethnischer Gruppen ebenfalls auf Handelsplätzen die Muschelgrusgefäße (mit Inhalt) erworben und weitergetragen haben können,[54] liefert das Auffinden von Muschelgruskeramik außerhalb des friesischen Raumes keinen sicheren Nachweis für die Anwesenheit von friesischen Händlern. Auch das Kriterium der Fundmenge möchte man hier nur ungern bemühen. Außerdem können sie natürlich im Haushaltsgepäck der Händler mitgeführt worden sein, doch kann

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Händlers belegen kann (so *Ellmers*, Bedeutung [1986], 51 mit dem Beispiel Helgö in Schweden), wird man zurückweisen müssen.

50 *Besteman*, Frisian Salt (1974), 172.

51 *Saile*, Salz (2001), 176–177. Für den niederländisch-deutschen Küstenraum ist eine Salzgewinnung in der Römischen Kaiserzeit belegbar beziehungsweise zu vermuten, während es für das Frühmittelalter offenbar noch an Nachweisen mangelt. Das „Friesensalz" scheint erst ab dem 11. Jahrhundert eine größere Rolle in der Wirtschaft des deutschen Küstenraums gespielt zu haben, vgl. *Bantelmann*, Salzgewinnung (1986); *Witthöft*, Friesensalz (2000/2001), 87. *Ellmers*, Bedeutung (1986), 13 vermutete hingegen eine Forschungslücke für die karolingisch-ottonische Zeit.

52 *Marschalleck*, Salzgewinnung (1973), 129; 132–135.

53 *Marschalleck*, Salzgewinnung (1973), 135–139.

54 *Ellmers*, Bedeutung (1986), 8; 18–19; 57.

dies als alleiniges Erklärungsmodell nicht überzeugen. Und wir können weiterhin nicht völlig ausschließen, dass die Muschelgrustöpfe selbst das Handelsgut waren. In jedem Fall scheidet die Muschelgruskeramik als sicheres Indiz für die Mobilität von Friesen außerhalb des friesischen Siedlungsraums aus. Die Mobilität von Händlern allgemein und die Reichweite des Austauschnetzwerks, in das der friesische Raum eingebunden war, kann sie dennoch gut illustrieren, wenn auch nicht vollständig nachzeichnen, wie die Verhältnisse im Rheinland zeigen.

Sind die Friesen am Rhein über andere Keramikfunde greifbar? Hierzu fällt der Blick zunächst auf frühe Kugeltöpfe, die sich in den Körpergräbern von Rill bei Xanten gefunden haben und der groben Gebrauchsware zuzurechnen sind. Sie wurden in das 8. Jahrhundert datiert und sind für diesen Raum in dieser Zeitphase als Fremdform zu bewerten.[55] Diese Gefäße könnten zunächst als Transportbehälter gedient haben, zeigen aber auch Schmauchspuren vom Herdfeuer, sodass sie zumindest in einem vorletzten Schritt, bevor sie in das Grab gelangten, als Kochkeramik verwendet worden sind. Der Kugeltopf wurde in den heutigen Niederlanden im 8. Jahrhundert entwickelt und recht zügig entlang der Küste verbreitet, sodass er bereits um 800 in Ostfriesland bekannt war und auch schon die Weser aufwärts im mittleren und südlichen Niedersachsen im 9. Jahrhundert getöpfert wurde.[56] Im Rheinland erscheinen handgefertigte Kugeltöpfe im 8. Jahrhundert noch nicht. Daher hat schon Albert Steeger hier fremde Einflüsse gesehen, konnte sich wegen der seinerzeit noch unsicheren Datierung aber nicht entscheiden, ob von zugewanderten Sachsen oder Friesen auszugehen ist.[57] Uwe Gross wies die Kugeltöpfe aus Rill zurecht dem friesischen Küstengebiet zu, ohne auf den Grund für ihr Auftreten im Süden näher einzugehen.[58]

Neben den Kugeltöpfen zeigt der Fundplatz weitere Auffälligkeiten. In der jüngsten Belegungsphase wurden zahlreiche Baumsarggräber angelegt. In einem Fall treten Baumsarg und Kugeltopfbeigabe zusammen auf, bei einem weiteren Grab ist das Vorliegen eines Baumsarges zumindest wahrscheinlich. Die Bestattung in Baumsärgen ist auch im friesischen Raum nicht unbekannt gewesen, ebenso wie die Beigabe von Kugeltöpfen in Körpergräbern.[59]

Sofern die Baumsarggräber überhaupt noch weitere Beigaben enthalten, handelt es sich fast ausschließlich um handgefertigte Kümpfe, eingliedrige Gefäße mit einbiegendem Rand, eine weitere Form der Grobkeramik. Diese Kümpfe sind nun sehr großräumig verbreitet, fehlen allerdings weitgehend im friesischen Küstenraum.[60] Baumsargbestattungen sind im 8. Jahrhundert eine geläufige Erscheinung im benachbarten

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55 *Siegmund*, Merowingerzeit (1998), 157–162.

56 *Verhoeven*, Middeleeuws gebruiksaardewerk (1992), 251–252.

57 *Steeger*, Fränkischer Friedhof (1948), 278–280.

58 *Gross*, Funde (1999), 105.

59 *Marschalleck*, Zetel (1978), 87–88; 92; 95; 97–101; 103–106; *Rötting*, Gräberfeld (1977), 22–23; 27; 32; *Schmid*, Gräberfeld (1970), 46; 52.

60 *Steuer*, Südsiedlung (1974), 138.

Westfalen, wo sich nun auch Kümpfe als Grabbeigaben finden. Während die ältere Forschung in den westfälischen Nord-Süd-ausgerichteten Baumsarggräbern die Beisetzungen zugewanderter Sachsen erkennen wollte, geht man in jüngerer Zeit von einer autochthonen Bevölkerung aus, die ihre Toten derart bestattete.[61] Die Gewohnheit, in Baumsärgen zu bestatten, könnte durchaus im Rahmen kultureller Diffusionserscheinungen aus Westfalen an den Rhein gelangt sein.

Demnach ist die Fundsituation nicht eindeutig zu interpretieren. Während die Kugeltöpfe in den friesischen Raum und die Kümpfe eher nach Westfalen verweisen, sind die Baumsärge in beiden Regionen bekannt. In einem Fall (Grab 8) treten schließlich ein Kugeltopf und ein Kumpf zusammen auf. Es wäre deutlich zu simpel, wollte man in den Gräbern mit Kugeltopf einen Friesen und in denjenigen mit Kumpf einen Zuwanderer aus Westfalen vermuten. Hier zeigen sich die Grenzen der Deutungsmöglichkeiten auch bei der einfachen Grobkeramik. Die Kugeltöpfe, sollten sie Transportbehälter gewesen sein, könnten von Einheimischen übernommen, sekundär als Kochkeramik genutzt und dann mit in die Gräber gegeben worden sein.[62] Es bleibt zu fragen, und das gilt in gleicher Weise für die Kugeltöpfe aus Muschelgrusware, ob diese recht dickwandigen, schweren, und dabei doch auch bruchgefährdeten Gefäße überhaupt als Emballage tauglich waren, wobei wir auch hier wieder nicht wissen, was in ihnen transportiert worden sein könnte. Zumindest für einen Transport von „Massengütern" wären größere Behälter sicherlich zweckdienlicher gewesen. Mit dem Auftreten der Kugeltöpfe in Rill werden zweifellos fremde Einflüsse im 8. Jahrhundert sichtbar; diese können nur aus dem Gebiet stammen, in dem bereits im 8. Jahrhundert Kugeltöpfe hergestellt worden sind, und das ist nach allgemeinem Kenntnisstand der niederländische (= friesische) Raum. Das entscheidende Kriterium ist hier demnach, ob wir die Kugeltöpfe als Transportverpackungen akzeptieren wollen. Dann wäre der Fundniederschlag in Rill auch ohne Migration vorstellbar. Die Knochenerhaltung in Rill war sehr schlecht; in den Baumsärgen haben sich in einigen Fällen Schädelreste, zum Teil mit Zähnen, erhalten. Möglicherweise ergibt sich hier die Chance, die mutmaßlich fremde Herkunft der Verstorbenen mit Isotopenanalysen zu überprüfen.

Als archäologischer Nachweis für die Anwesenheit von Friesen kursiert in der Literatur auch ein Grabfund aus Frei-Weinheim bei Ingelheim, in dessen unmittelbarer

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61 *Peters*, Gräberfeld von Soest (2011), 331–334.

62 Auch im Rheingebiet wurde die Beigabensitte im 8. Jahrhundert länger geübt, als die Forschung lange angenommen hat. Auf dem nicht weit von Rill entfernten Gräberfeld von Walsum sind in der ersten Hälfte des 8. Jahrhunderts noch zahlreiche Gefäße in die Gräber gelangt, vgl. *Ruhmann*, Walsum (2007), 611; *Stampfuß*, Sippenfriedhof (1939), 42–55. In Rhens (Lkr. Mayen-Koblenz) ist die Mitgabe von kompletten Gefäßen noch für die frühe zweite Hälfte des 8. Jahrhundert nachgewiesen, vgl. *Saal*, Gefäßbeigabe (2012), 186; *Saal*, Darum (2016), 169.

Nähe sich der Hafen der Königspfalz befand.[63] Es handelt sich um ein Urnengrab, dessen Topf bei der Publikation einmal in das 8. Jahrhundert, an anderer Stelle in das 9. Jahrhundert gesetzt wurde.[64] Es soll sich um ein einheimisches Gefäß Badorfer Machart handeln, wobei die Form des kugeligen Topfes mit Linsenboden eine Zeitstellung nicht vor dem späten 8. Jahrhundert anzeigt.[65] Für das Rheinland ist eine Urnenbestattung in dieser Zeit in der Tat völlig ungewöhnlich, sodass schon Kurt Böhner an das Grab eines Friesen oder Sachsen dachte.[66] Brandbestattungen, zum Teil mit Urnen, beziehungsweise bi-rituelle Doppelgräber begegnen in Süddeutschland, am unteren Main und in Hessen zwar noch bis in die zweite Hälfte des 8. Jahrhunderts, stellen aber letztlich große Ausnahmen im Vergleich zur absolut vorherrschenden Körpergrabsitte dar.[67] Die Forschung ist sich nicht einig, ob es sich bei den Brandgräbern des 7./8. Jahrhunderts um die Beisetzungen fremder Personen handelt, hier wird vor allem an Slawen und Skandinavier gedacht,[68] oder ob autochthone Gruppen die Brandbestattung wieder aufgenommen beziehungsweise seit der Spätantike tradiert haben.[69] Die Praktizierung der Feuerbestattung wurde spätestens zur Zeit Karls des Großen als pagane Sitte angesehen, die es zu verbieten galt, wie die *Capitulatio des partibus Saxoniae* ausdrücklich bezeugt.[70] Dass es auch außerhalb Sachsens in den fränkischen Herrschaftsgebieten noch, allerdings wohl nur ganz vereinzelt, Brandbestattungen gegeben hat, zeigen Befunde aus Wenigumstadt, die in die Zeit Karls gehören und wohl das Missfallen des Herrschers erregt hätten.[71] Das dortige Grab 207A könnte eine zeitliche Brücke zu dem Ingelheimer Befund herstellen. Letztlich stehen aber beide Gräber in ihrer Zeit in diesem geografischen Raum zu vereinzelt dar, als dass man eine gesicherte Entscheidung zur Herkunft des in Ingelheim kremierten Individuums treffen könnte. Das einheimische Gefäß kann hier nicht den Ausschlag geben. Man mag eine Verbindung mit dem Norden für wahrscheinlich halten. Während bei den Sachsen auf dem Kontinent die Feuerbestattung in dieser Zeit eine große Ausnahme war, hatten die Angelsachsen bereits im Verlauf des 7. Jahrhun-

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63 *Ellmers*, Frühmittelalterliche Handelsschiffahrt (1972), 176; *Ellmers*, Nachweis (1993), 274; *Volquartz*, Friesische Händler (2017), 92.

64 *Böhner*, Rheinhessen (1969), 63; *Böhner*, Ingelheim (1969), 108.

65 *Grunwald*, Anmerkungen (2012), 150.

66 *Böhner*, Ingelheim (1969), 108.

67 *Cemper-Kiesslich* u. a., aDNA-Analysen (2021), 287, Abb. 4; *Pütz*, Merowingerzeitliche Gräberfelder (2019), 284, Abb. 154; *Stauch*, Wenigumstadt (2004), 242–245.

68 *Losert*, Moinvinidi (2009), 242; *Wamers*, Franconofurd (2015), 190; 213–214; 216.

69 *Haas-Gebhard*, Gräberfeld (1998), 105; *Masanz*, Brandbestattungen (2010), 371–373; *Pütz*, Merowingerzeitliche Gräberfelder (2019), 283.

70 Es ist zwar richtig, dass dieser Text im Zusammenhang mit den Sachsenkriegen entstanden ist und die religiöse Unterwerfung hier mit der politischen Hand in Hand ging (*Masanz*, Brandbestattungen (2010), 371), doch war dieses Verbot für die neu eroberten Gebiete auch für die Zeitgenossen nur logisch nachvollziehbar, wenn es ebenso für das Frankenreich insgesamt galt.

71 *Stauch*, Wenigumstadt (2004), 243–245.

derts diese Bestattungsform endgültig aufgegeben. In Ostfriesland gehören die jüngsten Brandgräber in die Zeit um 800.[72] Somit ist die Bestattung eines Friesen in Ingelheim weiterhin vorstellbar. Bedenkt man aber, dass wir uns hier an einem der bedeutenden Pfalzorte der Karolingerzeit befinden, wird man auch mit der Anwesenheit fremder Personen aus größerer Entfernung rechnen wollen, die nicht zwangsläufig mit dem Friesenhandel in Verbindung gestanden haben müssen. Denkbar wäre durchaus auch eine „Delegation" aus den slawischen oder skandinavischen Gebieten, wo in dieser Zeit noch die Brandbestattung üblich war. Es stehen vorerst keine weiteren Möglichkeiten zur Verfügung, die Herkunft der Person aus dem Ingelheimer Urnengrab eindeutig festzulegen.

5.3 Fazit

Somit ist festzuhalten, dass wir Mobilität oder Migration von Personen aus dem friesischen Raum beziehungsweise von friesischen Händlern über die Funde von Muschelgruskeramik aus Siedlungszusammenhängen außerhalb Frieslands nicht hinreichend belegen können. Es kann nicht ausgeschlossen werden, dass diese Gefäße Transportbehälter gewesen und damit auch von Händlern anderer ethnischer Herkunft mitgeführt worden sind oder dass sie als Importgeschirr verhandelt wurden. Tritt Grobkeramik in Form von Kugeltöpfen anderer Machart aus dem friesischen Gebiet in Grabzusammenhängen außerhalb Frieslands auf (Rill), dann drängt sich zwar die Vermutung auf, hier seien Ortsfremde beerdigt worden, doch kann auch hier eine primäre Funktion der Gefäße als Emballage nicht ausgeschlossen werden, sodass sie auch in die Hände der einheimischen Bevölkerung gelangt sein könnten. Hier wird das Handels- bzw. Kommunikationsnetz archäologisch greifbar, in das Friesland eingebunden war, während eine ethnische Interpretation der Bestatteten unsicher bleiben muss. Wurde bei einer fremden Bestattungsform einheimische Keramik verwendet (Ingelheim), können wir die Herkunft der bestatteten Person aus Friesland nicht verifizieren, da es eine exklusiv im friesischen Raum praktizierte Bestattungsform nicht gegeben hat.

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72 *Hines/Bayliss* (Hrsg.), Anglo-Saxon Graves (2013), 526; *Kleemann*, Sachsen und Friesen (2002), 312–317.

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6 Out of the village. Short-distance exile and local communities in Iberia (c. 700–1200)

6.1 Exile as enforced mobility in modern research

Mobility can be analysed from many perspectives. One promising method is looking at push factors, namely the reasons why people moved from one place to another.[1] Among these factors was enforced mobility, owing to reasons of political persecution, enmity, or banishment. Involuntary exile was considered a damnation or condemnation (*exilium: damnationem*)[2] because it broke with social and material relations by isolating specific individuals or groups. When speaking of exile – be it outside the house, manor, village, city, or the home kingdom – sources rarely specify the distance or duration of travel imposed on an individual separated from home, since the main purpose of this act was to make people invisible by severing ties with their family, friends and social networks, thereby ensuring a state of loneliness. Thus, exile was a form of enforced mobility generally implemented as a social punishment for committing a crime, mostly homicide or high treason (or both). There exists little information about relevant cases in sources related to early medieval local societies in Iberia. Those few valuable sources remaining include charters and other documents related to activities executed inside local societies and by individuals or families in the north-western part of the peninsula. In opposition to chronicles and laws, which have already been studied by focussing on upper-class elites, the intention of the present investigation is to examine the exiles of middle- and lower-class people and what this experience meant for them.

Late antique and early medieval exile and forced mobility have been investigated more recently in the framework of singular publications and research projects. The increased interest in this topic may be related to modern day questions revolving

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2 "Exile: damnation", gloss in the manuscript from the Silos monastery in Castile, Add. 30851, British Library, Book of Hymns, fol. 113�v. Published in *Vivancos Gómez*, Glosas y notas (1996), 127.

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around mobility, emigration, local and national citizenship legality, and political persecution. Among the most studied social groups affected by such exiles were late Roman churchmen in the Mediterranean. Exile or banishment has become particularly important as a research topic in the context of migration studies. From a medievalist perspective, exile was willingly connected with theological concepts, e.g. exile related to Adam and Eve, or excommunication as a meaningful expulsion from the Christian community or the parish.[3] More recently, projects and publications on exile in late Antiquity and the early Middle Ages have focused on the clergy and the legal assessment of banishment, including works by Harold Mawdsley, Céline Martin, and, in particular Julia Hillner.[4] Focussing on Hispania or Iberia, more recent studies were particularly interested in analysing the legal implementation of exile, its geopolitical dimensions, and Iberia's interconnection with other Mediterranean areas like Byzantium.[5]

6.2 Religious and secular approach within the small-world exiles

Ancient stories may begin with tragic banishment. The tenth century Asturian *Chronica Adefonsi* (Chronicle of Alfonso III, Rotense version) connects the Asturian kings to the historic Visigoth royal aristocracy.[6] It claims that the last Visigoth king, Rodrigo (died 711), experienced exile because his father had been expelled from the city of

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3 It is not a *démodé* legal measure: "By allowing states to deport their own citizens or, if present overseas, to prevent their return, denationalization, like banishment, enables states effectively to disown their members", *Gibney*, Banishment (2020), 277. Migratory mobility and consecutive refugee crises have shown the deep importance of the problem today, as in the past: *Borgolte*, Migrationen im Mittelalter (2014). *Ertl*, Erzwungene Exile (2017).

4 *Mawdsley*, Exile in the Post-Roman (2018). *Martin*, L'évêque (2011), 45–55. *Hillner*, Confined Exiles (2013), 385–434. *Hillner/Ulrich/Engberg*, Clerical Exile (2016). Projects of research, database, and mapping in blog.clericalexile.org/people/dirk-rohmann (accessed: 25.08.2024). Projects of research: *Migration and Mobility in Late Antiquity and the Early Middle Ages*' project at the Eberhard Karls Universität Tübingen. *Rapp*, Introduction (2023), 357–359.

5 *Wood*, Borders, Centres and Peripheries (2015), 1–17. *Frez*, Fugitivos (2001), 113–124. *Martin*, Erwig and Capital Penalties (2020), 133–158. *Martin*, In confinio externis (1998), 267–280. *Vallejo Girvés*, Comparison of Roman and Visigothic (2023), 97–122. *Vallejo Girvés*, Exilio bizantino (2004), 117–154. *Vallejo Girvés*, Exilios de católicos y arrianos (2003), 35–47. *Schlieben*, In exilio (2013), 189–203. *Frederick*, Penalty of Banishment (1979), 87–107. *Napran/Houts*, Exile in the Middle Ages (2004). *Jordan*, From England (2015). *Jones*, Outlawry (2011).

6 *Teodefredo oculos euellere precepit. Qui a regia urbe expulsus Corduba adiit habitandus, ibique sortitus est ex magno genere huxorem nomine Ricilone, et ex eis natus est filius iam ditus Rudericus. Qui Rudericus iam supra fatus creuit et ad etatem perfectam uenit.* Chronica Adephonsi 6. Ed. *Gil*, 396.

Córdoba. However, kings did not only use exile against "great men". In the same royal context, the two main works of Beatus of Liebana (died 798) – one of the most important writers of his epoch – not only attest to contemporary ideas related to religion and the Book of the Apocalypse, but also to political views related to the north Iberian kingdom in the harsh context of the eighth century. In the framework of the Adoptionist controversy that characterised eighth century western Europe – in a way comparable to the impact of Iconoclasm in the East – Beatus and his partner, the Bishop Etherius of Osma, argued strongly against the Archbishop of Toledo, Elipandus (died 805, then in Muslim territory). In his work against the "heretical" Archbishop of Toledo, Beatus and Etherius stated: "But we are, on reason of our Faith which we defend, ready not only to be exiled but even more, to be executed".[7] This is a strong statement confirming the idea that death and exile were considered similar fates (whether physically or literally). Like Isidore of Seville (died 636) centuries before him, Beatus connected his concepts, terms and ideas with the comparison of political and penal resources of power. He was additionally influenced by the ancient perspective of martyrs, like John the Evangelist, who was banished into exile on an island where he wrote the *Commentary on the Apocalypse* – a key work on which Beatus based his *Tractatus.*

Around two centuries after Beatus's polemic, the exile remained a relevant topic in ecclesiastical discourses and homiletics, especially within monastic communities. Monks conceived their monastic life as an "exile" from the world. A manuscript from the Royal Palace of Escorial Library (Codex a. I. 13), known as *Codex of Leodegundia* – using the name of a high-class woman who promoted it – contains a copy from a text written by Gregory the Great (died 604), with some modifications on crime, sin, exile, guilt, and pardon:

> Having killed his friend by striking him, it is necessary for him to flee to three cities so that he may live under the protection of one of them, because, if someone turned to repentance and is hidden in the unity of the sacrament under the hope of faith and charity, he is not held liable for the committed homicide.[8]

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7 *Sed nos pro hac fide, quam uindicamus, non solum exiliari, sed etiam mori parati sumus*, Beatus Liebanensis, Eterius Oxomensis 1.14. Ed. *Löfstedt. Explorant pastoris absentiam, et ideo pastores eclesiarum uel occidere uel in exilium mittere contendunt, quia praesentibus pastoribus oues Christi deforare non possunt*, Beatus Liebanensis, Eterius Oxomensis 2.21. Ed. *Löfstedt*, also in Beatus Liebanensis. Tractatus de Apocalipsin, 6.4.21. Ed. *Gryson*, 695.

8 *Set his que amicum suum percutiens occidit, ad tres necesse est ut urbes confugiat ut sub una earum uiuat quia, si quis ad penitentiam conuersus in unitate sacramenti sub spe fide et caritate absconditur, reus perpetrati omicidii non tenetur*. English translation by L. Sarti. The inspiration for the text comes from Pope Gregory the Great and his work *Pastoralis* (Pastoral of Care), known in Hispania since Visigothic times. See also another version in English in *Pick*, Dialogue in the Monastery (2019), 50–51, Latin text in n. 42. Originally in Latin from Codex of Leodegundia Madrid, Real Biblioteca del Monasterio de El Escorial, Ms. a.I.13, fol. 109v.

Exile is understood here as a penance leading to redemption, in part because exile was conceived as being a sufficiently harsh standalone punishment, equal to redeeming one's crime through charity and faith. Although the extraordinary concept of exile as a form of penance is used here as a metaphor, it became very real when it was legally applied.

Following the collapse of the Visigoths, the former legal apparatus was readapted, especially the *Liber Iudicum*. It was the most important code of law in the early Middle Ages in Iberia, written during the rule of the Visigoth Kingdom. However, the legal heritage of the *Liber Iudicum* was modified and completed after the eighth century with new regional and local rules established in the north-western Iberian dominions from the tenth to twelfth centuries. The codification was based on the ancient legal tradition put into practice in its new context. Exile was addressed in the *Liber's* first addenda by referring to the ecclesiological context of exile. This allows for comparison by modern researchers between early versions of the *Liber* and the later implementation of exile as a punishment in the post-conquest Christian kingdoms of the North. For example, perpetual exile was added in two different manuscripts of the *Liber Iudicum* and modified for the case of criminals being accused of murder: *homicida tamen secundum superiorem ordinem perennis exilii poenam indubitanter excipiat* ("a murderer should suffer the penalty of exile forever, following the former order").[9] These modifications belong to French copies of the *Liber* and attest to the aim of modifying precedent rules related to homicide. In the last modification of the original law (*Liber Iudicum* 6.5.12, by King Recceswinth), which took place during the Visigoth rule, King Ervig (died 687) defined scalping, flogging, or penal enslavement as potential penalties for homicide, whereas the French copies returned to the regulation previously established by King Reccesvint (died 672). This regulation used exile against murderers, something that would become common at a later stage.

The earliest citation of the *Liber* section about exile dates to the eleventh century. However, its purpose did not focus on sanctions, but more on economics, i.e. sales and purchases, landed property, serfs, and dependencies. One of the few exceptions is a document dated to 1019 about an aristocrat rebellion – headed by a woman named Gotina Fernandez and her son – against King Alfonso V of León (died 1028). In this document, the legal reference quotes the consequences of rebellion and the different punishments considered by the *Liber Iudicum*:

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9 Liber Iudicum 6.5.12 in Paris, Bibliothèque nationale de France, Latin 4618, fol. 245^r. Ed. *Zeumer*, 275. About these modifications see, *García López*, Estudios críticos (1997), 41–47 and Liber Iudicum 6.5.18. Ed. *Zeumer*, 276 and 283.

1019, Otero de las Dueñas, doc. 124	*Liber Iudicum* 2.1.8
sic inuentus fuiset, aut effusione oculorum, aut dekalbatum tamen, aut exilio perditurus dignitate, set serbus pricipe factus et sum perpetua serbitutis catena in pricipis potestate re(. . .)tus eterna tenebitur, exilio relicacionem obnosius	*effosionem perferat oculorum, secundum quod in lege hac hucusque fuerat constitutum, decalvatus tamen C flagella suscipiat et sub artiori vel perpetuo erit religandus exilio,*
"If they were found, they could be blinded, or scalped (the head) also, or sent into exile or enslaved into royal service and with perpetual chain of slavery under the prince's authority (. . .) eternally, harmed by the relegation into exile"	"Following what was constituted in the law, they should be blinded, and also with the head scalped they should suffer one hundred lashes and be relegated with a very harmful or perpetual exile"

The document quotes almost word for word the law of the *Liber Iudicum* to reinforce the later version from King Ervig. However, in the document of 1019 the penalties are exclusive: blinding or lashing, exile or enslavement, and so on, given the use of the Latin word *aut*. In contrast, the punishments in the original legal quotation are not exclusive, allowing a combination of penal humiliations against the rebel as reinforced by the use of "also" (*tamen).* Thus, the initial regulation placed on penal exile is modified *ad libitum* to adapt it to a later social context, involving harsher consequences.[10]

Of course, penal exile was not the only form of exile. Exile could also be used for practical purposes, such as the protection of one's goods and landed property. Early references appear in the framework of managing monastic, lay and royal infrastructure, wherein it was important to maintain and increase the capacity of dependants inside the relevant territory. A particularly early testimony is preserved in the late-twelfth century chartulary from Celanova monastery, which appears to go back to an original tenth-century parchment. This document confirms that if a monk or nun tried to avoid the work that had been entrusted to him or her, this was punished with expulsion from the monastic community. The exile here is not related to any ecclesiological connotation (e.g. implying excommunication) but is restricted to physical expulsion from the monastic house and its lands as a penalty for lack of compliance to the monastic rule. This formula is addressed to the monks: *qui in ipso monasterio in agone Christi non perseuerarint uel contradictor fuerit expellatur de loci ipsius* ("in this monastery with the struggle for Christ it will be expelled from these places those who do not persevere or contradict").[11] The document was sanctioned in the year 952 by the bishop Rudensindus of Celanova (907–977), a high-ranking aristocrat of the kingdom and promoter of the monastery cited above. Although a direct quote is missing, it is likely that

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10 Document of 1019 *Fernández Flórez/Herrero de la Fuente*, Colección documental (1999), doc. 124. See also *Barrett*, Text and Textuality (2023), 312, he stresses that "the first half of the text is corrupt".
11 *Sáez Sánchez/Sáez Sánchez*, Colección diplomática (2006), 70–73, doc. 95.

the regulation was inspired by the *Liber Iudicum* since Ilduara, the mother of Rudesindus, provided the monastery with copies from her personal library.[12]

New regulations on exile were implemented in different areas of northwestern Iberia during the twelfth century, and executed in urban centres like Lugo, Astorga, Santiago, as well as monasteries like the one in Sahagún. Among these new regulations were the *fueros*, a regional or local compilation of customs intended to regulate violence, taxes, punishments, and hierarchy. In the central Iberian plateau – and more specifically Amayuelas, near Palencia – a written description (dated 1159) detailed how to publicly perform a person's departure from home. If anyone was coerced (*necessitate*) into leaving his or her home, its door was closed and besmeared with tar or clay to symbolise that its inhabitants had vacated.[13] This public ritual underlines the significance attributed to the notion of being *out-* or *in*-side in an urban context (*alfoz*), showing that different rules could apply.

In the Galician area, these *fueros* were not new. The most important character in the kingdom, the archbishop of Santiago de Compostela, Diego Gelmírez (died 1136), had struggled to achieve a power balance between the archbishopric's governance and the increasing aspirations of bourgeoisie and royal authority, who desired greater control of the city (see figure 6.1). In 1135, during a riot in the city, an attempt was made on the archbishop's life. After defeating the rebels, the royal justice sentenced the perpetrators to death, but this final sentence was then softened to exile and forfeiture – an adjustment perceived as a gesture of ecclesiastical "mercy" against royal wrath.[14] In the next decade, the bishop of Lugo faced similar problems and the traitors were punished with exile, too. More interestingly in this case of riots against the archbishop, enforced mobility was used after the trial to remove the perpetrators from the city and to re-establish control over church local government.

Exile was also understood as a way of safeguarding, in that it could be used to escape local hostility or the enmity of specific authorities. Surviving evidence reports two cases, one from Galicia and another from Toledo, where local enmity ended with the possibly voluntary exile of those threatened. In 1163, a man of the Church departed from his home in Galicia towards Jerusalem, in an effort to escape bad rumours circulating about him in his home village. Although strictly speaking a pilgrimage, the evidence leaves no doubt that the man's prime intention was to remove himself from possible dangers. The second case dates to 1190, when a man named Muño Mocho built himself a private church. According to the evidence, he sold his

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12 *Pallares Méndez*, Ilduara (2004), 116.

13 Year 1152: *Et si aliquis homo uel femina in alia terra pro necessitate morare uoluerit claudat suam portam et lotet eam cum luto et non pectet suam hereditatem nec faciat forum*, *Herrero Jiménez*, Documentos (2004), 61–63.

14 Year 1159: *et penam sui corporis tamquam proditor sustineat et a Ciuitate expellatur*, *Sánchez Monge/Vidán Torreira*, Tumbo viejo (2011), doc. 32. Also, Historia Compostellana 1.17 and 3.46.49 Ed. *Falque Rey*, 53–54. See the main research of this archbishop in *Portela Silva*, Diego Gelmírez (2016).

properties only two years later because his enemies did not allow him to use the church for praying and sharing common places in the village.[15]

These considerations indicate that exile, banishment, and outlawing were closely intertwined, as will be further illustrated in the following case studies. With the establishment of new regulations initiated from 1204 onwards, King Alfonso IX (died 1230) decreed that all traitors, robbers and rapists were to be banished not solely from the city, but from the entire Kingdom of Galicia.[16] This decree represented not so much a novel law as a reaffirmation of existing ones. It also shed light on the delineation of what constituted the boundaries of the community, particularly within the Kingdom of Galicia. However, scant evidence remains regarding perceptions of space and distance (between centre–periphery, for example).

In 1215, a man publicly professed ignorance of the conflict between the Bishop of León and the Abbot of the Sahagún monastery. After the inquisitors asked how his ignorance was possible, he explained as follows: *non quia de montanis est et remotus* ("I am not from here, but from the mountains, and it is far away"). Similarly, in northern Galicia, a monk from Monfero monastery recorded the following in a document detailing the death of a donor: *Iste pauper obiit in terra aliena, id est in civitate Lucensi* ("this poor man died in foreign land, in the city of Lugo"). The distance between Monfero monastery and the city of Lugo is approximately 80 kilometres. These examples provide valuable insight into perceptions of distance and what constituted "foreign" territory within the kingdoms of Galicia and León. They also give a fuller picture of the notion of centrality versus periphery and what counted as "in" or outside the kingdom to locals. Additionally, these two references convey an idea of strangeness that is valuable in understanding the role played by physical distance in characterising exiles, which will be discussed in the next part of this study.[17]

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15 Also, *et si propter inimicicias aut paupertatem ibi morari non potuerit, Cavero Domínguez*. Colección documental (2001), doc. 35. In Galicia, 1163: *propter malas linguas hominum ibi iam stare nolo* (. . .) *ipse frater Garsia propter maledictas pauorum hominum linguas in ipsa ecclesia stare non uult. Pérez Rodríguez*, Documentos do tombo (2004), doc. 759 and 760. In Toledo: *propter inimicicias inimicorum tuorum que te impediunt ad comunem ecclesiam uenire* (. . .) *Munio Mocho uolens inimicias inimicorum meorum euitare que ad comunem ecclesiam me impediunt uenire*, years 1190–1192, *Grassotti*, "Inimicitia" y señoríos (1981), 213–219.

16 Year 1194: *Si qui non possunt eiciantur de regno tanquam regni inimici, Vaquero Díaz/Pérez Rodríguez*, Colección documental (2010), doc. 59. Year 1204: *Et dominus rex terram ei auferat et eum a regno eiciat, Sánchez Monge/Vidán Torreira*, Tumbo viejo (2011), doc. 56.

17 Year 1215, *Fernández Catón*, Colección documental (1991), 266, doc. 1849. Year 1211, *López Sangil*, Monasterio cisterciense (2020), doc. 185.

6.3 Homicide, treason, pardon and banishment

Numerous diplomatic sources offer glimpses into the obscure social history surrounding individuals accused of various crimes (primarily murder, high treason, female adultery, violation of clerical celibacy, theft and unspecified offenses) who fled from judicial authorities or punishment. They sought refuge beyond their villages or outside the kingdom. This section is a preliminary investigation into these social exiles, aiming to address a specific question: Were the legal sanctions implemented as intended? The following will delve into micro-regional and local analyses to elucidate how theoretical and theological concepts of exile influenced social conduct during this era. Details about the experiences of those in exile – like the individuals themselves – often elude our scrutiny. The available evidence typically offers only cursory accounts of an individual's departure and destination, leaving their experiences outside the country – often in adverse conditions – largely unexplored. In his work on the economic ties of early medieval Europe, Michael McCormick provides a glimpse into the lives of some privileged individuals, particularly prelates and courtiers, who faced exile.[18] However, numerous questions remain regarding the experiences of non-privileged individuals who were exiled or forced to flee due to criminal proceedings. What led to their exile, and what were the conditions like? Who wielded the authority to impose such penalty? Although available studies primarily focus on the exile of privileged individuals for political reasons, there still exists documentation regarding other exiles.[19] Below is a selection of documents from this period containing pertinent information:

What were the most prevalent crimes penalised with exile? Murder and high treason, sometimes in combination, emerge as the primary offenses. Exile could forestall local vendettas between communities by effectively segregating adversaries, rival families within the rural landscape and people charged with crimes, especially murder. They largely adhere to the foundational principles passed down from Antiquity, notably from the ancient *Liber Iudicum*. Among a total of fourteen instances, seven pertain to murder, four to high treason (three of which involve the perpetration of murder as well), one to nuns' sexual misconduct, one to simony and fraud, and three to arson or unspecified crimes (presumably subject to judicial trial) (see table 6.1 and figure 6.1).[20] The rationale

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18 *McCormick*, Origins (2001), 254–261.

19 For example, the exile of count Gonzalo Peláez after his rebellion against the king. He was exiled from Asturias to Portugal (*terra aliena*), likely the city of Coimbra (distance approximately 530 km) until his death. Only his body returned to Asturias, see *Calleja Puerta*, Destierro del conde (2000), 17–35. On exiles from the aristocracy in the Christian kingdoms of Iberia, see also *Tafjord*, Conflicts and the Use of Exile (2024), 83–101.

20 The total collection of documents spanning the tenth and thirteenth centuries are published in: referring to 943: *Mínguez Fernández*, Colección diplomática (1976), doc. 84; referring to 954: *Saez Sánchez*, Colección documental (1990), doc. 278; referring to 996: *Sáez Sánchez/Sáez Sánchez*, Colección diplomática (2006), doc. 266; referring to 1027: *Fernández Flórez/Herrero de la Fuente*, Colección documental (1999),

Table 6.1: References to exiles from evidence spanning the tenth–twelfth century, Northwest Iberia.

Reference	Reason of Exile	Sentence
943, Sahagún, 84	Homicide, High Treason	*Pro qua eiecti et exiliati sunt a patria*
954, León, 278	Sexual Misconduct	*quod non occiderunt exterminauerunt*
996, Celanova, 266	High Treason	*eiecimus eum de terra ipsa* (. . .) *de hanc terram heradicatum est*
1027, Dueñas, 180	–	*eramus nos exidos de nostras kasas et de ipsa nostra uilla*
1052, Braga, 184	Homicide	*exiliarunt illum maiorinos de rege*
1088, Lugo, 18, 19, 134	High Treason-Homicide	*a me eiecti ex omni Regno ipsius Prouintie*
1088, S. Vicente, 104	Homicide	*propter calumniam peccatis meis advenit mici omicidium, et venit in ipsa terra*
1100, Sahagún, 1045	High Treason	*a patria exilio propter superbiam suam religati*
1109–1126, Monfero	Homicide, High Treason	*Suerius Vermudi et Froila Vermudi ociderunt unum maiordomum a regina dona Urraca et iactavit eus de suo regno et abstulit eos quantas hereditates habent*
1111, Coimbra	–	*Non introducam Munium Barrosum vel Ebraldum Colimbriam*
1133–1144, Arouca, 65, 66, 75, 83, 133	Homicide	*de terra sua eiectus fuit eius miseria condolens* (. . .) *uero filius meus ad exitum suum*
1167–1169, Salamanca, 39	Homicide	*secundum terre consuetudinem, quam in longo exilio*
1169, Rioja, 237–238	Simony-Fraud	*de tota terra expellant* (. . .) *a finibus nostris eliminari precipimus*
1183, Bujedo, 40 and 40b	–	*rex navarrensis expulsit domnus Furtadus de terra sua*

behind selecting exile as the penalty for these varied offenses, and why it was perceived as a just judicial measure, is challenging to elucidate. Exile likely served as a highly effective non-capital punishment, signifying social demise rather than physical execution. A considerable portion of cases involve crimes of blood, such as murder. Contemporary chronicles also illustrate how royal justice utilised exile in murder cases, even extending

doc.180; referring to 1052: *Costa.* Liber fidei (1965), doc. 184; referring to 1088: *Sánchez Monge/Vidán Torreira,* Tumbo viejo (2011), doc. 18, 19, 134; referring to 1088: *Floriano Llorente,* Colección Diplomática (1968), doc.104; referring to 1100: *Mínguez Fernández,* Colección diplomática (1976), doc. 1045; referring to 1109–1126: *López Sangil,* Un problema resuelto, 209; referring to 1111: *Pinto de Azevedo,* Documentos medievais (1958), doc. 25; referring to 1133–1144: *Coelho,* Mosteiro de Arouca (1998), docs. 65, 66, 75, 83, 133; referring to 1167–1169: *Martín,* Documentos (1977), doc. 39; referring to 1169: *Rodríguez de Lama,* Colección diplomática (1979), docs. 237–238; referring to 1183: *Ruiz de Loizaga,* Libro becerro (2000), docs. 40–40b.

to bishops.[21] For instance, the mentioned chronicle of Alfonso III recounts how King Sancho Garcés I (died 925) of Pamplona (present-day Navarra in northern Spain) expelled all criminals (referred as *biotenatis*) from his domains, among his final decrees. The term *biotenatis* is of Greek origin and translates to "twice dead men", underscoring what being exiled must have meant for the criminals.[22]

Approximately half of the cases involved murders, a trend notable not only in north-western Iberia but also resonating strongly in eastern Iberia and documented instances from Catalonia. Drawing from an anthology of judicial records spanning early medieval Catalonia up to the twelfth century, Josep Maria Salrach and Cornel Peter Rodenbusch have curated and published four documents in which exile is consistently associated with homicide, although not all sentences were ultimately carried out. In one instance, a pair of murderers faced exile as punishment, but – remarkably – they opted for enslavement instead. The preference for enslavement over exile underscores the deep-rooted ties of local communities to their land, evident from the fact that perpetrators were disinclined to relocate abroad to atone for their crimes. In this context, the documentation from Northwest Iberia aligns with broader patterns evident across early medieval Iberian and Catalonian records, despite the limited scope of this sample.[23]

In the central and western regions of Northwest Iberia, two significant instances of homicide and treason resulted in exile to different locations in the years 943 and 1088. In 943, King Ramirus II [951] awarded a meadow to Vermudo Nuñez (in Valdávida, Cea, in the north of León) because the previous owner, a man named Dom Patre, was involved in a murder and other crimes with six relatives, including children and nephews. The penalty not only entailed the forfeiture of the property but also the exile of all involved in the crime.[24] This confiscation aimed to dismantle the material and economic foundation of those found guilty. The murderers were banished, likely because the victim served the king, and their relatives had no inheritance.

Over a century later, in 1088, another case of murder and treason in Lugo led to the same royal response. Treason manifested through murder, primarily targeting bailiffs, royal executors, and tax collectors. The collective outrage was directed at them as they symbolised the king's distant authority. Information from Lugo is more extensive than

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21 In 925 King Froilán II exiled Bishop Frunimium of León because the prelate was accused of killing his own brother (*in exilium misit*), Chronica Naierensis 27. Historia Silensis 25.4*. Ed. Estévez Sola.*

22 *Dehinc, expulsis omnibus biotenatis* ("Then, [the king] exiled all the criminals"), Chronica Albeldensis, 20.1. Ed. *Gil*, 484 and *Miranda García*, Sacralización de la guerra (2011), 227.

23 Documents from Catalonia were selected from de *Salrach i Marés/Montagut i Estragués*, Justicia i resolució (2018), 968-doc. 80, 990-doc. 115, 1069-doc. 384, 1091-doc. 490. See also the analysis in *Rodenbusch*, Wheel of Justice (2021), 405–413. The case of enslavement as a form of exile is contained in the document from the year 990.

24 *Fecerunt omicidium et multa egerunt mala pessima pro qua eiecti et exiliati sunt a patria*, 943, *Mínguez Fernández*, Colección diplomática (1976)*, doc. 84. On this case and similarities with the documentary record, see *Davies*. Windows on Justice (2016), 182–183. Also, *Carvajal Castro*, Bajo la máscara (2017), 268–276.
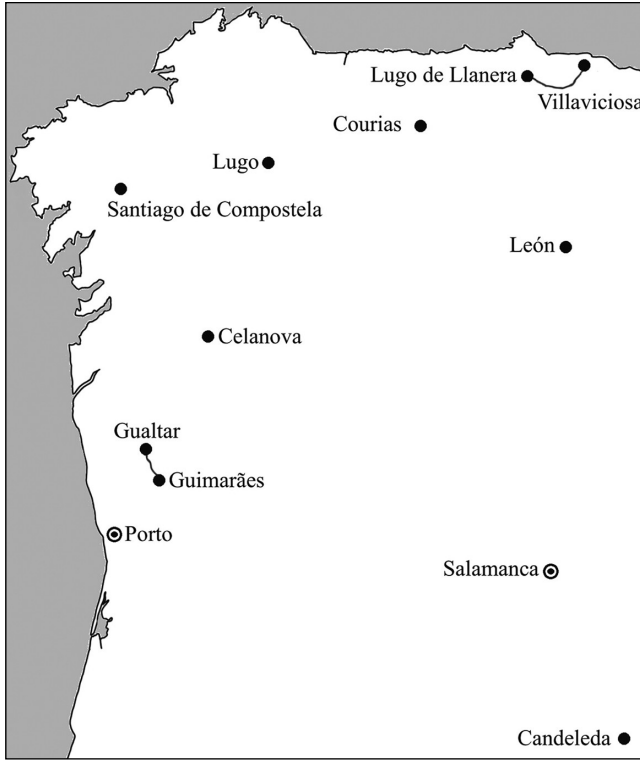
Figure 6.1: Map of Northwest Iberia and locations mentioned in this chapter regarding exile as punishment.

the previous case in 943. Count Rodrigo, along with his mother and many other rebels, killed Ordonio, the city's first soldier and landlord (*primitus militem suum et maiorinum terre),* and many other Church servants *(ex familia ipsius Sancte Marie quam plurimi interfecti).* As in the earlier case, Rodrigo Ovequiz and his mother Geloira were exiled from the city and the kingdom. They were sent to the Muslim kingdom of Saragossa, nearly 700 kilometres away, similar to El Cid and his exile in Saragossa during Alfonso VI's reign (1040–1109). Unfortunately for them, the remaining traitors in the city met grim fates (*morte pessima perierunt*), and survivors lost their properties, bestowed as a substantial royal donation to the Cathedral of Lugo (see Figure 6.1).[25] No further details were provided about their conditions of exile. King García of Galicia, brother of King Al-

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25 *Morte pessima* is a common trope used in chronicles and documents to explain the hard and violent consequences of justice or revenge, sometimes as a miracle: *Et ideo mihi auxiliante ipse comes et sequaces eius, conuincti et abducti in confessione expulsi in cesaraugustana urbe a me misi sunt* (. . .) *Satellites et Rebelli ipsi capti et in fugam uersi et a Me eiecti ex omni Regno ipsius Prouintie* (. . .) *Satellites et Rebelli ipsi capti et in fugam uersi et a Me eiecti ex omni Regno ipsius Prouintie, et ceteri, qui*

fonso VI, was exiled a few decades earlier during the civil wars against his brother San-
cho of Castile.[26] Later, in a document from 1100, also during Alfonso VI's reign, mention
was made of a previous royal trial against Count Monio Fernández due to the aristocrat's
arrogant demeanour. The reference to legal justification by the customs of the land (*con-
suetudinem patrie*) indicates a connection with the (unspoken) legal tradition of late An-
tiquity.[27] Here, *consuetudinem patriae* refers to local, ancient, and unwritten traditions
that were socially accepted, and tradition (*consuetudinem*) superseded law (*lex*) since it
was more effective and embraced by the populace. A decade later, Queen Urraca (died in
1126), Alfonso's daughter and heir to his kingdom, exiled two noblemen because they had
killed one of her officers in Galicia (*regina dona Urraca et iactavit eus de suo regno*).[28]
Numerous documents refer to exile as a "special political measure", and among the four-
teen references, ten are linked to kingship, ranging from royal justice to land ownership.

However, public execution of the punishment was not always tied to high politics
or treason. The judiciary also acted against murderers in four cases in 1052, 1088,
1109–1126, 1133, and 1167–1176. Documents from 1052 and 1088 provide exemplary
cases of how the judiciary prosecuted murderers and operated publicly. A notable
case is that of Vilifonsus, banished from his land in 1052 by various royal executors of
justice for committing murder. There is no mention of the murderer's fate, but the
banishment must have been brief because one of his relatives, Countess Ilduara, inter-
vened. The distance between Vilifonsus's property and Ilduara's was about twenty
kilometers, between Gualtar (Braga, Portugal) and where Vilifonsus pleaded for
mercy (Guimarães, Portugal, see Figure 6.1). It is an extremely vague temporal chro-
nology. The context and references to the various stages of the trial are scant. Count-
ess Ilduara, a prominent figure in the northern region of Portugal, had a maternal
relationship with Vilifonsus (*sua radice et de sua matre*) and the public act of forgiving
the murderer, who pleaded for mercy from the countess, converted the exile into an
economic penalty, entailing forfeiture of half the land he had inherited in Gualtar
(now within the Portuguese town of Braga). The property was transferred to Countess
Ilduara in exchange for 500 *solidos*, a considerable amount of money at the time.

In some way, it was a privilege that allowed Vilifonsus to return safely to his
home. The first trial took place near the village of Gualtar and the second trial of Vili-
fonsus occurred in the monastery of Guimarães. A large assembly met with Countess
Ilduara, royal executors, and the Abbot Pedro Alvites, among many other high-class
local people (*bene natorum*). They likely convened due to a royal privilege granted by
King Fernando I three years prior. This legal document was pivotal as it granted the

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remanserant ibidem, falsitate consui morte pessima perierunt, referring to 1088. *Sánchez Monge/Vidán
Torreira*, Tumbo viejo (2011), doc. 18–19 and 134.

26 *Erexit se rex Sanccius adversus fratrem suum Garciam et cepit eum misitque in exilium et accepit
regnum ipsius,* referring to 1109, *Costa.* Liber fidei (1965)*, doc. 20.

27 Year 1100, *Mínguez Fernández,* Colección diplomática (1976), doc. 1045.

28 The event happened between 1109 and 1126, *López Sangil,* Un problema resuelto (1997), 209.

monastery the authority to persecute all murderers, rapists, and outlaws within the monastic dominions. In fact, this privilege of 1049 was also confirmed by Gomice Egicat/z, royal executor or bailiff, and Countess Ilduara, i.e. the same individuals who participated in the murder trial of 1052 against Vilifonsus (and the same jury that judged independence from royal justice). According to the document, the bailiff named Gomice was responsible for the exile of the murderer, but the authority that made the final agreement was Pelagio Midiz, another royal executor in the area (*maiorino*). The transition from royal to local policy in the case of murder was executed, benefitting Vilifonsus who had committed a murder valued at 500 *solidos*, suggesting that the victim was of high rank.[29]

The document from Portugal in 1052 is useful as it explains the rationale and steps behind both royal and local justice procedures, as well as the spatial particulars. Nevertheless, the document does not elucidate where and for how long Vilifonsus stayed outside the parish community. This is evidently problematic information to ascertain from documents, as it does not pertain to official and practical matters linked to the dominions. More than three decades after Vilifonsus's crime, Petro Vermudiz committed a murder in the northern region of Asturias. His first-person testimony is quite valuable because the document was written when he was exiled from his community. In the text, he explained why and where he was rescued. Petro hailed from the land of Maliayo (now the town of Villaviciosa) and had to flee because of his crime. It is probable that he was exiled, but it is not certain whether he was an exile or an outlaw because the document does not explain if he left his land because of a trial or to avoid a conflict. Petro came to the monastery of San Vicente in Oviedo, and the monks sent him to serve in Lugo de Llanera, his birthplace, about 40 kilometres from the original place in Maliayo, where he lived before (see Figure 6.1). The reason for the exile seems to be a return to his native land and birthplace. The purpose of the exile could have been to find a safe place to hide from his enemies or be protected by close relatives, but this is merely one hypothesis. The new sanctuary was also a place of work where, under the authority of the monks, he could atone for his murder. In the agreement, the sanctions reveal how – in the case of violence or contradiction against the monks due to his sins (*si propter peccata mea scandalizatum fuerit*) – they could expel him, and he should pay a large fine to the monks (*et me inde expulsaveritis*).[30] Thus, the exile could be "reactivated" in the future in the event of any new crime or sin being perpetrated.

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29 Royal privilege granted to the monastery of Guimarães in 1049, *Marques/Amaral*, Livro de Mumadona (2007), doc. 47. Gomice and Countess Ilduara appeared together in the act of donation of Abbot Pedro Alvites, who also participated in the assembly of Vilifonso in 1058, *Marques/Amaral*, Livro de Mumadona (2007), doc. 2. The main document reads: *contigit ipsi Vilifonso homicidium et exiliarunt illum maiorinos de rege domno Fredenando et de Cornizo Egicaz* (. . .) *fuerunt proinde in Vimaranes*, referring to 1052, *Costa*. Liber fidei (1965), doc. 184. 500 *solidos* was a normal free-man penalty for murder. In comparison, see *Davies*, Sale (2002), 149–174. Also, *Davies*, Notions of Wealth (2020), 158.
30 Referring to 1088, *Floriano Llorente*, Colección Diplomática (1968), doc. 104.

An additional case stems from a Portuguese document dated 1133. It underscores the severe repercussions of exile on familial ties, shedding light on the challenges of preserving family legacy amid a member's fall from grace. Contrasting the monastery of Arouca's record, this account diverges not only in its narrative of enduring tribulations but also in the proliferation of documents. Five refer to the involved parties. Here, the perspective shifts from the exiled individual to his mother, offering insights into her endeavours following her son's trial and subsequent expulsion. The individual in question, Monio Rodriguez, son of Toda Venegas, faced condemnation for the murder of Petrum Salidum, resulting in his immediate disgrace and expulsion from his estate. The document poignantly captures Monio's exile experience as a profound state of suffering (*de terra sua eiectus fuit eius miseria condolens*). Mirroring actions taken almost a century prior by Vilifonsus, the convicted Monio sought reconciliation, striking a pact with his mother to relinquish a significant portion of his assets in atonement for his transgressions. Toda, a prominent landowner and benefactor of the monastery of Arouca, enlisted the aid of local elites, including Petro Monionis, Egea Moniz, and his sister Tarasia, in facilitating her son's redemption. Despite Monio's exile, Toda assumed the role of her son's *fideiussor* and guarantor, spearheading negotiations for his eventual return. During the following years, the properties once owned by her son underwent various transactions, predominantly benefitting the monastery of Arouca, akin to the practices observed in Guimarães in 1052. In 1134, a year following these events, Toda made further contributions to the monastery, seeking solace for her own soul and those of her children (*pro remedio anime mee et filii mei*). By 1144, more than a decade later, she reflected on her son's trial and her role as his guarantor, citing the origins of certain properties tied to his exile (*nam ego fideiussor . . . recepit me pro fideiussore*) in her last will. However, the envisioned reconciliation was without success, and her son's aspirations could not be realised. Unlike prior instances, Monio's exile endured, leaving the underlying cause of this failed pact somewhat ambiguous. Toda and Monio hailed from the high-ranking Venegas family, prominent in the vicinity of Arouca, which boasted extensive land holdings. Notably, Monio's past prominence as a ruler is highlighted in a document from 1117, wherein he is referenced as *dominante in Arauca* ("ruling in Arouca") alongside Egas Moniz, with a preceding donation made in collaboration with his mother.[31] The underlying factors contributing to the failure of Monio's repatriation are multifaceted, encompassing elements such as resentment, threats to his safety, and the community's collective responsibility for maintaining order amidst instances of violence.[32]

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31 *Silva*, Cartulário (2001), docs. 96 and 121, referring to 1116–1117.

32 Toda underlined the responsibility of being a guarantor as she also became the owner of a large part of the inheritance at the same time: *ipse vero filius meus ad exitum suum deliberavit omnem hereditatem suam in manu mea et posuit me monasterio fideiussorem*, *Coelho*. Mosteiro de Arouca (1998), doc. 65 (referring to 1133), doc. 66 (referring to 1134), doc. 75 (referring to 1140); also in the same collec-

In the twelfth century, new authorities such as the papacy emerged, altering the royal capacity to implement exiles within parish communities. Contrary to recent suggestions by some scholars, however, exile persisted well into the eleventh century,[33] incorporated into pilgrimage and penance (the main disparity lay in the temporal duration of the latter as a means of atoning for one's sins). The benefits for ecclesiastical authorities were twofold: temporary separation allowed for mitigation of conflicts between victims and murderers within communities; additionally, exile enabled increased ecclesiastical control over armed crimes and their expiation or redemption, thereby supplanting local justice systems (which were hardly concurrent). In preceding examples, owing to legal heritage from the Visigoths and the sway of local authority, murders were perceived as largely domestic matter. However, by the twelfth century, papal authority in Iberia had become entwined in local issues, including claims of violence enacted against churchmen in small villages or towns.

In the village of Candavera (now Candeleda, located in the province of Ávila at the centre of the peninsula), a group of individuals mutilated and murdered the parish priest (see Figure 6.1). Neighbours reacted vehemently upon discovering the priest's apparent engagement with a woman who was purportedly his relative. The priest was subjected to castration and his eyes were gouged out before ultimately being murdered, his body left at an entrance to his house. Subsequently, the Bishop of Ávila was informed of these atrocities and took action to seize the possessions of the murderers and excommunicate them. However, upon seeking forgiveness from the Pope, who was initially misinformed of the events, the murderers were granted absolution. Yet, the papal authority reversed its decision upon learning of new and gruesome details. Thus, this document constitutes the Roman response to the Bishop of Salamanca, instructing him to conduct a thirty-day judicial inquiry into the events in Candavera.

The significance of the latter part of the document lies in the emphasis on the penalties, publicly displayed and explained to instil fear. According to the customary laws of the land (*secundum terre consuetudinem*, once again following precedent cases), they were to be divested of their properties and expelled. Exile – akin to those previous cases involving Beatus of Liebana or Isidore – was deemed one of the severest punishments.[34] It appears that no civil authority undertook a trial or process be-

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tion: *nam ego fui fideiussor* (. . .) *recepit me pro fideiussore* doc. 83 (referring to 1144), doc. 133 (referring to 1157–1167). On the Venegas family see *Mattoso*, Abbaye de Pendorada (1962).

33 *Rodenbusch*, Wheel of Justice (2021), 413.

34 *Caput eius infra duo hostia posuerunt, et aliis extra hostia oculos eruentibus, et aliis interius genitalia amputantibus, eundem presbyterum nequiter occiderunt* (. . .) *in possessionibus secundum terre consuetudinem, quam in longo exilio* ("They put his head under two doors and others outside the doors gouged out his eyes, and others cut his genitals, therefore they killed the priest [. . .] and in their possessions following the tradition in the land as a long exile"), referring to 1167–1176. *Martín*, Documentos (1977), doc. 39. See also the comments of Peter Linehan and his late-twelfth century study on Hispanic clergy in *Linehan*, Spain, 1157–1300 (2008), 23 and 39.

cause the victim, being a churchman, was executed due to his publicly perceived lecherous and incestuous behaviour. The murderers likely fled from Ávila to Salamanca to seek refuge and evade the authority of the Bishop of Salamanca, as the inquisition also fell under his jurisdiction. The measure of exile could be attributed to homicide due to the intense hostility and lingering effects of anger within local communities. The solution of distance mitigated the issue by averting direct social contact and potential cycles of internal violence. While banishment for sexual motives was rare, its repercussions were intertwined with monitoring the celibacy of consecrated women; for instance, in the tenth century, a group of nuns in León were exiled for committing sexual misconduct, facing either death or banishment (*quod non occiderunt exterminauerunt*).[35] The disparity in the present case lies in the papal decree of exile against the murderers, motivated by the preservation of sexual purity in the conduct of churchmen within the local community.

6.4 Conclusion

Exile did not always entail extensive journeys, often spanning merely 40 to 100 kilometres, i.e. approximately two days of travel), or travel from one bishopric to another within the confines of relatively small territories. Notably, Iberia's unique landscape featured internal borders demarcating Muslim and Christian domains, facilitating the expulsion from villages, parishes, regions and realms, as well as fostering alliances with neighbouring domains. A significant finding derived from documentary evidence is that justice could be administered without necessitating exile beyond the kingdom. Indeed, on some occasions, both commoners and high-ranking church officials were exiled a mere 20 to 30 kilometres from their original homelands. Since late Antiquity, exile emerged as a pertinent form of enforced mobility, persisting not only as a legal recourse but also as a practical application of the law in cases of murder, high treason and sexual misconduct. During the transition from the eleventh to twelfth centuries, the burgeoning authority of the Pope in Iberia introduced a new jurisdiction for exiling offenders, expanding ecclesiastical control beyond the purview of royal and local courts. By the twelfth century, the growing practice of penance among laypersons regularly involved exile – often equated with pilgrimage or local banishment – thereby altering the traditional concept of exile as a perpetual punishment. Exile served as a means of gauging the societal ramifications of justice within local communities, shedding light on people's perceptions of space and distance during the Early and High Middle Ages in Iberia.

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35 *Sáez Sánchez,* Colección documental (1990), doc. 278 (referring to 954).

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Laury Sarti

7 Mobility and networks from 976 to 991 in the letters of Gerbert of Reims. A quantitative approach

7.1 Introduction

Letters serve as a particularly invaluable medieval genre through which to explore mobility and networks. They bridge the gap between individuals who would be otherwise unable to communicate due to their geographical separation, thanks to messengers who undertake these journeys on their behalf. Additionally, letters often contain references to further mobility, whether it be through reference of travellers in the author's vicinity at the time of writing or mentions of assignments and tasks that necessitated physical movement.[1] This study uses the collection of letters mainly authored by Gerbert of Reims – the future Pope Silvester II – as a case study through which to examine the potentials and limitations of employing quantitative analysis in the study of early medieval epistolary exchange.

Gerbert was probably born to free parents in Auvergne around 940/5 and entered the local monastery of St. Gerard in Aurillac as an oblate at an early age. His education was furthered after a visit by the Count Borell II of Barcelona to the monastery in 967, who took Gerbert to Catalan Spain. In December 970, Gerbert embarked on his first visit to Rome, accompanied by Bishop Hatto of Vich, who played a pivotal role in his advanced education. During this period, Gerbert resided in the vicinity of Pope John XIII where he encountered Otto I and his family. His allegiance remained firmly with the empire throughout his life. Although he spent the majority of his time in the western city of Reims, he considered himself an advocate of the empire, not of the Frankish kings of the western realm. In 972, on the occasion of Otto II's marriage to Theophanu in Rome, Gerbert encountered the archdeacon Gerannus of Reims and joined him in his episcopal see where he served as a teacher in the cathedral school. According to the historian Richer of St. Remis, Gerbert swiftly gained recognition for his scholarly excellence and his exceptional teaching skills.[2] Around 982, after a stint at Otto II's court in Ravenna, Gerbert was appointed as the abbot of the monastery of Bobbio. However, following the death of the emperor in December 983, he returned to Reims. Here, he assumed the role of a political advisor to Archbishop Adalbero of

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1 On early medieval letter collections in Lotharingia, see, e.g., *Witzleb*, Briefe und Briefsammlungen (2017).

2 Richer, Hist. 3.43 and 3.55–3.57. Ed. *Hoffmann,* 191–191 and 198–200.

Laury Sarti, Freiburg/Heidelberg

Reims and, later, became the defender of the young Otto III against his cousin, Henry of Bavaria, and the Frankish king Lothar. This period saw the capture of Verdun by the Frankish king and the imprisonment of Adalbero's brother, Count Godfrey. Gerbert continued to support Adalbero against the Frankish kings and played a pivotal role in the coronation of Hugh Capet in May 987 – the time at which the city of Laon was captured, leading to the imprisonment of Adalbero and Queen Emma. Although Gerbert was expected to succeed his archbishop after Adalbero's demise in 989, the king chose the Carolingian Arnulf for that role. Gerbert served briefly in Arnulf's service before siding with the Capetian faction. He ultimately assumed the position of archbishop of Reims in 991, and in this capacity, he travelled to Rome in 995, participating in the coronation of Otto III. Upon his return to Francia, he once again faced challenging circumstances, prompting him to align with Otto III, who appointed him as the archbishop of Ravenna in 998. In April 999, Gerbert ascended to the papacy, becoming Silvester II, a position he held until his death on 12th May 1003.[3]

7.2 Gerbert's letter collection

Letters from Gerbert of Reims and his addressees have been preserved from the time period between 976 and 1003, the year of his death. It appears that Gerbert himself initiated the collection, meaning that it was probably he who chose which letters to retain and which to omit. Gerbert's collection now comprises approximately 220 letters, the exact count varying depending on the criteria used by the respective edition. The majority of these were penned by Gerbert himself, primarily for his patrons, as we shall see.[4] These epistles are preserved in two manuscripts: the first originates from Leiden and was written by different scribes on 136 leaves, dating back as early as between 999 and 1011. This particular manuscript is believed to correspond to a copy Gerbert sent to Constantine of Mincy (Ep. 86).[5] The second manuscript is now

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3 For further biographic information on Gerbert, see *Lattin*, Introduction (1961), 3–31; *Weigle*, Einleitung (1966), 1–3; *Riché/Callu*, Introduction (1993), vii–xi and xxx–xxxii; *Demouy*, Gerbert (2005), and the extensive treatment in *Flusche*, The life (2005). On his relation to Aurillac, see *Lauranson-Rosaz,* Entre deux mondes (1997); on his time in Spain, see *Gainet,* Le Voyage (1851) and *Gümpel*, Gerbert von Aurillac (2002); on his relation to Bobbio, see *Riché*, Gerbert d'Aurillac (2001), 49–64; on his role as a teacher in Reims, see *Darlington*, Gerbert, the Teacher (1947), *DeMayo*, The students (2012), and *Lake*, Gerbert of Aurillac (2013); on his relationship to the Ottonians, see *Fauvarque*, Gerbert-Sylvestre II (2005) and *Nuvolone*, Gerbert d'Aurillac (2007); and on his (confidential) epistolary network, see *Cousin*, Un réseau épistolaire (2020).
4 *Riché/Callu*, Introduction (1993), xxii and xxvii–xxviii. See also *Riché*, Gerbert d'Aurillac (2014).
5 Leiden, Bibliotheek der Rijksuniversiteit, Vossianis lat. Q 54. See *Riché/Callu*, Introduction (1993), xxiii.

located in Rome and dates to the seventeenth century.[6] While the chronological order of the letters is generally consistent between the two manuscripts, neither of them contains all of the known letters.[7] The initial portion of the official collection encompasses letters from 983 to 991 and is found in the Leiden manuscript, extending from fols. 52^v to 82^v. These epistles are interposed with some omissions and are separated from the later letters – spanning from fols. 87^r to 97^v – by additional material, such as the acts of the synods held in Mouzon and Reims in 995.[8]

Most of the letters preserved from Gerbert's records were written between 983 and 991. The editor Fritz Weigle suggested differentiating the period under Adalbero's leadership – extending up to 23rd January 989 – during which he has identified 139 letters (Ep. 16 to 154). Following this, the period of Arnulf, from April/May 989 to June 991, includes 24 letters (Ep. 155 to 178). As noted, Gerbert did not write most of his letters in his own name, but in his role as the secretary of his respective patrons: firstly, Adalbero of Reims, with 72 letters, and subsequently Arnulf, with around 8 to 10 letters, depending on the edition. Rulers such as Otto III and Hugh Capet also received letters authored by Gerbert. Some of these were likely dictated to the scribe.[9] Occasionally, Gerbert favoured oral messages, as evident in a letter to Otto II in which he recommended his trustee Rainier by emphasising that certain crucial information should not be conveyed in writing.[10] A similar attitude is attested in reference to the Abbot Ayrard of St. Thierry, who was expected to return with oral messages.[11] Regrettably, this means we may be missing some vital information that was considered sensitive at the time.

Of the letters composed in Gerbert's name, approximately 80 are of a highly political nature, with more personal epistles being the exception.[12] In some cases, such as

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6 Rome, Bibliotheca Vallicelliana, lat. G 94. *Riché/Callu* , Introduction (1993), with xi–xv, on the earlier, and xvi–xxi, on the later manuscript. Similar *Weigle,* Einleitung (1966), 8–16, with references to further manuscripts based on those mentioned above. See also *Weigle*, Studien (1958); *Stoppacci*, Costantino di Fleury (2018).

7 See the comprehensive overview in *Riché/Callu*, Introduction (1993), xxiv–xxv.

8 *Riché/Callu*, Introduction (1993), xxiii–xxvii.

9 Gerbert, Ep. 66. Ed. *Riché/Callu*, 166: *dum haec dictavimus*; *Lake*, Gerbert of Aurillac (2013), 278.

10 Gerbert, Ep. 2. Ed. *Riché/Callu*, 8: *Suscipite nus amici consilio et auxilio, et quid sit faciendum rescribite*. See also Gerbert, Ep. 30. Ed. *Riché/Callu*, 66: *totum non est credendum cartis.*

11 Gerbert, Ep. 34. Ed. *Riché/Callu*, 82–84: *Multa cartis non credimus, quae legatis committimus.* [. . .] *Ut sibi, sic legato credite, et quaevobis placeant, si non est aptum scriptis, vel vivis rependite verbis.* Similar Gerbert, Ep. 38 and 49. Ed. *Riché/Callu.*

12 The above follows the counts made by *Weigle*, Einleitung (1966), 3. See also *Riché/Callu*, Introduction (1993), who, in a list at pp. xxxv–xli, only make such differentiations for the period between 7th December 983 and 23rd January 989, referring to a total of 77 letters written for others, with 63 letters in the name of Adalbero and 5 for Hugh Capet, and 56 letters written in Gerbert's name. For a more thorough survey on earlier letters from the Lotharingian region, see *Witzleb*, Briefe und Briefsammlungen (2017). *Lake*, Gerbert of Aurillac (2013), 282, counts 8 letters that would have been written in the name of Hugh Capet.

Ep. 28, 117, or 118, it remains unclear whether a particular letter was in fact dispatched.[13] The number of letters post-dating Gerbert's ordination as the Archbishop of Reims in 991 is notably smaller, totalling only 42. After his election as the Archbishop of Reims in mid-June 991 and his consecration as pope in April 999, there is a noticeable decline in the number of preserved letters. This is not due to the brevity of these phases, as indicated in Figure 7.1. The post-991 section of the collection features significant gaps between individual letters, with some years without any surviving letters. In contrast to the earlier part of the collection, up to Ep. 180, these letters lack a chronological order.[14] This reduction in the number of preserved letters is unexpected, as Gerbert's rise in status during these years should logically have led to an increase in the volume of his correspondence. The rationale for this discrepancy may be linked to the nature of his initial collection, as he appears to have made a first selection around 991.[15]
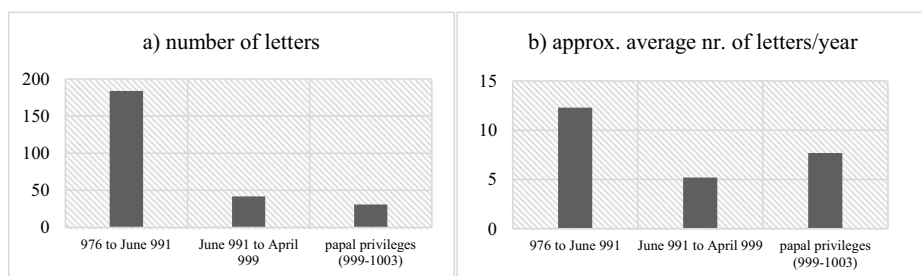
Figure 7.1: Comparing the total number of letters attested for the specified periods (including letters mentioned in these writings) to the approximate average number of letters per year.

In 1889, Julien Havet released a critical edition of Gerbert's letters, and Fritz Weigle edited another version for the Monumenta Germaniae Historica in 1966.[16] Both scholars strove to reconstruct Gerbert's original collection. Accompanying these editions, further letters have been preserved, particularly within Gerbert's mathematical work, which has been edited by Nikolaĭ Bubnov.[17] Some additional letters are included in

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13 *Riché/Callu*, Introduction (1993), xxiii–xxix.

14 *Weigle*, Einleitung (1966), 4; *Riché/Callu*, Introduction (1993), xxvii–xxxii, counting at p. xxviii, only 58 letters written in the name of Adalbero, and 8 letters in the name of Hugh Capet.

15 See also *Lake*, Gerbert of Aurillac (2013), 273–275; *Witzleb*, Briefe und Briefsammlungen (2017), 178–179.

16 Gerbert, Ep. Ed. *Havet* and Ed. *Weigle*.

17 Gerbert, Ep. Ed. *Bubnov*. See also *Qandil/König*, 984 (2021), access wiki.uni-konstanz.de/transmed-en/index.php/984:_Some_Letters_by_Gerbert_d'Aurillac_Dealing_with_"Arabic"_Mathematics_and_Astrology (accessed: 10.09.2024).

Havet's appendix. Moreover, there are 31 papal privileges also included – at least in part – in the English translation published by Harriet Pratt Lattin in 1961.[18] In 1993, a bilingual edition (with a French translation by Pierre Riché and Jean-Pierre Callu) followed, encompassing a total of 214 letters. However, this edition omits Gerbert's writings to Constantin and Adelbod of Liège, which were edited by Bubnov (vol. II, pp. 6–8, 23–24, 25–28, 29–30, 32–35, 43–45), and his preface letter to his *Libellus de rationali et ratione uti* (as found in Havet's appendix II, pp. 236–238). Although Gerbert's papal documents are not included, this edition nevertheless incorporates Ep. 217 (Leiden, BR, Voss. lat. Q 54, fol. 41–52v), which was not present in Weigle's edition. The edition also features an appendix containing three letters to Pope John XV and extracts from a letter of Abbo to Gregory V (Rome, BV, lat. G 94), situated between the epistles 181 and 218.[19]

| a) total number of mobilities attested | b) approx. nr. of mobilities attested/year |
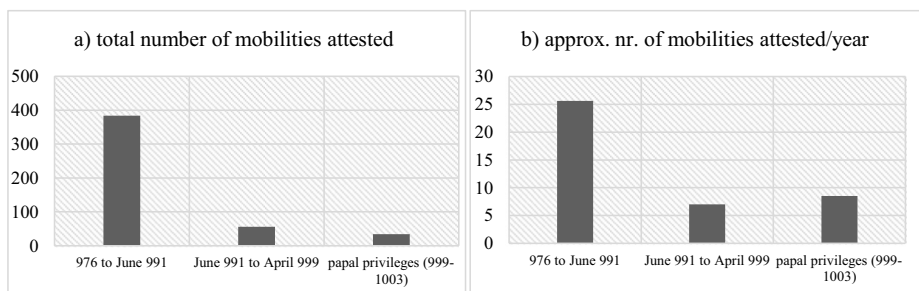
Figure 7.2: The mobilities attested in the letters of Gerbert of Reims.

In this study, I initially included all of Gerbert's letters, but eventually narrowed my focus for further analysis, as I will elaborate shortly. Based on the data collected, it became evident that Gerbert's letters reached a total of 110 individual recipients spanning the years 976 to 1003, with 42 individuals receiving multiple correspondences. For the purposes of this analysis, my primary focus is directed towards the letters dated between 976 and 991. Although there is no compelling reason to assume that the mobility of Gerbert and his vicinity decreased after 991 – if anything, it likely increased – the number of documented journeys described in his letters nevertheless wanes notably during this period (as illustrated in Figure 7.2). Beyond the reduction in the volume of letters, potential explanations may revolve around the more politicised nature of the preserved letters from June 991 onwards. They tend to be less informative concerning the author's surroundings. This observation is further validated by the fact that even when a journey *is* mentioned in these later letters, the relevant information is often so vague that any attempt to discern the journey's details re-

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18 *Lattin* (Ed.), The Letters of Gerbert (1961).
19 *Riché/Callu*, Introduction (1993), xlvi.

quires much speculation, rendering it less suitable for a comprehensive study. As a result, only the letters predating June 991 – which comprise a more consistent set of epistles, encompassing each year and referencing a broad array of journeys – are included in the current study.

In addition to the letters contained within the official collection, my research also incorporates the epistles known from Gerbert's other work mentioned above, provided they are dated to the period before 991. With this addition, a total of 184 letters have been preserved for said period. This excludes epitaphs and other writings that were likely never intended for dispatch.[20] A quantitative analysis of the 184 letters was conducted utilising an Excel database, gathering various data pertaining to the journeys documented in these correspondences. Starting with just over ten personal letters dating from 976 onwards, the official collection commences with Gerbert's residence in Bobbio in 983. During this period, 15 letters were dispatched, with a significant portion addressed to Otto II and his court. Subsequent letters were predominantly penned in Reims and were directed towards high-ranking individuals representing a cross-section of the medieval elite across various regions of Europe. The bulk of the recipients were members of the clergy, particularly (arch)bishops and abbots. Notably, approximately 8% of the letters were addressed to prominent women (see Figure 7.3).
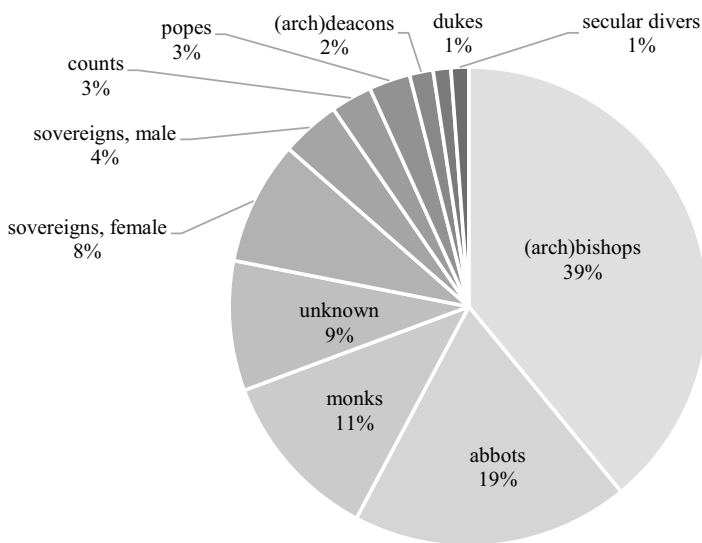
Figure 7.3: Relative proportions of the groups of letter recipients attested in Gerbert's letters (976–991).

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20 This applies to Gerbert, Ep. 75 to 79 and Ep. 90. Ed. *Rich*é/*Callu.*

7.3 Deficiencies in the textual transmission

Gerbert's collection of letters presents an excellent choice for the study of early medieval mobility due to its volume and comparably heterogenic set of correspondences. However, it is not without substantial challenges, difficulties that are common for the correspondence of this era. As such, this collection is also a good example for discussing potential issues and their impact on the utility of this type of historical source. One notable issue here is the absence of preserved responses to the dispatched letters.[21] In fact, there are only four exceptions – Epp. 143, 220, 218, 186. To address this in the context of an Excell research database, responses (and the journeys they implied) have been incorporated whenever a missing letter was referred to or when a letter suggested that a messenger was expected to return after his or her mission. Still, the absence of responses means that we are left with less than half of the correspondence known to have actually circulated. A closer examination of the collection further reveals that it contains only a comparably small selection of letters, as alluded to above in the discussion of Gerbert's role as the compiler. Consequently, the collection does in no way correspond to the sum of letters initially dispatched from Gerbert's desk.

A second issue relates to the lack of explicit dates in Gerbert's letters, in the condition they have reached us. Often, even information about the location and/or recipients is missing.[22] Although the editions and translations mentioned above tend to suggest otherwise at first glance, typically providing at least approximate dates, these are usually conjectures built on disputable assumptions. As a result, different publications regularly offer notably variable dates for the same letter. For instance, Lattin dates Ep. 25 to 25th March 984,[23] while Weigle estimates a date around March or April of the same year;[24] Riché and Callu, meanwhile, suggest a more general timeframe of spring 984.[25] Consequently, these letters can, at best, only tentatively support inquiries into travel frequency or speed when offering more specific dates related to these journeys. Occasionally, we do find rare instances of specific dates, such as in Ep. 43, which mentions Notger of Liège's voyage to the ordination of Adalbert of Verdun – planned to commence on 28th December 984, with an estimated arrival on 3rd January 985.[26] Assuming that Notger was in Liège and that the ordination took place in Verdun, as Weigel presumed,[27] this journey

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21 *Lake*, Gerbert of Aurillac (2013), 274.

22 *Weigle*, Einleitung (1966), 4. Gerbert, Ep. Trans. *Lattin*, 117, suggests that Ep. 71 (counted as Ep. 78) is the only one bearing a date. However, as *Weigle*, Einleitung (1966), 4, n. 13, with further references, makes clear, this was only added to the register at a later date.

23 Trans. *Lattin*, 70, counted this letter as Gerbert, Ep. 33.

24 Gerbert, Ep. Ed. *Weigle*, 47.

25 Gerbert, Ep. Ed. *Riché/Callu* 51.

26 Gerbert, Ep. 43. Ed. *Riché/Callu*, 104: *Secundum promissa Treverensis archiepiscopi ordinationem A [dalberonis] nostri III non. jan. inspecturi, ubi adhuc decreverit, ducem itineris vestri V kl. praemittemus, et quae certiora cognoverimus, denunciabimus.* It corresponds to Gerbert. Ep. 49, in Trans. *Lattin*.

27 Gerbert, Ep. Ed. *Weigle*, 71, n. 2.

would have covered 190 kilometres in six days, averaging about 32 kilometres a day[28] – a speed that corresponds to the usual average during that period.[29] Another example, demonstrating notably faster travel, can be found in Ep. 94. Penned in Reims, likely on or shortly after 24th September 986, it invited Adalbert of Reims – who may have been either in Mouzon or Charleville-Mézières at the time – to visit Hautvilliers, a monastery near Epernay, approximately 23.5 kilometres south of Reims, on 27th September. This letter implies that the messenger either traversed 84 kilometres (if the destination was Charleville-Mézières) or 93 kilometres (if it was Mouzon) from Reims to convey the message. Assuming no significant delays for packing, Adalbert would have covered an additional 104 kilometres (Charleville-Mézières) or 114 kilometres (Mouzon) thereafter. In total, this suggests that both the messenger and the archbishop would have had to cover around 69 kilometres (Mouzon) or 63 kilometres (Charleville-Mézières) each day in order to meet the three-day timeframe mentioned. This was the upper limit of what was typically achievable on horseback.[30] However, it is important to note that these calculations remain unreliable since the letter does not specify the month, leaving room for alternative dates.[31]

Further complications emerge when considering that the letters do not consistently mention the addressee. While, in 27 cases, relevant names are spelled out, abbreviations are much more frequent and, in 42 cases, this section is omitted entirely.[32] In such instances, we must rely once again on inferences drawn from a letter's content and context. A similar challenge is posed by the location of the respective recipient, which can often be deduced thanks to additional information, but certainty remains elusive. The same uncertainty applies to whether a letter was actually sent and whether the plans articulated in writing were ever realised.

7.4 Methodology

Gerbert's letters reveal a multifaceted view of mobility, which can be categorised into two distinct groups. The first category encompasses journeys undertaken by messengers, attested by every letter dispatched. Regrettably, Gerbert's correspondence only offers spo-

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28 However, the letter does not explicitly confirm that the ordination was planned to take place in Verdun, and it was finally postponed to December 985, see Gerbert. Ep. Trans. *Lattin*, 94, n. 1. Further uncertainty is added by the fact that, according to the comments on Gerbert, Ep. 43, in Ed. *Weigle*, 71, it was the ordination that was meant to take place on 28th of December 894.

29 Cf. *McCormick*, Origins of the European economy (2001). 474–481; *Childs*, Moving around (2006), 260–261.

30 See *de Rachewiltz/Riedmann* (Eds.), Kommunikation und Mobilität (1995), 73.

31 See Gerbert. Ep. Trans. *Lattin*, 130, suggesting that these travels took place until 29th October.

32 *Riché/Callu*, Introduction (1993), xxiii and xxvii.

radic information related to this particular group. The second category is attested with significantly more detail and thus is much less anonymous. It encompasses any journey alluded to or hinted at within the letters, involving not just the primary correspondents but also their associates, servants, or family members. To ensure accuracy, I compared assessments from different editions, including Lattin's translation and, in cases of discrepancies, either selected the most plausible option or, when multiple interpretations were equally viable, included more than one for comprehensive coverage. The Excel database includes information pertaining to both of the categories mentioned – including explicitly named individuals with a considerable number of anonymous travellers and implicit information, such as those referring to messengers and inbound journeys. This data was subsequently analysed in conjunction with the pivot function provided by Excel, which allows for the generation of tailored statistics and construction of graphs. The database covers information on the senders, recipients, presumed departure and arrival points, documented journeys, individuals involved, items transported, and the stated objectives as referenced within these epistolary exchanges. For accessibility and transparency, the database is openly accessible on my Academia.edu page.[33] The map was redrawn from models created using Google My Maps, meaning that the study is widely based on easily accessible or free to use software. Thus, the procedure used here may be easily adopted in the framework of other projects with analogous requirements.

The database, along with any analysis emerging from it, is susceptible to a range of errors stemming from the uncertainties discussed above. These errors include the omission of vital information concerning the time of dispatch, the location of the sender and recipient, ambiguity as to whether future journeys alluded to in letters actually took place, and, perhaps most notably, the absence of numerous letters that were dispatched but never integrated into Gerbert's collection. Despite this array of inaccuracies, it was deemed impractical within the context of quantitative analysis to exclude any travels due to such ambiguities. Doing so would diminish the number of journeys analysed considerably, thus further distancing us from developing a comprehensive understanding of mobility in the vicinity of figures like Gerbert of Reims. Whether planned or implied, every journey mentioned in these letters would have been considered likely to take place by the authors: their inclusion in the study thus tentatively helps to restore some of the lost data. The same level of certainty is less apparent when dealing with journeys necessitating conjecture about time and place. Even when the recipient of a letter is known, such as Egbert of Trier, who is the most frequent addressee of these letters (see Figure 7.4), there is often no assurance as to whether that person was actually situated at their usual residence during the time being referenced. Therefore, whenever the available editions and translations pro-

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33 See the document "Mobility in the letters of Gerbert of Reims data" filed under "Other" on the page uni-freiburg.academia.edu/LaurySarti. Please note that this document contains mistakes, like misspellings or different references for a same element, which were amended manually before having the graphs drawn.
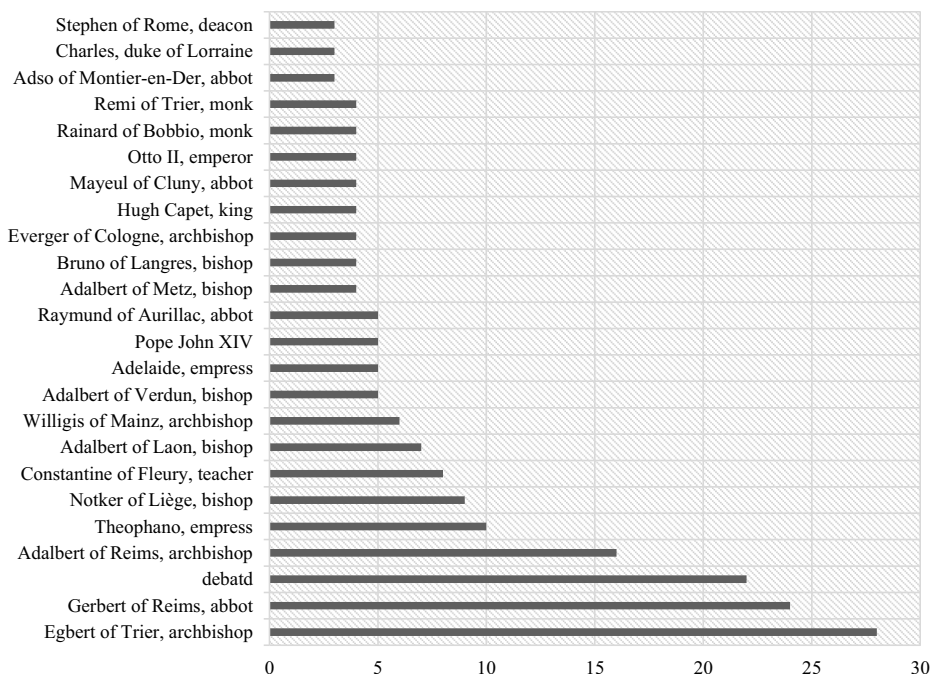
Figure 7.4: Recipients of at least 3 epistles in Gerbert's letters (976–991).

posed a location with reasonable plausibility, it was incorporated into the database. The most challenging scenarios involve recipients associated with itinerant courts, which lack a fixed home base and, consequently, defy a precise location without knowing the exact date of a dispatch. While the itineraries of these courts are typically documented, not least in the ongoing work on the *regesta imperii*,[34] the scarcity of specific dates for Gerbert's letters – as well as the journeys to which they refer – often makes it a difficult even to determine whether a recipient was situated north or south of the Alps. One such example is contained in a letter composed in the name of Adalbert around March 984, in which Gerbert mentions that the French kings had recently decided to support the Ottonians. However, in the absence of additional details regarding dates, it remains difficult to discern whether this exchange occurred via written correspondence or in person – i. e. whether only a messenger embarked on this journey – and where they might have encountered the King Lothar and Louis.[35] Other instances include Ep. 28, directed to the universal Church in Jerusalem, where both the timing and destination remain subjects of debate, or Ep. 61, where Gerbert,

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on behalf of Adalbert, alluded to a meeting with the addressee, but without specifying whether the recipient was Duchess Beatrice or confirming that the meeting took place in Lorraine.[36] A planned encounter between Adalbert of Reims and Notger of Liège, as referenced in Ep. 65, remains elusive in terms of both time and location.

In cases of such uncertainties, I have used any information that could be ascertained without resorting to excessive speculation. For instance, I made it a practice to specify a location or region where there was a reasonable basis for conjecture, and conversely, I labelled it as "unknown" where there was no such basis. This "unknown" designation applied in 39 instances concerning the precise destination location and in 28 cases in relation to the destination's broader region. Consequently, it is worth noting that, although a significant number of the travels documented in the database may not have occurred exactly as described, the cumulative data should provide a plausible reconstruction of the mobility patterns in Gerbert's vicinity. Still, given the unquantifiable volume of missing data resulting from the loss of a fraction of those once dispatched and received, it is highly likely that the total number of historical mobilities far exceeded what is presently captured in the collection – even after taking into account travels associated with uncertain data.[37]

7.5 The travellers

The dataset comprises references to a total of 387 mobilities. Notably, a significant portion of these, precisely 262 or 68%, were carried out by messengers (*legati*).[38] While it can be assumed that each letter was entrusted to a messenger, Gerbert hardly makes any explicit mention of them, as we shall see. This category encompasses messengers implied explicitly or implicitly, either in the content of a relevant letter or by its dispatch. For instance, in a letter addressed to Abbot Gerald of Aurillac, he was urged to visit Reims, but also instructed to dispatch a messenger to notify his hosts in Reims about his upcoming visit.[39] A messenger with a similar task is mentioned in a missive to Archbishop Willigis of Metz, where Gerbert announced an envoy of Adalbert.[40] The group of messengers also includes escorts intended to accompany a guest, such as when Notger of Liège was invited to partake in the ordination of Adalbert of

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36 See Gerbert, Ep. Ed. *Riché/Callu*, 55, n. 1.

37 See in this context my recent study *Sarti,* Die Mobilität der englischen Gentry (2023), showing the extremely high number of mobilities around the Paston Family of the fifteenth century, raising the question whether a similar amount may be presumed for the earlier periods even though they are lacking in our records.

38 E.g., Gerbert, Ep. 42. Ed. *Riché/Callu.*

39 Gerbert, Ep. 17. Ed. *Riché/Callu*, 36: *Si limina beatorum Remigii vel Dionisii datur vobis copia vodendi, nuntio praemisso vestris alloquiis poterimus condelectari.*

40 Gerbert, Ep. 34. Ed. *Riché/Callu.*

Verdun by the Archbishop of Trier. On this occasion, Gerbert – acting on behalf of Count Godfroy of Verdun – dispatched a guide (*dux*) to accompany Notger on his journey.[41] Unfortunately, the details of these journeys remain largely obscure.

At times, multiple letters were entrusted to the same messenger, as exemplified by Ep. 45, directed to the monk Raymond in early 985, and Ep. 46, addressed to Abbot Gerald, both situated in Aurillac. Additionally, a set of three letters directed to the monks of Bobbio and various individuals in Italy were likely conveyed by a single messenger.[42] Ep. 48 seems to have been appended to Ep. 47 as a post-scriptum. These circumstances demonstrate that not every letter necessarily implies an additional messenger journey, a fact taken into account in the current analysis. Excluding travels executed by these messengers, we are left with 125 mobilities, constituting 32% of the documented travels (see Figure 7.5.a). Of the total 387 mobilities in the dataset, 81 were either requested or planned. This leaves us with 306 mobilities that had already taken place at the time of writing or were due to take place shortly after a letter was sent.
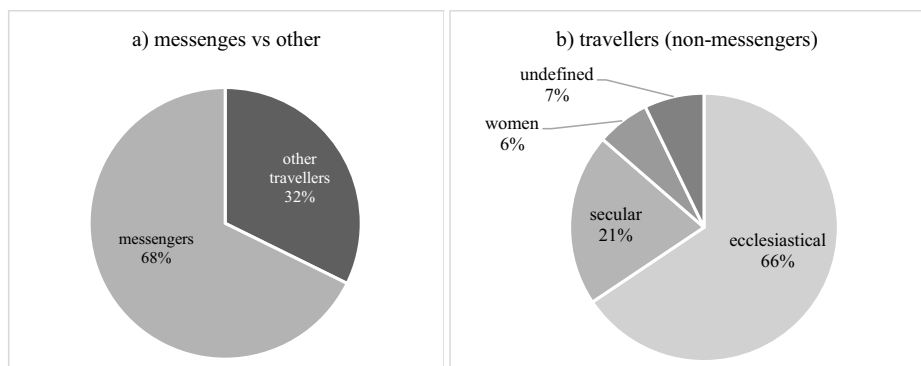
Figure 7.5: Mobilities attested in Gerbert's letters (976–991).

While messengers constituted the largest group of travellers attested, the letters they delivered often lack additional information. Of the 262 messengers, 250 remain shrouded in anonymity. As for the remaining 12 messengers, 3 were clergymen or monks. In 2 instances, it appears that Gerbert not only authored the letters but also took on the role of the courier himself.[43] If this holds true, Gerbert features among the 6 named individuals responsible for 9 documented missions, as evidenced by his correspondence. Two additional dispatches were conveyed by Count Guy of Soissons and another 2 by someone named Gobther, while individual letters were carried by

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41 Gerbert, Ep. 43. Ed. *Riché/Callu.* Similar procedures in Gerbert, Ep. 129 and 146, and 147.

42 Gerbert, Ep. 82 to 84. Ed. *Riché/Callu.*

43 Gerbert, Ep. 43. Ed. *Riché/Callu,* see Trans. *Lattin*, 89, n. 1. See also ibid. 156, n. 2.

men identified as Roderick and Richard, and the mentioned Abbot Ayrard also handled another delivery (see Figure 7.6). These named carriers account for a mere 3% of the group of messengers.
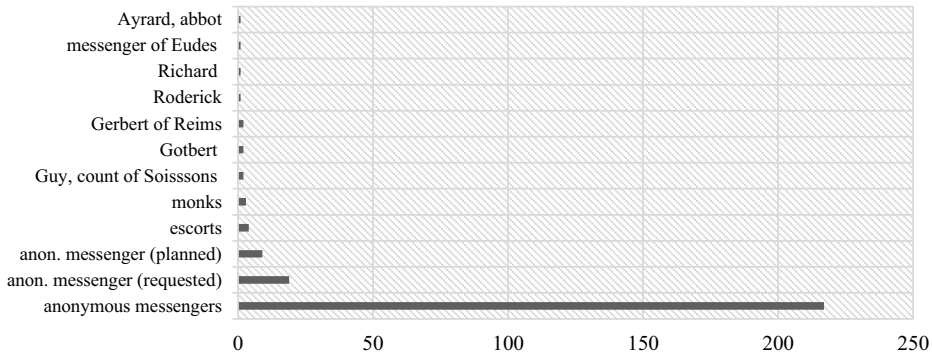
Figure 7.6: Messengers attested in Gerbert's letters (976–991).

As already mentioned, a total of 125 journeys have been documented for individuals unrelated to the role of the messenger. These travellers encompass a diverse array of individuals from various social backgrounds. When categorising these 125 journeys based on social groups, it becomes apparent that almost 66% of them were attributed to the clergy, while 27% belonged to secular groups – primarily the elite – including 6% women. Only 7% of those travellers unrelated to the group of messengers are unclassified (see Figure 7.5.b, with further details in Figure 7.7). In contrast, the social affiliation of 97% of the messengers remains undisclosed, 1% being classified as secular and 2% as ecclesiastical. One can speculate that the majority of them served as retainers or belonged to the household of the respective dispatchers, likely occupying a lower rank within the same social group. An intriguing glimpse of the mobility of more common people is offered in Ep. 61, which mentions the disappearance of the monk Meingus, ostensibly due to his fleeing. He was actively sought out by his abbot, Reingaud of Corbie, and eventually located in Rouen.[44]

Among those travellers unrelated to the group of messengers, Gerbert unsurprisingly stands out, with a total of 24 documented journeys. The number of travels known for the remaining individuals is notably lower, with 9 recorded for Adalbert of Reims and 4 for Notker of Trier, all others falling below these numbers (see Figure 7.8). The letters only sporadically provide details about the circumstances surrounding these journeys. An interesting exception is found in Ep. 109, which sheds light on the

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44 Gerbert, Ep. 61. Ed. *Riché/Callu.* In Ep. 64, Ed. *Riché/Callu*, 162, Gerbert suggested that Meingus was tired of his life in the monastery: *Taedio monastrii eum nolle redire dixistis.* Ep. 67 suggests that Meingus was in England.
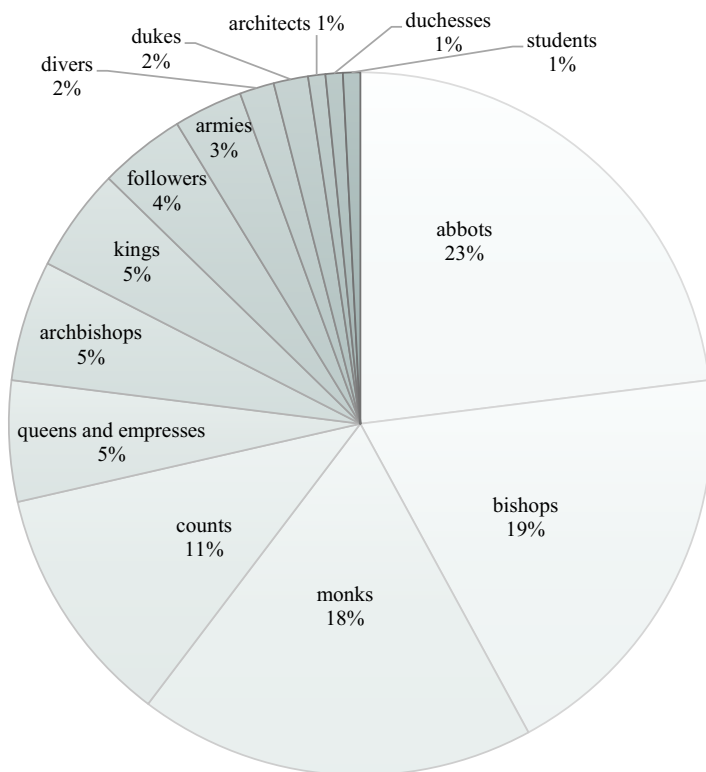
Figure 7.7: Non-messenger travellers attested in Gerbert's letters (976–991).

impact of weather. Adalbert's pilgrimage to St. Gall (Ep. 106) took an unexpected turn due to adverse weather conditions. The letter vividly describes incessant torrents affecting the mountains and villages, emphasising that the inhabitants were submerged, and their flocks were carried away by the floods. In another letter, addressed to the Bishop Notger of Mainz in May 984, there is a rare mention of a foot injury that prevented Count Godefroi of Verdun from travelling to visit his king.[45]

While it is evident that early medieval letters were occasionally dispatched to individuals of lower social standing, and often pertained to the mobility of this part of society,[46] most known letter recipients were members of the elite. Consequently, names and other personal information about individuals of lower birth are infrequently provided, underscoring a notable limitation of early medieval collections of letters, a tendency also shared by other historical records like chronicles. Nonetheless,

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45 Gerbert, Ep. 30. Ed. *Riché/Callu*, 64.
46 See, e.g., Einhard, Ep. Ed. *Hampe*, which comprise a large number of administrative epistles. See also related discussions in Einhard, Ep., Ed. *Grabowsky* et al.
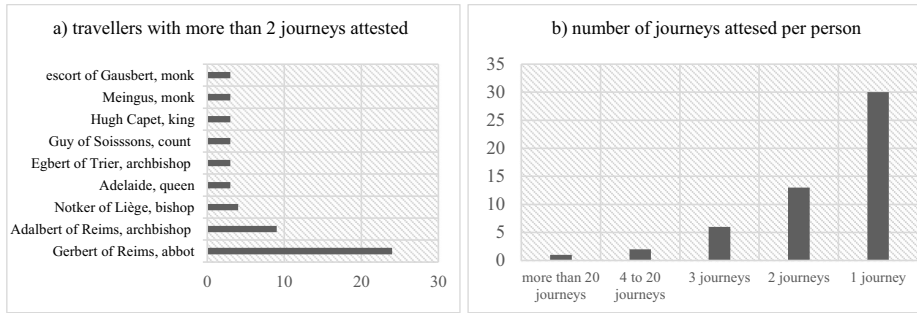
Figure 7.8: Journeys of non-messenger travellers attested in Gerbert's letters (976–991).

it is crucial to recognise that the elite never travelled in isolation. This implies that for every bishop, king, or count, we must assume a corresponding entourage, which could span from an entire royal court – as in the case of kings and other high-ranking authorities like dukes – to just one or two servants, as was probably the case for a common monk or scholar. Regrettably, these companions remain conspicuously absent from Gerbert's correspondence. In a letter addressed to his friend, Gerald of Aurillac, Gerbert alluded to the presence of *milites* under his command, prepared for armed service. However, he did not clarify their exact relationship to him or whether they regularly accompanied him during his journeys.[47] In Ep. 101, Gerbert's use of the plural form to refer to him meeting the western authorities confirms that he did not travel alone.[48] In a letter attributed to the former Queen Emma, Gerbert mentioned her scheduled encounter with Empress Adelaide in Remiremont on 11th May 986, along with her son.[49] However, these examples already represent the majority of information related to possible travel companions contained in Gerbert's letters. Nevertheless, even though we cannot quantify these companions, any reference to travellers from the upper social strata implies the existence of further journeys undertaken by unnamed, largely unmentioned individuals. This means that these letters merely scratch the surface, revealing only the tip of the iceberg – any additional detail is thus highly significant in estimating what lies beneath the surface.

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47 Gerbert, Ep. 16. Ed. *Riché/Callu*, 32: *Milites mei quidem arma sumere, castra munire parati.*

48 Gerbert, Ep. 101. Ed. *Riché/Callu*, 246: *XV kl. jun. Francorum colloquio nobis occurrendum.*

49 Gerbert, Ep. 74. Ed. *Riché/Callu*, 180: *Nostro quidem vestrae praesentiae ac regis Conr[adi], in vicinia Romarici Montis, ubi confinium regnorum est, XV kl. jun. me ac filium meum occurrere volunt.* Similar Gerbert, Ep. 29. Ed. *Riché/Callu*, 62.

7.6 Travel places

Gerbert's letters exhibit a noticeable variability in their mention of the origins and destinations of letters and travellers, as evident from the preceding discussion. Among the starting locations, Gerbert's hometown of Reims predominates with a substantial 189 mentions, followed by comparatively fewer references to Bobbio (22), Laon (14), Trier (12), and Senlis (9). Turning to the destinations, we encounter a more diverse landscape. Nevertheless, certain places enjoy a higher frequency of mention, such as Reims (78), Trier (34), Bobbio (20), and Rome (15). Just like the travellers, the majority of destinations are mentioned only once or twice. This enhanced variety of destinations becomes more apparent when we examine the frequency of locations from distinct regions. In terms of regions of origin, France (296) takes the lead, with Italy (43) and the Ottonian east (26) following closely behind. In contrast, when it comes to destinations, France (213) is closely followed by the Ottonian Empire (74) and Italy (55). These destination choices attest to Gerbert's strong Ottonian patronage, even though he resided in western Reims, where he later also established ties with King Hugh Capet. It is noteworthy that Reims served as a pivotal point for both outgoing and incoming journeys, despite the fact that the total count of starting locations is significantly lower than the number of known travel destinations (see Figure 7.9).

Excel's pivot function allows us to zoom in on data by filtering and arranging it, drawing connections between these various aspects. For instance, it allows us to link the initial points of travel to the destinations, the travellers, their objectives or the goods they transported. This method facilitates the examination of the relationship between specific groups of travellers and their respective destinations or intentions. Referring to the travels undertaken by Gerbert himself, for example, 59% of the destinations were situated within the western Frankish territories, while 25% of his destinations were in Italy, with only 8% being located in the eastern realms, and another 8% of the locations remaining unclear (Figure 7.10).

Pivot also allows for analysis of the interplay between other starting locations and destinations, as demonstrated in Figure 7.11.a–b for Trier and Bobbio. The data from Reims (Figure 7.11.c) shows that, unsurprisingly, this city served as the predominant point of departure for the majority of the destinations documented, whereas dispatches from Bobbio primarily headed towards destinations within the peninsula, alongside a few Ottonian centres and Reims itself. It is also intriguing to examine the 150 messengers dispatched from Reims. As illustrated in Figure 7.11.c, the bulk of these messengers were directed towards the archbishops of Trier (25) and Liège (9), the Ottonian courts, as well as Bobbio, Gerbert's friend Constantine in Fleury,[50] and Aurillac, which was Gerbert's hometown. These destinations thus mirror the diverse networks in which Gerbert was embedded. If we map out the origins and endpoints of the journeys

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50 On Gerbert's amical friendships and related notions, see *DeMayo*, Ciceronian amicitia (2007).
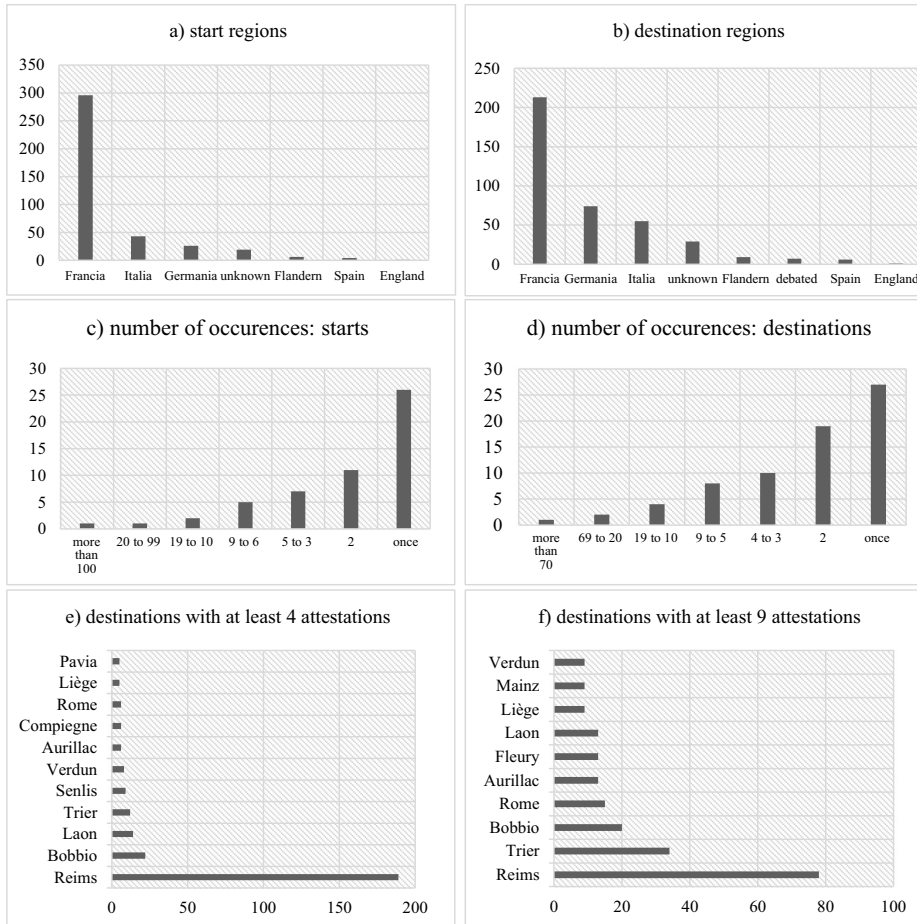
Figure 7.9: Start locations and destinations attested in Gerbert's letters (976–991).

recorded in Gerbert's letters, we can discern that a significant proportion of these travels occurred within a radius of roughly 200 kilometres around Reims, while Bobbio had a considerably smaller travel perimeter, as depicted in Figure 7.12.

7.7 Travel aims

The letters seldom provide explicit explanations for the underlying reasons behind a journey. When we consider both the stated objectives and the implicit inferences drawn from the available evidence, the predominant aims appear to revolve around the execution of tasks that connect the sender with the intended recipient of a letter.

Figure 7.10: Travel destinations attested for Gerbert of Reims (976–991).

It is worth noting that while these travels may have served multiple purposes, these additional intentions remain obscure in cases where the letters offer no further clues. By excluding any references to messenger-related travel objectives or those of Gerbert himself, we are left with a total of 106 remaining references. The majority of these references are attributed to (arch)bishops (30) and monks (29), as shown in Figure 7.13. a. Among the most prominent objectives were meetings with secular (14) and ecclesiastical (12) authorities, followed by military movements (10), and further, more personal motivations, as depicted in Figure 7.13.c. When we focus on the travel purposes of the individual for whom we possess the most comprehensive information – namely, Gerbert himself – it becomes evident that meetings with secular authorities were by far the most frequent aim, with bishops only ranking fourth in terms of frequency, as indicated in Figure 7.13.b.

Establishing connections between these mobility objectives and distinct groups of travellers substantiates disparities between laypeople and clergy members, on the one hand, and between higher-ranking officials and individuals from lower socioeconomic strata, on the other. Notably, bishops primarily embarked on journeys to convene for religious ceremonies, whereas other clergy members typically undertook travels for the purpose of delivering letters and commuting between monasteries. Military groups predominantly comprised laypeople, while encounters with other notable figures predominantly encompassed high-ranking officials and noblewomen. Anonymous messengers were excluded from this analysis, mainly due to the men-
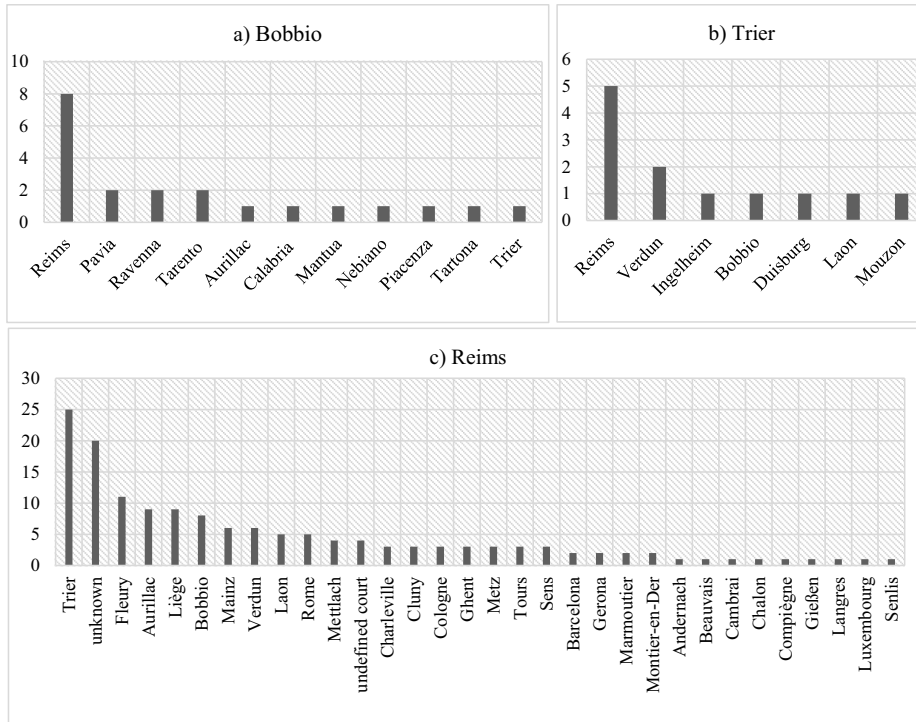
Figure 7.11: Destinations recorded for Bobbio, Trier and Reims in Gerbert's letters (976–991).

tioned unavailability of additional information necessary to determine their social status (Figure 7.14).

7.8 Objects transported

Within the corpus of letters, there are a total of 41 references to items carried by travellers that were not letters. Among these, manuscripts are the most prevalent category, accounting for 10% of relevant references, as depicted in Figure 7.15.a. They mirror Gerbert's efforts to acquire new literary works and offer manuscript copies from his own library in exchange, a trend also reflected in the varied recipients illustrated in Figure 7.15.c.[51] In 24 instances, manuscripts were dispatched from France, predominantly originating in Reims, with a sporadic occurrence of three instances from Italy. The prevalence of French origin is similarly evident when examining the destinations, as the majority of relevant dispatches were directed to Gerbert. Other items, such as

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51 On Gerbert's work on ancient manuscripts, see *Passalacqua*, Gerberto di Aurillac (2003).
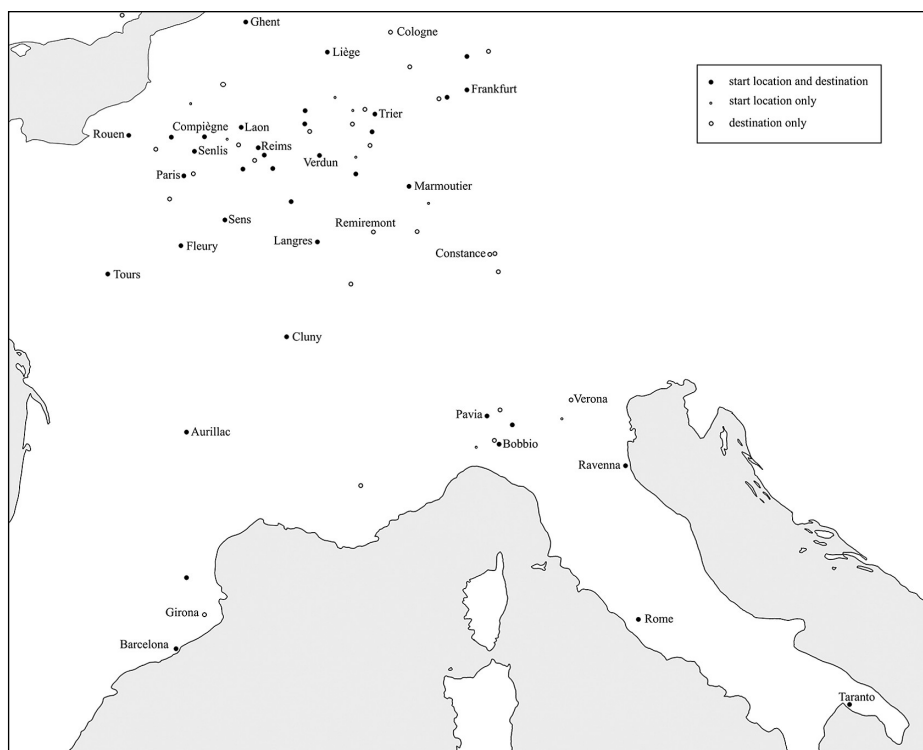
Figure 7.12: Start locations and destinations attested for the time between 976 and 991.

money, cloth, or singular elements like a sphere, are only mentioned once, as indicated in Figure 7.15.b.

7.9 Conclusion

To what extent may letter collections serve as a lens to study the complexity of early medieval mobility? And what are the potentials and limitations associated with the quantitative approach presented here? The fact that Gerbert's collection comprises only a selection of dispatched letters implies that it can provide merely a glimpse into the mobility of those who authored these letters. This selectivity primarily focuses on the elite, resulting in a lack of references to the movements of individuals of lower status, which would be essential for constructing a comprehensive overview of related mobility patterns. This limitation only becomes more surmountable with the emergence of private letters in the late Middle Ages. A notable challenge also arises from the paucity of (or incomplete references to) dates and locations, as well as a scarcity of information about the recipients due to the liberal use of abbreviations. These
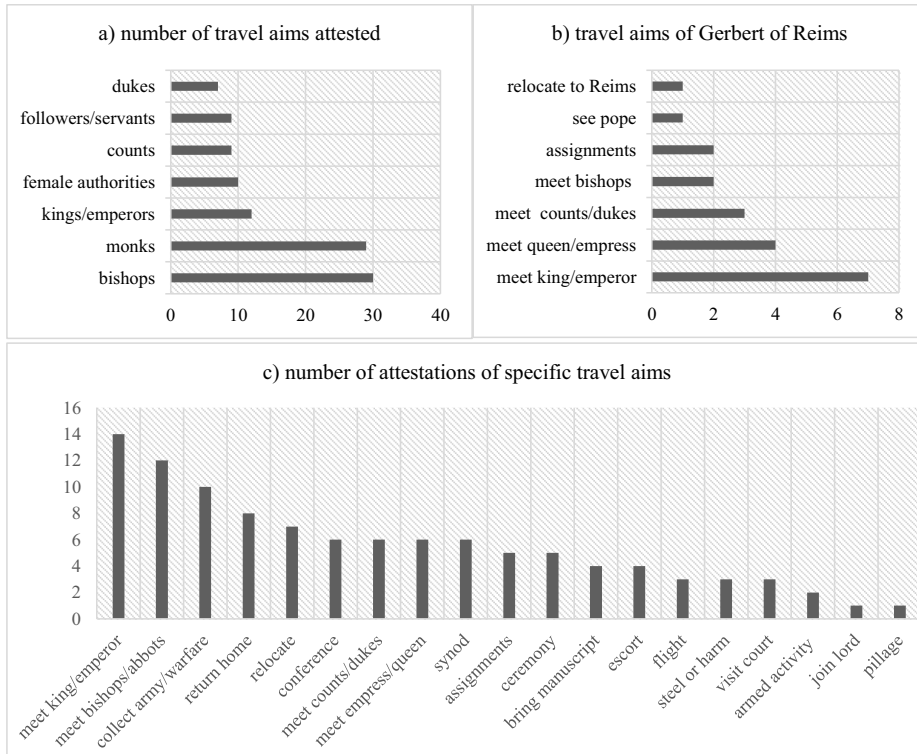
Figure 7.13: Travel aims in Gerbert's letters (976–991).

shortcomings, which affect the comprehensiveness and reliability of the source material, could not be adequately addressed within the confines of the database established for this study. Consequently, the latter includes conjectures and other information, such as planned journeys, even when the specific letter's parameters may be inaccurate or the journeys in question might have been cancelled. By not confining itself to travels for which the letters provide unequivocal information, this quantitative study succeeded in amassing additional data allowing to further complete a still fragmentary picture. This supplemental information contributes to a more holistic understanding of the potential mobilities connected to Gerbert and his archbishop, Adalbert. However, this approach bears the significant drawback that its results do not precisely mirror the historical travels that once took place.

This study demonstrates the potential of a quantitative approach, notwithstanding the initial reservations. Early medieval letter collections like Gerbert's epistles provide limited data owing mainly to constraints in both quantity and quality of information, further compounded by the fact that the relevant data pertains predominantly to the elite. However, a quantitative approach is able to reconstruct a multifaceted view of a substantial portion of high-born mobility within the network of
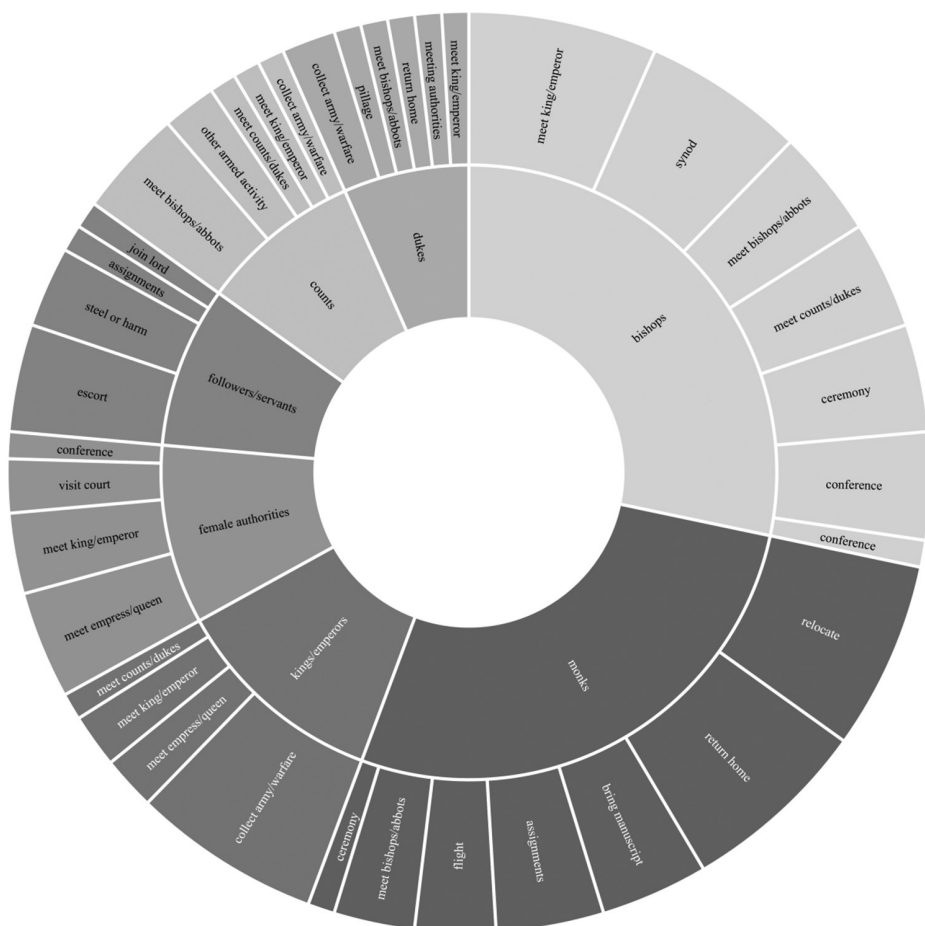
Figure 7.14: Traveller groups and their travel aims, excluding Gerbert of Reims and the anonymous messengers (976–991).

senders and recipients of these letters. Although the inclusion of equivocal information prevents a one-to-one reconstruction of historical mobilities, the incorporation of additional data enables the creation of a more comprehensive representation that may reflect past mobility patterns more accurately than a study confined to explicit evidence. It is important to note here that this approach may not be suitable for collections where unequivocal information is significantly more abundant, meaning that any research methodology should be adapted to address the challenges inherent in its respective source material. The present results illuminate the diverse networks Gerbert of Reims was connected to, encompassing political ties to the Ottonians and the
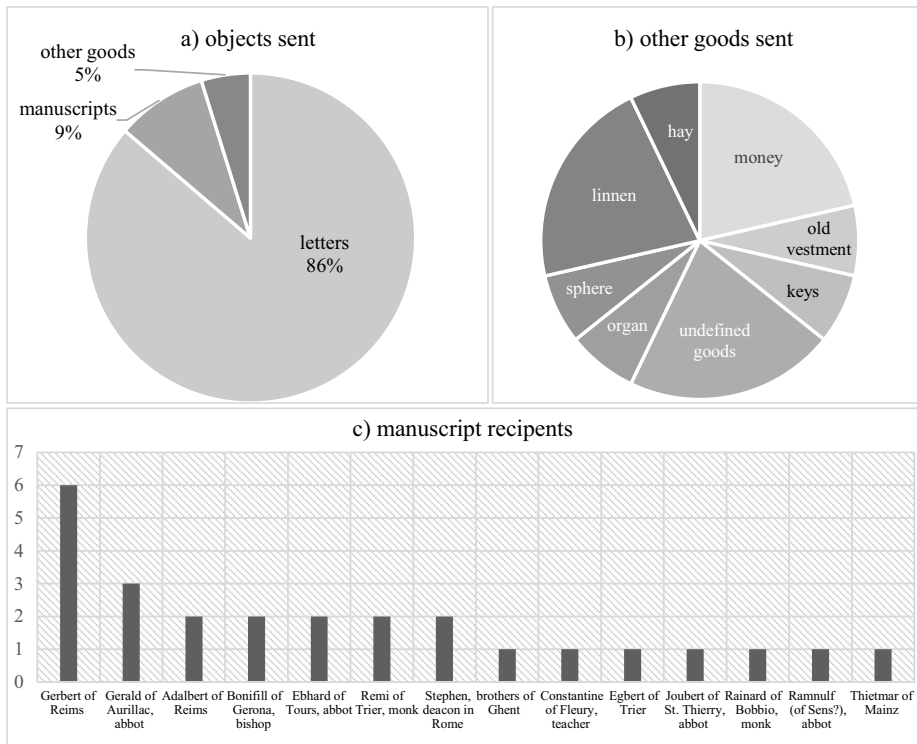
Figure 7.15: Objects carried by the travellers recorded.

Frankish kings as well as a broad network of ecclesiastical authorities,[52] and personal relationships with specific scholars. This research intended to show how letter collections may serve as a unique window onto the use of letters as instruments of influence and relationship maintenance across different strata of society. Consequently, this approach contributes significantly to our understanding of early medieval mobility patterns, travel objectives, and the roles played by at least a selection of voyagers.

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52 *Lake,* Gerbert of Aurillac (2013), offers a meticulous analysis of these networks and how Gerbert used them.

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Russell Ó Ríagáin

8 Shifting patterns of mobility in the Insular Scandinavian diaspora between the ninth and eleventh centuries

8.1 Introduction

In Insular history, the period from around 800 to 1300 was characterised by a series of increased interactions with Scandinavia, extending from the first recorded viking raids in the late ninth century down to the diplomatic relations between the kings of Norway, England and Scotland in the thirteenth and fourteenth centuries. This paper combines prosopographical and material approaches to explore the shifting patterns of mobility of members of the Scandinavian diaspora principally associated with Ireland and Britain across several centuries of this socially and materially entangled era. The principal portion of the paper is concerned with the mobility of three individuals: Óláfr of Hlaðir (ob.AD873×878), Óláfr *Cúarán* Sigtryggsson (ob.AD980×981),[1] and Echmarcach Rǫgnvaldsson (ob.AD1064). A full, high-resolution discussion of the evidence for each individual is not possible within the confines of this article, but will be found in a series of pieces related to each figure currently either under review or in preparation.

8.1.1 Elite focus

Due to the nature of the surviving documentary sources, the focus is typically on elites because of their textual visibility. For each actor, only events that are directly linked to that actor are used in the analysis. This means that many actions carried out by groups associated with these actors but without explicit reference to the actors' involvement are (largely) omitted here. However, it is at least worth noting that these actors did not travel alone: their most visible movements are at the heads of armies or fleets, both of which give some indication then of wider patterns of movement. They were agents of forced mobility, involved in the capture and sale of hundreds, if not thousands, of slaves and hostages, in addition to the ousting or subversion of pre-existing populations during the establishment of settler communities. Furthermore,

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1 The use of a multiplication sign (×) is to separate *tpq* and *taq* where uncertainty exists as to the date of an event, extent of a floruit, or minting of a coin. If appearing before a year without a preceding year, this indicates that it is not possible to add a *tpq*.

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the position of such elite agents relied on ideological, economic, military and political power resources,[2] which may in part be read from the evidence for the flows of material culture in northern Europe.

There is a caveat regarding elite mobility as a proxy for mobility in general, though. In Irish law texts, mobility between the 130 or so *túatha* ("peoples", extendable to mean "minor kingdoms") was theoretically confined to kings acting on behalf of their *túath*, and to the upper classes of ecclesiasts, legal specialists and poets.[3] Additionally, it also encompassed women moving for marriage, with the mobility of elite women clearly visible in the *Banshenchas* texts found in several manuscripts concerned with the mothers of major Irish kings.[4]

8.1.2 Sources

This paper draws upon a range of sources, principally Irish and English annals/chronicles,[5] ranked in order of geographical origin and hierarchy of citation in Table 8.1. Unless a published edition uses section numbers (§X), the standard abbreviation will be used to precede the annalistic date, with square brackets used to indicate a date reconstructed either from the use of a kalends or by comparison to other sets of annals. Convention calls for Old English chronicles to be referred to as ASC/A–F +annalistic year, which is done reluctantly, as they are separate chronicles linked by shared exemplars. Primacy is accorded to the *Annals of Ulster* (AU) for Ireland and the *Winchester Chronicle* (ASC/A) for England. Repeat items in other sets of annals are omitted unless containing novel information, which occurs more frequently after the departure of the exemplars (c. 911 and c. 893, respectively). The focus will mainly be on contemporary/near-contemporary texts, but reluctant use will occasionally be made of retrospective texts, including high-medieval Norwegian and Icelandic sagas and synthetic histories, as well as the narrative-chronicle incorporating saga material known as the *Fragmentary Annals of Ireland* (FAI).

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2 *Mann*, Sources of Social Power 1 (1986).

3 On this large corpus of legal material, see e.g. *Kelly*, Guide to Early Irish Law (1988).

4 The Ban-Shenchus. Ed. *Dobbs*; *Connon*, Prosopography of the Early Queens of Tara.

5 Fully discussed in *Ó Ríagáin*, Familiar Strangers (2024), where such texts are argued as lying on a spectrum between "iterative annals" with information laid down year by year in the original exemplar(s) and "narrative chronicles" written in a small number of writing campaigns. Any division between the two forms is complicated by copying, glossing and continuation; on the intertextual layering in these texts, see *Ó Ríagáin*, Becoming Dál Riata (2024).

Table 8.1: Principal chronicles and sets of annals used in this article, grouped by their likely (modern) country of origin, and ranked in their hierarchy of citation; very few of the conventional names are unproblematic; CCCC = Corpus Christi College Cambridge, TCD = Trinity College Dublin, RIA = Royal Irish Academy, KBR = Royal Library of Belgium, NLW = National Library of Wales, BL = British Library.

Conventional name(s)	Abb.	MS(S)	MS Date	Language(s)	Coverage
Ireland					
Annála Uladh (Annals of Ulster)	AU	Dublin TCD MS 1282; Bodleian MS Rawlinson B.489	15th C	Latin, Old Irish, Middle Irish	AD431–1588
Annals of Inisfallen	AI	Bodleian MS Rawlinson B.503	14th C	Latin, Old Irish, Middle Irish	AD433–1092 to 1390 (cont.)
Annals of Tigernach	AT	Bodleian MS Rawlinson B.488	12th C; 14th C	Latin, Old Irish, Middle Irish	AD489–1178
Chronicon Scotorum (Chronicum Scottorum)	CS	TCD MS 1292	17th C	Latin, Middle Irish, Early Modern Irish	AD353–1150
Annals of Clonmacnoise	AClon	Armagh Robinson MS A; BL MS Add. 4817	17th C; 17th C	Early Modern English (trans.)	Adam–AD1408
Fragmentary Annals of Ireland		KBR MS 5301–5320	17th C	Middle Irish, Early Modern Irish	AD573–919 with lacunae
Annála Rioghachta Éireann (Annals of the Four Masters)	AFM	Dublin RIA MS C iii 3; Dublin UCD MS A13; etc.	17th C	Early Modern Irish	The Flood–AD1616
Frankia					
Annales Regni Francorum (Royal Frankish Annals)	ARF	multiple see Kurze 1895: v–xix	9th C–	Latin	AD741–839
Annales Bertiniani (Annals of Saint-Bertin)	ASB	Saint-Omer MS 706; KBR MS 6439–51 (B); etc.	11th C; 11th C	Latin	AD741–882
Annales Fuldenses (Annals of Fulda)	AF	multiple see Reuter 1992:2–4	10th C–	Latin	AD741–901

Table 8.1 (continued)

Conventional name(s)	Abb.	MS(S)	MS Date	Language(s)	Coverage
England					
Winchester Chronicle	ASC/A	CCCC MS 173	12th C	Old English	60BC–AD1070
Abingdon Chronicle I	ASC/B	British Library Cotton Tiberius A.vi	11th C	Old English	60BC–AD977
Abingdon Chronicle II	ASC/C	BL Cotton Tiberius B.i	12th C	Old English	60BC–AD1066
Worcester Chronicle	ASC/D	BL Cotton Tiberius B.iv	11th C	Old English	60BC–AD1080
Peterborough Chronicle	ASC/E	Bodleian MS Laud 636	12th C	Old English	60BC–AD1154
Canterbury Chronicle	ASC/F	BL Cotton Domitian A.viii	12th C	Old English, Latin	60BC–AD1058
Chronicon Æthelweardi	–	BL Cotton Otho A.x (damaged)	11th C	Latin	Adam–AD975
CCCC.139 Annals	–	CCCC MS 139	12th C	Latin	AD888–957
Historia Regum	HR	CCCC MS 139	12th C	Latin	AD732–1129
Northern Britain					
Chronicle of the Kings of Alba	CKA	Paris BNF MS latin 4126	13–14th C	Latin	c.AD852–995
Man					
Chronica Regum Manniæ et Insularum	CRMI	BL Cotton MS Julius A VII	13th C	Latin	AD1016–1374
Wales					
Annales Cambriae (A)	AC/A	British Library Harleian 3856	12th C	Latin	AD445–954
Brut y Tywysogion	Brut	NLW Peniarth MS 20; Oxford Jesus College MS 111	14th C; 14th C	Middle Welsh	AD662–1332

8.1.3 Nomenclature

In terms of naming, I will be drawing on sources written in Latin, Old and Middle Irish, Old English and Old Norse. I will refer to the actors consistently using one form, in accor-

dance with what is likely to have been their predominant daily language – unless I need to emphasise something. This comes with the caveat that thirteenth-century forms will be used for ninth-/tenth-century Old Norse names (so Óláfr rather than Áleifr or *Anulaibaz). For Irish surnames, lower-case nominative singular *ua* + genitive is used for grandsons, title-case *Ua* + genitive for surnames indicating descent from a more distant ancestor, and the same occurs with *mac* ("son [of]") and *Mac*.[6] Polity names are also quite subjective. For example, the use of Scotland rather than Alba for the principal kingdom in northern Britain is largely unjustified prior to the twelfth century, but so is the use of Alba before the tenth century to refer just to the northern part of Britain rather than all of Britain. Going further, a figure may be *rí* ("[a/the] king") of *Innsi Gall* ("[the] islands of foreigners [i.e. the Scandinavian diaspora]") in Irish sources but be described as *Suðreyjarkonung* ("[a/the] king of the southern islands [Hebrides]") in Icelandic/Norwegian texts, *rex Insularum* ("[a/the] king of [the] islands") in Latin texts, and "king of the Isles" in modern English. The Isle of Man is usually but not always included in these designations, and there may be several kings of this area at the same time.

8.2 Material mobility

It is important to keep in mind that the movement of material culture requires the movement of human agents, even if such movement does not always imply (permanent) migration, and most often occurs along chains of human interaction, rather than moving with a single agent. Similar to the surviving textual evidence, much of the material culture used to assess mobility in the period around 790 to 1310 is also largely associated with the upper social strata. This material can include coins, ingots, bullion jewellery, hacksilver, personal adornments, mounts, strap-ends, bridle fittings, and a range of other forms of repurposed metalwork, all of which are more archaeologically visible than other high-value goods such as salt, textiles and furs. These materials could have moved both directly, with elites being responsible for their (re)distribution within their social pyramids, or indirectly via their sponsorship of systems and loci of exchange. The growing corpus of published research on Scandinavian emporia, such as Ribe in Jutland and Kaupang in Skiringssal in Vestfold,[7] has demonstrated the mediation between local and transregional trade via participation in wider networks. This indicates the importance of thinking in terms of chains of interaction rather than just long-distance voyages.

The appearance of repurposed objects of Insular origin, such as mounts and jewellery, in furnished burials in Scandinavia is one particularly visible material trace of

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6 The nominative plural and genitive singular form is *uí*/*Uí* + genitive, often used for entire lineages, e.g. the Uí Néill, descendants of Niall (Noígíallach), with *meic*/*Meic* the equivalent for *mac* + X names. This is discussed at more length in *Ó Ríagáin*, Becoming Dál Riata (2024), 26–27.

7 See e.g. *Sindbæk*, Northern Emporium (2022/2023); *Skre*, Things from the Town (2009).

mobility in this period.[8] However, this flow seems to have occurred mainly in the ninth century, up until a shift from extractive practices to colonial settlement in Ireland and Britain.[9] It is striking that there are so few hoards of exclusively ninth-century coins in Ireland contemporary to this shift,[10] even in Northern Ireland, where metal-detecting in areas not subject to protection by heritage legislation is legal, unlike in the Republic of Ireland. This shift from raiding to settlement corresponds to the first peak in the flows into Europe of silver *darāhim* from mints controlled by the Abbasid Caliphate,[11] although this peak seems to have been much smaller than the peak in the flow of *darāhim* from Samanid-controlled mints in the tenth century. The number of such coins in Ireland and Britain is low,[12] and it is also comparatively low in Norway. However, the figures are increasing, especially at emporia in Scandinavia, e.g. Kaupang (92 *darāhim*),[13] and camps associated with the various armies active in Britain and Ireland in the period c. 835–900, e.g. Torksey in Lincolnshire (144 fragments of *darāhim*)[14] and Woodstown in Co. Waterford (one fragment).[15] This leaves the question somewhat open as to whether the Scandinavian diaspora in the North Atlantic participated intensely in the networks of exchange that brought hundreds of thousands of coins to the Baltic region. Considering that isotopic work currently being done on silver objects in Scandinavia has demonstrated the almost exclusive use of silver from Abbasid- and Samanid-controlled mints and mines,[16] Insular objects may yet demonstrate a similar signature, even if sources of silver in England or Frankia cannot be ruled out either.

Considering the number of raids and tribute payments reported in Frankia in the 830s and 840s,[17] it is somewhat surprising that the overall number of Carolingian coins known from Scandinavia decreases rather than increases in this period,[18] albeit starting from an already low figure. Among the contents of the Westerklief-1 hoard (1996, deposited c.850), are silver ingots, arm-rings, and 78 coins, all of which would

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8 At least 300 such objects – principally from Norway but also from Sweden and Denmark – are known, but the number of known examples is ever increasing due to metal-detecting activity, see e.g. *Wamers*, Insularer Metallschmuck (1985); *Heen-Pettersen*, Mellom de britiske Øyer og midt-Norge (2013); *Mikkelsen*, Looting or Missioning (2019).

9 This is the topic of my 2022–2024 project at University College Dublin, "Scandinavia's Insular Age", funded by the Irish Research Council.

10 *Dolley*, Fourth Find (1967); see also e.g. *Hall*, Check List (1974); *Sheehan*, Early Viking Age Silver (1998).

11 *Jankowiak*, Dirham Flows (2021).

12 *Horne*, A Viking Market Kingdom (2022).

13 *Kilger*, Kaupang from Afar (2008).

14 *Hadley/Richards*, Torksey (2016).

15 *Russell/Hurley*, Woodstown (2014).

16 *Kershaw* et al., Scale of dirham imports (2021).

17 *Cooijmans*, Monarchs and Hydrarchs (2020).

18 *Coupland*, Raiders (2011); *Coupland*, Frankish Tribute Payments (2000).

seem to have come from Frankia with the exception of a small number of *darāhim*. Considering this content, it may be that some of the groups active in Frankia became self-sustaining by the 840s, with little material flowing back to Scandinavia.[19]

The advent of minting at Dublin, Sigtuna, Lund and Norway occurred around 995.[20] While this may have been a reaction to the fall-off in the supply and quality of Samanid silver from the 960s onwards, it also corresponds to the growing imperial power of the kings of Denmark that would shape eleventh-century Scandinavian and Insular politics. This resulted in a major flow of English coins into Scandinavia and the Baltic, not least due to the tribute payments imposed on Æþelræd and general taxation in the era of Knútr. The latter may be the vector by which early eleventh-century Dublin coins ended up in the eastern Baltic.

Not all material flows were necessarily related to predation, with emulative practices spreading via migration streams also possible. Examples of this include the adoption of ring-headed pins and contemporary Insular forms of penannular brooch both among the Scandinavian diaspora and in Scandinavia itself, where excavated evidence has indicated there a marked shift from imports being buried with women to locally produced examples being buried with men.[21]

8.3 Individual mobility

8.3.1 The worlds of Guðrøðr Óláfsson and Eógan Mac Dubgaill

Before moving onto the three main case studies forming the central focus of this chapter, two high-medieval figures will first be discussed. Due to the survival of a wide range of (near-)contemporary references to their movements, their biographies can frame the range of possibilities for movement potentially open to the three earlier figures, some of which might have occurred in the gaps that appear in the data related to them. Furthermore, Guðrøðr and Eógan's mobility may itself be regarded as the outcome of the processes at work earlier, not least the establishment and development of Scandinavian settler communities in Britain and Ireland. However, it must also be acknowledged that their era was characterised by the increasing and competing authority of kings in Norway, England, Alba and Ireland, which may have necessitated personal visits to these areas to a degree not required in preceding centuries.

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19 Discussed *Coupland*, Raiders (2011), 123–124.

20 *Woods*, Economy and Authority (2013); *Gullbekk*, Norway (2011).

21 *Tsigaridas Glørstad*, Ringspennen og kappen (2010); *Tsigaridas Glørstad*, Sign of the Times (2012); *Pederse*n, Dead Warriors in Living Memory (2014), 132–133. For further examples of transculturation in relation to fashions in personal adornment, see *Kershaw*, Viking Identities (2013).

Guðrøðr Óláfsson – at times king of Man and/or the Isles (ob.CRMI1187) and the great-great-grandson of Óláfr Cúarán – was active in Man, the Hebrides, Norway, England, Orkney, Alba and Ireland. He submitted to Ingi Haraldsson in Norway before returning to Man after the killing of his father, Óláfr Guðrøðarson (CRMI1142–3[=AD1152–3]). He fought in Dublin against the overking Muirchertach Mac Lochlainn (CRMI1144 [=AD1156]), but whether he was among the fleets of *Gall-Gáedil*, Arran, Kintyre, Man and Alba in Muirchertach's naval hosting against Toirdelbach Ua Conchobair remains unclear (AFM1145). As a grandson of Guðrøðr *Cró-Bhán* Ívarsson (ob.AU1095), he had a claim on the kingship of Dublin, in addition to Man and *Innsi Gall*. Óláfr Guðrøðarson had been under the protection of both Magnús *berfœtt* of Norway and Henry I of England, and Guðrøðr kept up these relations with their grandsons, Ingi and Henri II. According to CRMI1102, Guðrøðr's mother was Affreca, daughter of Fergus of Galloway, and his sister was married to Somhairle/Sumarliði of Argyll. The marriage of Ingibjǫrg, daughter of Jarl Hákon Pálsson of Orkney, to Óláfr *Suðureyjakonungr* is attested in an interpolated genealogy in the B-text of *Fagrskinna*.[22] It is worth noting that Guðrøðr was declared king by the *principes* of the Isles on arriving in Orkney from Norway (CRMI1143[=AD1153]), rather than in the Hebrides where these *principes* were based.

Guðrøðr was forced into a partition of *Innsi Gall* (CRMI1156) before being ousted completely from Man by an alliance of his rivals in *Innsi Gall* and Dublin: Somhairle/Sumarliði, Dubgall Sumarliðarson, and Þórfinnr Óttarsson, which led him to flee to Norway (CRMI1158). En route to Norway, he was given armour by Henry II of England and was declared as in Henry's pay.[23] Back in Norway, Guðrøðr *Suðreyjakonungr* is reported as having abandoned Ingi in favour of Hákon Sigurðarson, resulting in the death of Ingi on the ice near Oslo in February 1161.[24] After the death of Somhairle, Guðrøðr returned from Norway and re-established his rule on Man by blinding his brother Rǫgnvaldr Óláfsson, who had seized the kingship the same year (CRMI1164). There is evidence of further finances from Henry II in AD1165,[25] and, at some point, Guðrøðr married a granddaughter of Muirchertach Mac Lochlainn (CRMI1176[=AD1177]). Guðrøðr may also have taken part in – or at least supported – the failed AD1171 attack on Dublin led by another Irish overking, Ruaidhrí Ua Conchobair.[26]

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22 Fagrskinna. Ed. *Finlay*, 302.

23 Given armour by Henry II in 1158, RLPTL (Patent Roll Tower of London) 4 Henry II; in pay of king, 1158, RLPTL 4 Henry II; in: CDRS-1. Ed. *Bain*, 9 §56, §60.

24 Hákonar saga §17. Ed. *Vigfusson*, where he fled the battle after signalling to Hákon's men.

25 Liberate mentioned in Pipe Roll Tower of London 11 Henry II roll 3, in CDRS-1. Ed. *Bain*, 13 § 102.

26 This support is only mentioned in Expugnatio Hibernica. Ed. *Scott/Martin*. Vol. 1, §21; cf. AU1171, AT[1171], AFM1171; that he was an ally of Ruaidhrí here might indicate that it may have been another faction from Man that took part in Muirchertach's hosting against Ruaidhrí's father Toirdelbach; it may also be regarded as unusual that Guðrøðr would oppose Henry II, having been supported by Henry in the previous two decades, but of course alliances can always shift.

Eógan son of Donnchad son of Dubgall was similarly caught up in the political elimination process characterised by the competing imperial projects of Scottish, English, Irish, and Norwegian kings. Eógan's grandfather Dubgall's mother was the sister of Guðrøðr Óláfsson (CRMI1098[=AD1102–1103]). Like Guðrøðr, Eógan went to England and Norway to obtain the support of their respective kings. Unlike Guðrøðr, part of Eógan's core territory, Argyll, was in the kingdom of Alba, and there is no surviving evidence that Eógan was ever active in Ireland.

Eógan's mobility is perhaps best indicated in the range of names applied to him across several sources: he is *Eugenius miles filius Duncani* in his own charters;[27] *Oenus de Argæthel* in Matthew Paris;[28] *Jón Dungaðarson, konungr av Suðreyjar* in Hákonar saga Hákonarsonar;[29] *Johannes filius Dungaldi, rex Insularum* (CRM1250[=AD1248×1250]); *Evynus filius Duncani* in a Scottish inquisition post mortem;[30] and *Eugenius de Ergadia* in a series of English letters patent of Henry III,[31] as well as in his last ever appearance in a Scottish ecclesiastical charter.[32]

Eógan and his paternal second-cousin Dubgall mac Ruaidhrí went to Hákon Hákonarson of Norway in 1248 to petition to each be made king of the northern part of the Hebrides ("yfir nyðra hlut Suðreyja"): it was granted to Eógan and Dubgall remained with Hákon.[33] This was shortly before the death of Eógan's third cousin Haraldr Óláfsson, king of Man and the Outer Hebrides and grandson of Guðrøðr Óláfsson, who was also in Norway at the time and married to Hákon's daughter, so it could refer to the northern portion of the southern Hebrides.

Having left Norway, Eógan invaded Man proclaiming himself king of the Isles, having been sent by Hákon following the drowning at sea of Haraldr, but was expelled.[34] Afterwards, Eógan seems to have met Alexander II of Scotland under the protection of four earls, but would not give up four castles that he held of Hákon, according to *Hákonar saga*.[35] Presumably, these were the maritime Cairnburgh, Dùn Chonaill, Aros and Duart, rather than Dunstaffnage, Achanduin or Castle Coeffin in the core Meic Dubgaill ancestral holding of Lorn and held of the kings of Scotland. Eógan fled to Lewis and Alexander II invaded Argyll before falling ill and dying on

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27 22 May 1240 grant to Lismore. Ed. *Duncan/Brown*, 219 §4. Calendared in People of Medieval Scotland: 1093 –1371 [PoMS] Document 3/33/1, poms.ac.uk/record/source/2747/# (accessed 06.01.2025).

28 Matthew Paris, Chronica Maiora. Ed. *Luard*. Vol. 5, 88–89 s.a. 1249. See *Duncan/Brown*, Argyll (1957), 208–209.

29 Sturla Þórðarson, Hakonar Saga. Ed. *Vigfusson*, 144 §168, 255 §259, 256–257 §260.

30 CDRS-4. Ed. *Bain,* 385–386 §2.

31 21 and 23 September RLPTL 39 Henry III m. 3[×2] and m. 8 in cedula, CDRS-1. Ed. *Bain*, 387–388 §2014, §§2017–2018.

32 Charters of Inchaffray. Ed. *Lindsay/Dowden/Thomson*, 201–203 §96; Earls of Strathearn. Ed. *Neville*, vol. 2, 98–100 §53.

33 Sturla Þórðarson, Hákonar saga. Ed. *Vigfusson*, 255–257 §§259–60.

34 CRMI1250[=AD1249]; Sturla Þórðarson, Hákonar saga. Ed. *Vigfusson,* 259 §264.

35 Sturla Þórðarson, Hákonar saga. Ed. *Vigfusson,* 259–261 §265.

Kerrera in 1249.[36] Eógan of Argyll was taken into Henry III of England's protection in 1255 and subsequently reinstated.[37]

8.3.2 Óláfr of Hlaðir

Overview

Table 8.2: Actions and locations attributable to Óláfr of Laithlinn.

Óláfr, active 853–c.873×878; son of king of Laithlinn				
Event	**No.**	**Location**	**Movement**	**References**
Born	0	Laithlinn?		none
Arrived in Ireland, submission of *Gaill* to him, tribute taken from Irish	1	Ireland	Laithlinn to Ireland	AU853, CS[853]
Four-year gap				
Allied with Ívarr and defeated the *Gall-Goídil* and Caittil or Cathal Find (Cenél Fiachach)	2	Mumu	unknown to Ireland	AU857, CS[857]
Allied with Ívarr and Cerball of Osraige and defeated *Gall-Goídil* and Cenél Fiachach in Ara-Tíre (north Mumu)	3	Ara-Tíre, Mumu	within Ireland	CS[858]
Invaded Mide with Ívarr and Cerball of Osraige	4	Mide	within Ireland	AU859
Four-year gap				
Plundered Brega with Ívarr and Auisle, and Lorcán son of Cathal of Mide	5	Brega	within Ireland	AU863
Drowned Conchobar of Mide at Clonard	6	Clonard, Mide	within Ireland	AU864, CS[864]
Plundered Fortriu and Alba with Auisle (= Ásgísl)	7	Alba	Ireland to Alba	AU866, CKA [AD864–5]
Ásgísl killed by *fratres* and/or in parricide (Óláfr? Ívarr?)	8	unknown	Alba? Ireland?	AU867

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36 CRMI1249; CMel1249; Chronica de Mailros. Ed. *Stevenson*, 177–178; *Duncan/Brown*, Argyll (1957), 217–218; *Brown*, Wars of Scotland (2004), 80–81; *Woolf*, From Pictland to Alba (2007), 84–85.
37 21 and 23 September RLPTL 39 Henry III m. 3[×2] and m. 8 in cedula, CDRS-1. Ed. *Bain*, 387–388 §2014, §§2017–2018.

Table 8.2 (continued)

Event	No.	Location	Movement	References
Óláfr, active 853–c.873×878; son of king of Laithlinn				
Óláfr's *dún* at Clondalkin burned by Cennétig son of Gaítíne of the Loígse	9	Clondalkin, Dublin	absent	AU867
Committed treachery against Lismore, Co. Waterford, liberation of Martán from him	10	Déisi, Mumu	Alba to Ireland or within Ireland	AI[867]
Plundered Armagh	11	Armagh, Airgíalla	Alba to Ireland or within Ireland	AU869, CS[869]
Laid siege to Alt Clut for four months with Ívarr, plundered afterwards	12	Alt Clut	Alt Clut	AU870, AC/A870, Brut870
Brought large number of Angles, Britons and Picts as captives back from Alba with Ívarr	13	Alt Clut and Dublin	Alba and Alt Clut to Ireland	AU871, CS[871]
Killed in Alba by Causantín while taking tribute	14	Alba	Ireland to Alba	CKA[AD873×878]

Interpreting Óláfr's movements

As can be seen in Table 8.2, at least fourteen events can be directly associated with Óláfr, thirteen of which involve movement of some sort and the other occurring at Clondalkin while he was elsewhere. His main reported spheres of activity are in the Irish kingdoms of Mumu, Mide, Brega, Laigin, In Fochla and Airgíalla, and the northern British kingdoms of Alt Clut and *Fortriu.[38] This may be a reflection of the partiality of the surviving sources, but, even so, the evidence does indicate that his activities for most of his reported career were in Ireland, with a shift of focus in northern Britain occurring in the later 860s. There is nothing to indicate that he took part in the composite army—or armies?—active in England in the 860s and 870s, even if one of his principal allies, Ívarr, does seem to have been one of the leaders of that army.

The gaps in his reported activities are potentially instructive, with the caveat that general references to activities by *Gaill* ("foreigners") or *Gennti* ("gentiles") in Ireland may have involved Óláfr without his actually being named. Furthermore, annals tend to report what the author–compiler thought were the major events of the year of which they were informed; this may mean that Óláfr was involved in events regarded as "minor" or perhaps not interesting enough to warrant reporting, or of which the annalist was simply unaware.

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38 This is a reconstructed nominative, hence the asterisk.

The biggest such gap relates to what Óláfr may have done between being born and arriving in Ireland. Where he was born is unknowable, but it is likely that he spent some of his life in his father's kingdom, referred to as Laithlind in Irish sources. As will be discussed presently, there is circumstantial evidence that places Óláfr in West Frankia either before or after arriving in Ireland. This brings us to the second gap, between his arrival in Ireland in 853 and the events related to his alliance with another Scandinavian, Ívarr, against the Mide kings Máel Sechnaill (Clann Colmáin) and Cathal Find (Cenél Fiachach) and their allies the *Gall-Goídil* ("foreign Gaels", i.e. Gaels from outside Ireland, most likely displaced by the establishment of a settler community in the Hebrides).[39] The third gap may be related to the nature of how events were reported, as many of the actions of the Scandinavian settler community in Ireland in the early 860s are consistent with Óláfr's actions before and after this gap (859–863). However, he may also have been absent from Ireland and Britain in this period. Without recourse to Scottish (or northern English?) sources, the gap between Óláfr's return to Dublin from northern Britain in 871 and his death in the mid-870s would be somewhat puzzling, and indeed it has prompted much speculation in Ireland from as early as the eleventh century.

Origins and arrival in Ireland

Plugging some of these gaps might help us more fully understand Óláfr's mobility and its ramifications. AU853 describes "Aṁlaip m*ac* riġ Laiṫlinde" as coming to Ireland,[40] taking the submission of the *Gaill Érenn* ("foreigners of Ireland") and tribute from the *Goídil* ("Gaels").[41] Discounting late and unreliable material in FAI, this Óláfr, son of the king of "Laithlind",[42] is the seventh figure from Scandinavia to be named in surviving Irish annals likely to have been recorded contemporarily, and the second to be given a point of origin (Table 8.3). Jarl Þórir's familial relationship to Óláfr is unknowable,[43] but it is striking that two elite figures from the same place were named as involved in events in Ireland. There is no contemporary evidence linking the other early figures to Óláfr or to each other, or indeed to the next two leaders to be named in Irish sources: Ívarr (first ref. AU857) and Ásgísl (first ref. AU863), both of whom

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39 *Macniven*, Vikings in Islay (2015), 107, 114. For an overview of the dynamic usage of the term, see *Clancy*, The Gall-Ghàidheil and Galloway (2008).

40 Italics within a quotation from a primary source indicate editorial expansions. Outside a quotation, they are used to indicate words or phrases found in a primary source where the grammar has been adjusted to accord with the syntax of the sentence in which they appear.

41 Transcribing exactly, TCD MS 1282 fol. 42r has "Aṁlaī ¹ ᵖ m̄ riġ laiṫliðe", whereas Rawlinson B.489 fol. 24r has "Aṁlaip m̄c riġ laiṫliñe".

42 The forms Laithlinn and Laithlind can be regarded as interchangeable, similar to "nn" versus "nd" in Old Irish in general. The form "Lothlinn" is perhaps more difficult to explain away.

43 Contra e.g. *Valante*, Family Relics (2013), 103, 105, who has Þórir as the son of the king of Laithlinn.

were allies of Óláfr's, with later traditions claiming that the three were brothers (FAI §347).

The location of Laithlinn has attracted much debate from as early as the eleventh century.[44] It appears four times in surviving texts: twice in AU848 and AU853, once in a poem of unknown date attached to AFM864, and in a poem preserved in the top margin of St Gallen Stiftsbibliothek MS 904 p. 112 (composed in 850/1) that portrays the scribe's relief that a storm meant that he would not be in danger from the "láechraid lain óa Lothlind" ("fierce warriors from Lothlind").[45] Uses of Laithlinn were hypercorrected to Middle Irish "Lochlann" in the sets of annals descended from the *Clonmacnoise Chronicle*,[46] either due to the correction being in that exemplar, or the later scribes making the change. Laithlinn and Lochlann are not direct equivalents.[47] AT[1058] might possibly be the earliest surviving contemporary usage of Lochlann as a specific toponym,[48] possibly as a borrowing of "Rogaland",[49] though it may also have been a mythological term retrofitted as the homeland of the Scandinavian diaspora.[50] Lochlann was certainly in use as a personal name in the tenth century, e.g. Lochland son of Máel Sechnaill (ob.AI[983]).

Laithlinn would seem to combine Old Irish *lind* or *linn* ("pool or body of water") with a specific derived from Old Norse, most probably a nominalisation of *hlaða* ("to load") and thus most likely refers to Hlaðir (now "Lade"), and hence to the area associated with the Þrœndar around Trondheimsfjorden.[51] The jarls of Hlaðir are accorded a prominent role in sagas and synoptic histories composed in Iceland and Norway several centuries later, and it is important to note that Adam of Bremen credits Jarl Hákon as the first ruler over all of Norway.[52] Furthermore, the west coast of Norway has the highest density of material culture of Insular origin found repurposed as personal adornments,[53] which hints at significant early entanglements.

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44 Summarised in *Ó Ríagáin*, Colonialism, Continuity and Change (2020), 471–473.

45 On the dating of the manuscript: *Ó Néill*, Irish observance (2000), where the date of completion of 851 is proposed based on the day that Easter fell that year, with several glosses throughout indicating that it was worked on over winter and spring 850/1.

46 *Grabowski/Dumville*, Chronicles and Annals (1984).

47 *Kruse*, Laithlind (2015); *Kruse*, The Norway to Be (2017).

48 In Modern Irish it is the term for Scandinavia, with *Lochlannaigh* used similarly to English "Viking".

49 Via *Rochlann and *Rochland, *Marstrander*, Lochlann (1911); *Marstrander*, Bidrag (1915), 56–58.

50 *Ní Mhaonaigh*, Literary Lochlann (2006); *Kruse*, The Norway to Be (2017), 205–208.

51 As proposed by *Egon Wamers*, Insular Finds (1998), 19; see also *Etchingham*, Location of Historical Laithlinn (2007), 28.

52 As pointed out by *Gazzoli*, Hákon Jarl (2019).

53 See e.g. *Wamers*, Insularer Metallschmuck (1985), 198.

Table 8.3: Scandinavian leaders named in Irish annals between the 830s and 850s; superscript [F] used to indicate that an item is likely to be fictional.

Figure	Floruit	Position	Deeds	References
Saxulfr (Saxolb)	×837	*toísech* (leader of) the *Gaill*	killed by the Ciannachta	AU837, CS[837]
Þórgísl (Tuirgéis)	×845	(leader of) *Gaill* of Lough Ree	(killing of Tolarg, lord of Fella by *Gaill* of Lough Ree; establishment *dúnad* on Lough Ree by Tuirgéis, followed by plundering of Connacht and Mide, Clonmacnoise, Clonfert, Terryglass and Lorrha raided; capture of Tuirgéis by Máel Sechnaill, who drowned him in Lough Owel	CS[844] AU845, CS[845], AClon842, AFM843; AU845
Hákon (Agonn)	×847	(a leader of) *Gaill* of Dublin	defeat of Agonn by Cerball mac Dunlainge (Osraige), with 1200 killed, AFM has this as defeat of *Gaill Átha Cliath*	AU847, CS[847], AFM845
Þórir	×848	jarl and *tánaise* (second/ deputy to) *rí Laithlinne*	killed with 200 at battle of Sciath Nechtain (Laigin) against Ólchobar (Mumu) and Lorcán mac Cellaig (Laigin)	AU848, AI[848], CS[848], AClon847, AFM846
Rauðúlfr (Rodolb)	×855	(leader of) Lochlannaig	led armies into Osraige, defeated (probably fictional)[F]	FAI §249
Ormr	851×856	*toísech* of the *Dubgaill* or *Dubgennti*	allied with Osraige against *Lochlannaig*;[F] allied with Osraige and Mumu against *Lochlannaig*, guest at Tara with Cerball;[F] killed by Rhodri son of Mervfn, king of Gwynedd	FAI §251; FAI §254; AU856
Sveinn or Hásteinn (Stain)	×852	(leader of) *Finngennti*	took flight from *Dubgennti* at Carlingford after attacking with 160 ships	AU852
Jarnkné (Iercne)	×852	(leader of) *Finngennti*	beheaded by *Dubgennti* at Carlingford after attacking with 160 ships	AU852
Óláfr (Aṁlaiṗ)	853×875		Table 8.2	

Early years in Ireland

It is difficult to determine what brought Óláfr to Ireland and where he arrived from. Revenge for the killing of Jarl Þórir may have been one motivation or, alternatively, an attempt to (re)assert Laithlinn leadership over the Scandinavian groups active in

Ireland.[54] The arrival of 140 ships of the *muinntir ríg Gall* ("people/adherents/supporters of (the) king of foreigners") to impose the obedience of the *Gaill* already in Ireland (AU849) may have been an action taken by Laithlinn, but it may also have been one of a number of other kings in Scandinavia, or a Scandinavian group active in Frankia or Frisia. It is usually presumed that Óláfr was acting in Ireland on behalf of his father in 853. However, arriving in Ireland with a large force may also have been the action of a loser in a succession dispute, similar to Haraldr *klakk* Hálfdanarson after failing to establish himself as a king of Danes a generation earlier (ARF823; ARF827; AF852). For all we know, Óláfr may already have been active elsewhere after leaving Laithlinn but before arriving in Ireland. Very little evidence survives as to what his relationship was to Laithlinn after 853, and it does not seem as though he used the wealth amassed in Ireland and northern Britain as a springboard to succeed his father. Of course, it may be that his father and family had also been ousted from Laithlinn prior to 853.

Óláfr in Frankia?

Óláfr had two sons that we know of and was married at least twice after arriving in Ireland. "Oistin" (Eysteinn or Hásteinn), was killed in an unstated location as *rex Nordmannorum* by Hálfdanr (AU875) during the infighting after the deaths of Óláfr (CKA, 873×875) and Hálfdanr's probable brother, Ívarr (AU873). According to AFM866[=AD868], Carlus Óláfsson was killed in a major battle in Ireland between an alliance of the kings of the Cenél nEógain and Connacht against the Laigin, *Gaill* and men of Brega. Carlus is not named in any other account of the battle (e.g. AU868), but all accounts have the *Gaill* involved. It is worth noting that "fail Tomair 7 claidim Carlusa" ("[the] ring of Þórir and [the] sword of Carlus"), seized by Máel Sechnaill of Clann Colmáin (AT[995]), seem to have been important insignia to the rulers of Dublin in the late tenth century.[55] The sword of Carlus was subsequently part of the ransom for securing the release of Óláfr Sigtryggsson after being captured by Mathgamán ua Riacáin, king of Brega (AU1029), and it was handed over to Diarmait mac Máel-na-mBó of Laigin as part of a fine for Conchbar ua Máel-Sechnaill killing Gallbrat ua Cerbaill (CS[1058]). It may also have been the "sword of the son of the jarl/earl" (AU1165) that was among the treasures given to Muirchertach Ua Lochlainn of the Cenél nEógain in return for the kingship of the Ulaid.

It is likely that the sword was associated with the same Carlus for whom Óláfr's son was named, which would seem to have been either Charlemagne or Charles the Bald. The sword may have been a gift to cement an alliance, with the son potentially named to commemorate this, even if the possibility that Carlus Óláfsson had a Frankish mother cannot be ruled out. Óláfr or his father may have been among the "poach-

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54 *Ashman Rowe*, Vikings in the West (2012), 122–123.

55 For an overview of the debate, see *Valante*, Family Relics (2013).

ers turned gamekeepers" deployed by ninth-century Frankish rulers to shield their kingdoms from viking incursions, with varying levels of success.[56]

With this in mind, it is important consider one of the few hoards of exclusively ninth-century coins in Ireland. The small group of coins reported from Mullaghboden House near Ballymore Eustace in Co. Kildare all seem to be from Aquitaine in the 830s and 840s, leading to a proposition that the coins were deposited there by the *Vestfoldingar* noted as having captured Nantes in 843.[57] However, there is nothing in the sources to indicate that the *Vestfoldingar* were the only group raiding or settling in Aquitaine and Brittany in this period, aside from Charles the Bald's own campaign there in 843 (ASB843). Cooijmans outlines how multiple distinct groups were active between Aquitaine and Frisia in the 840s and 850s.[58] Even if the Mullaghboden depositor had taken part in a Vestfold-led campaign, their allegiance may have shifted to another group later that decade, or the packet of coins may have changed hands intact between Frankia and Ireland, with the possibility that some or all of the Vestfold group took part in a campaign led by another group. Another option is that the coins (and the sword?) were brought back by the emissaries of the unnamed Irish king congratulated by Charles the Bald for his victories over Scandinavians in 848 (ASB848). Considering the centuries of trade between Ireland and Aquitaine indicated by E-ware pottery[59] and hagiographical evidence, the coins may also have moved through trade networks to arrive in Ireland.

This is important to consider to avoid the coin evidence being used to support the identification of Óláfr of Hlaðir as the Óláf *inn hvíti* of Oppland or Vestfold supposedly active in Ireland and northern Britain, who appears in e.g. *Íslendingabók, Landnámabók* and *Ynglinga Saga*.[60] Smyth proposes that many of the achievements assigned to Haraldr *hárfagri* son of Hálfdanr *svarti* ("the black") by twelfth- and thirteenth-century authors – not least subduing pirates in Orkney and imposing his overlordship on the settler communities in northern Britain – were originally those of

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56 *Coupland*, From Poachers to Gamekeepers (1998).

57 *Dolley*, 1871 Viking-Age Find (1961); *Dolley*, A Fourth Find (1967), 32–35; see Annales Engolismenses. Ed. *Pertz*, 486; cf. Annales Bertiniari. Ed. *Waitz*, 29; Annals of St-Bertin. Ed. *Nelson*, 55–56, where the attack on Nantes by "pyratae Nordmandorum", who went on to devastate western Aquitaine and take up residence on a "certain island" that may have been Noirmoutier, L'Île de Ré or another island in the *archipel charantais*.

58 E.g. *Cooijmans*, Monarchs and Hydrarchs (2020), 124–125.

59 Admittedly, this trade network seems to have declined after the ousting of the Umayyad by the Abbasid from southwest Asia, which seems to have altered the long-standing links between the Mediterranean and Atlantic Arc systems of exchange, but it had hardly been forgotten completely; on the material evidence, see *Campbell*, Continental and Mediterranean (2007), 199; *Duggan*, Links to Late Antiquity (2018); for textual evidence, see the Frankish merchants in Argyll in *Adomnán,* Life of Columba (1961). Ed. *Anderson/Ogilvie*.

60 Íslendingabók, Landnámabók. Ed. *Benediktsson*, 28, 136–137.

Óláfr.[61] However, it is important to note that Hálfdanr the *Dubgall* ("black foreigner") was also active in northern Britain in the 860s and 870s, which might be an alternative source for these activities (re)assigned to Haraldr.

8.3.3 Óláfr Cúarán Sigtryggsson

Overview

Table 8.4: Actions and locations attributable to Óláfr Cúarán Sigtryggsson.

Óláfr Cúarán Sigtryggsson 927×981				
Event	No.	Location	Movement	References
Born	0	Ireland or England or northern Britain?		none
Death of father, Sigtryggr Cáech	0	York	York	AU927, CS[927], ASC/D926[=AD927]
Fought at Brunanburh?	1	Brunanburh, England	Dublin to Brunanburh	none
Made king in Dublin?	2	Dublin	unknown to Dublin	none
Went to York, replaced by Blákári Guðrøðarson in Dublin	3	York	Dublin to York	AClon933[=AD940], AFM938[=AD940]
Allied with Causantín of Alba and king of Britons, defeated by Edmund, king of Saxons	4			AFM938[=AD940]
Made king of Northumbria	5	York	York	ASC/D941, Historia Regum
Raided Tamworth, captured Wulfstan the bishop	6	Tamworth	York to Tamworth	ASC/D943
Captured by Edmund and baptised	7			ASC/A–D943
Driven out from kingdom by Northumbrians and Edmund	8	York	York to unknown	ASC/A, E944, Historia Regum
Replaced Blákári Guðrøðarson in Dublin	9	Dublin	unknown to Dublin	AU945

61 *Smyth*, Scandinavian Kings (1977), 142–154.

Table 8.4 (continued)

Óláfr Cúarán Sigtryggsson 927×981

Event	No.	Location	Movement	References
Killed group of Ua Canannáin's followers, allied with Congalach of Brega	10	Brega	Dublin to Brega	AU945
Returned to Northumbria, as King of York	11	York	Dublin to York	ASC/E949, AClon946[=AD949]
Driven out by Northumbrians, replaced by Eiríkr Haraldsson	12	York	York to unknown	ASC/E952
Plundered Inis Doimle and/or Inis Ulad in alliance with Tuathal son of Ugaire (Laigin)	13a	Great Island, near Waterford	unknown to Great Island	AFM951[=AD953]
Plundered Inis Doimle and/or Inis Ulad in alliance with Tuathal son of Ugaire (Laigin)	13b	Little Island, near Waterford	Great Island to Little Island	AFM951[=AD953]

Nine-year gap

In alliance with Laigin, defeated Sigtryggr *Cam* Óláfsson at Uí Colgaín (Lusk), wounded by arrow through thigh	14	Lusk	unknown to Lusk	AFM960[=AD962]
Plundered Kildare with *Gaill Átha Cliath*	15	Kildare	Dublin to Kildare	CS[964]
Defeated by Osraige at Inis Téoc	16	Inistioge, Co. Kilkenny	Dublin to Inistioge	AFM962[=AD964]

Three-year gap

Killed Muiredach mac Faeláin, abbot of Kildare and rígdomna Laigen, acting with Cerball son of Lorcán	17	Kildare	Dublin to Kildare	AFM965[=AD967]

Three-year gap

Plundered Kells with Laigin	18	Kells	Dublin to Kells	AU970
Won Battle of Cell Móna in alliance with Brega against Domnall Ua Néill, Ulaid, Airgíalla and Conaille	19	Kilmona, Co. Westmeath, or Kilmooney, Co. Meath	Dublin to Cell Móna	AU970

Seven-year gap

Killed Muirchertach son of Domnall Ua Néill and Congalach son of Domnall	20	Not stated, possibly Dublin	not stated	AU977

Table 8.4 (continued)

Ólafr Cúarán Sigtryggsson 927×981				
Event	No.	Location	Movement	References
Defeated along with *Gaill* of Dublin and Isles at Battle of Tara by Máel Sechnaill, son Rǫgnvaldr and Conamal son of a minor king of *Gaill* killed	21	Tara	Dublin to Tara	AU980, AT[980], CS[980]
Siege of Dublin by Máel Sechnaill, the Ulaid, huge tribute imposed on Dublin	22	Dublin	Tara to Dublin	AT[980], CS[980]; AT[980]
Went on pilgrimage to Iona and died there	23	Iona, Hebrides	Dublin to Iona	AT[981]

Interpreting Ólafr Cúarán's movements

Ólafr son of Sigtryggr *Cáech* was at different times king of the Scandinavian diasporic communities in Dublin and York, and Woolf proposes that he may even have attempted to establish himself as the main overking in Ireland towards the end of his career,[62] having played kingmaker for several decades prior to this. His byname Ólafr *Cúarán* ("[the] shoe/sock/sandal") is rendered *kváran* in Old Norse, e.g. *Ólafs saga Tryggvasonar*,[63] and *cwiran* in Old English (ASC/E949), which indicates that this Irish epithet was regarded by all the associated speech communities as part of his name. A blow-by-blow account of his career would warrant a long article in its own right, and this has been done elsewhere.[64] As demonstrated in Table 8.4, there are two three-year gaps and one nine-year gap in his biography, not including the gap between his birth and emergence in the documentary record. The three-year gaps are most likely a reflection of the source material, with Irish annals attributing several events in both to the *Gaill Átha Cliath* ("[the] foreigners of Dublin") without specifically naming Ólafr but implying his leadership. The longer gap is more difficult to explain and will be discussed in more detail below.

Ólafr may have been born anywhere across his father's sphere of activity, and presumably his youth was spent in York, Dublin or Alba. His brothers Sigfrøðr and Ásgísl were killed at Brunanburh (AClon931[=AD937]; cf. AFM935.17[=AD937]), but whether Ólafr and his brother Haraldr (killed as king of the *Gaill* of Limerick, CS[940]) were among the allies of Ólafr Guðrøðarson and Causantín mac Aéda is unknowable. Ólafr Cúarán left Dublin for York, with Blákari Guðrøðarson arriving in Dublin (AFM938

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62 *Woolf*, Amlaíb Cuarán (2002).
63 It appears there in the genitive phrase "systir Ólafs kvárans" and in a dative phrase "með Ólafi konungi kváran", Snorri Sturluson, Heimskringla 3. Ed. *Jónsson*, 312.
64 *Woolf*, Amlaíb Cuarán (2002).

[=AD940]), followed by a defeat in alliance with Causantín and Strathclyde against an un-named king of Saxons (AFM938[=AD940]). Óláfr may well have been in Alba en route to his election in York after the killing of Óláfr Guðrøðarson while fighting the Eadwulfings in Bernicia (ASC/D941; CCCC.139 s.a. 941). After Óláfr had lost York to Eadmund (ASC/A944; cf. CCCC.139 s.a. 945) and the killing of Rǫgnvaldr Guðrøðarson (AClon937[=944×945]), Eadmund's attack on Cumbria (ASC/A–F945) may have targeted Óláfr and his allies, prior to Óláfr displacing Blákari, seemingly with the help of Congalach of Brega and Bráen Finn of Laigin (AU945; cf. AClon937[=AD945]); AFM943 [=AD945].[65] This alliance was cemented by the marriage of Ragnailt daughter of Óláfr to an unnamed son of Congalach, and of Óláfr to a grand-daughter of Bráen.[66] Indeed, Óláfr was instrumental in Congalach becoming king of Tara (nominal overking of the northern half of Ireland). The heavy defeat of Congalach and Óláfr by Ruaidrí Ua Cannanáin at Slane (AU947) seems to have resulted in Óláfr losing the leadership of the *Gaill Átha Cliath*.[67] Blákari was subsequently killed by Congalach (AU948), with Óláfr returning to Northumbria after the expulsion of his probable nephew Eiríkr Haraldsson (ASC/D948)[68] and the death of Eadmund of Wessex (CCCC.139 s.a. 948). Óláfr was displaced in York by Eiríkr (ASC/E952), the same year as men of Alba, the (Strathclyde?) Britons and (Bernician?) Saxons were defeated by undescribed *Gaill* after the death of Causantín mac Aéda (AU952). Considering Eiríkr had a marriage alliance with Strathclyde, having probably married a daughter or relative of Dyfnall,[69] it was most likely directed against Óláfr. This might place Óláfr in northern Britain after losing York. Meanwhile, Máel Coluim mac Domnaill, Causantín's rival and ally of Eadmund, was killed (AU954) seemingly at the behest of Illulb son of Causantín (ob.CS[962]), whose own son Amlaíb (Óláfr) was later killed by Cináed son of Máel Coluim (AU977).

The attack on the Waterford area in alliance with the Laigin (AFM951[=AD953]) is the only event in the Irish annals attributable to Óláfr between losing York and the battle in alliance with the Laigin against Sigtryggr *Cam* son of Óláfr Guðrøðarson (AFM960[=AD962]). This Sigtryggr seems to have been based on Anglesey, but had attacked Ireland with Hebridean allies (AFM960[=AD962]). However, there are only a handful of references in Irish sources to the activities of the Scandinavian settler community in Ireland during this period. Leadership of the Dublin community was held by a variety of other figures in these years, each with different alliances and motiva-

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65 As proposed by, e.g., *Woolf*, Amlaíb Cuarán (2002), 38–39.

66 The Ban-Shenchus. Ed. *Dobbs*, Ban-Shenchus (1931), 227.

67 Suggested by *Woolf*, Amlaíb Cuarán (2002), 38–39.

68 On Eiríkr's identity, *Downham*, Eric Bloodaxe-axed (2004); *Downham*, Viking Kings (2007), 115–120; *Woolf*, From Pictland to Alba (2007), 190; contra the view that he was a son of the mythical Haraldr hárfagri; *Driscoll,* Ágrip (1929), 4–5 §2; also *Smyth*, Scandinavian York and Dublin (1979), 176, among a very long list.

69 Proposed by *Woolf*, From Pictland to Alba (2007), 190, based on the evidence of the (probably tenth-century) Vita de S. Cadroe Abbate Metis in: Acta sanctorum. Ed. *Bolland*, 476.

tions to Óláfr. Guðrøðr Sigtryggson seems to have led Dublin in an alliance with Congalach of Brega against his main rival Ruaidhrí Ua Canannáin (AU950; CS[950]; AFM948[=AD950]), but churches in Brega were attacked by Dublin (AU950), and again by a Dublin force led by Guðrøðr Sigtryggsson (AU951), before a plague hit Dublin (AU951). Óláfr Cúarán's ally Congalach of Brega was killed by Óláfr Guðrøðarson (AFM954[=AD956]; cf. AU956, where it is *Gaill Átha Cliath*).

Very little information is available for Alba in this period, and Óláfr may well have been active there in the 950s, apart from what may have been a failed attempt to control Waterford in 953. For the remainder of the gap in the 950s, Lewis raises the possibility that the group attacking Brittany and Nantes in the late 950s may have come from northern England.[70] Óláfr or Sigtryggr *Cam* may have been part of this group, before splitting from it to focus on Ireland from 960 onwards. They may not have been the first descendants of Ívarr to have done so, as the Sigtryggr killed by Louis d'Outremer in 943 may have been the same Sigtryggr minting coins in York around 942 of similar style to those of Óláfr Cúarán and Rǫgnvaldr Guðrøðarson.[71] Six coins found at Mont-Saint-Michel in Normandy provide further indication of mobility between Northumbria and what would later become Normandy, including a penny minted on behalf of Óláfr Cúarán in the early 940s.[72] This evidence may not be substantial enough to place Óláfr in Brittany, Aquitaine and the Contentin in the 950s, but it does hint at the range of opportunities still available to mobile, well-informed members of the Scandinavian diaspora, able to exploit political crises for their benefit.

The gap can be shortened by recourse to other sources: the *Ríg Uisnig* ("kings of Uisnech [i.e., of Mide]") synchronism has the killing of Carlus son of Conn son of Donnchad in Dublin (AU960), by Northmen (AFM958[=AD960]), carried out by Murchad Find of Laigin and Óláfr Cuarán.[73] In between, Óláfr was either no longer important enough to appear in Irish annals or was simply active elsewhere. Even in the 960s, only four events are directly attributed to Óláfr, even if it might be inferred that he led the Dublin community in this period. This continued into the 970s, with Óláfr not referred to directly between 970 and 977, while the Dublin group is referred to five times. An increasing lack of mobility on the part of Óláfr corresponded to the closing off of opportunities to him else-

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70 *Lewis*, Vikings in Aquitaine (2021), 590–616.

71 Discussed *Downham*, Viking Kings (2007), 111; *Lewis*, Death on the Seine (2018), 44–60; on the three surviving coins, see *Metcalf*, Rome (Forum) Hoard (1992), 66; *Grierson/Blackburn*, Medieval European Coinage 1 (1996), 324; *Naismith/Tinti*, Forum Hoard (2016), 23, 44–45, 285; *Naismith*, Medieval European Coinage 8 (2017), 300. This Sigtryggr was more likely a son of the former kings Rǫgnvaldr (ob.AU921) or Guðrøðr (ob.AU934), rather than Sigtryggr Cáech, as it would be very unusual for him to have his father's name. It is worth noting that a "mac Ragnaill" was killed after raiding Downpatrick in Ulaid (AU942). Identifying Sigtryggr as the king of Dublin in the late material worked into AFM939 should be avoided due to the fictional nature of that particular material, see *Ó Corráin*, Muirchertach Mac Lochlainn (2000).

72 *Dolley/Yvon*, Group of Tenth-Century Coins (1971), 11.

73 Book of Leinster. Ed. *Best/Bergin/O'Brien*, 196–198.

where, and to the declining importance of Dublin within Irish politics due to pressure from Domnall ua Néill (AU970; AU971) and Máel Sechnaill mac Domnaill (AT[975]). Pushing back against this, with his allies and relatives from factions in Brega and Laigin (AT[976]; AU977; AU978; AT[978]; AFM977[=AD979]), may have almost established Óláfr as overking in Ireland,[74] but this attempt was ultimately destined to fail. After finally being ousted from Dublin by his step-son Máel Sechnaill mac Domnaill (AT[980]), Óláfr went to Iona, presumably to retire, where he subsequently died (AT[981]). Time spent in Alba, where Dunkeld (a daughter house of Iona) was located, may have influenced Óláfr's patronage of the Iona ecclesiastical federation (probably at Skreen and Swords) as much as his alliance with Brega, within which Kells was located.

8.3.4 Echmarcach Rǫgnvaldsson

Overview

Table 8.5: Actions and locations attributable to Echmarcach Rǫgnvaldsson.

Echmarcach Rǫgnvaldsson, 1004×1064				
Event	**No.**	**Location**	**Movement**	**References**
Born	0	Man or Hebrides		
Death of father	0			AU1004
Met with Knútr along with Máel Coluim and Mac Bethad	1	unspecified, Alba	Alba	ASC/E1031
Replaced Óláfr Sigtryggsson as king of Dublin when Óláfr went overseas	2	Dublin	*Innsi Gall* to Dublin?	AT[1036]
Replaced by Ívarr Haraldsson (Dublin?)	3	Dublin		AT[1038]
Succeeded mac Arailt, i.e. Ívarr, in Dublin	4	Dublin	Dublin	AT[1046]
Fled overseas, replaced by Diarmait son of Máel na mBó	5	Dublin	Dublin to Man?	AT1052; CS[1052]
Potentially involved in major alliance attacking England		England	England	AT[1058]

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74 *Woolf*, Amlaíb Cuarán (2002), 41–43; however, his motivations may also have been familial, promoting the interests of two of his grandsons in Brega and Laigin.

Table 8.5 (continued)

Echmarcach Rǫgnvaldsson, 1004×1064				
Event	No.	Location	Movement	References
Man invaded by Murchad son of Diarmait mac Máel na mBó, (Echmarcach?) Rǫgnvaldsson defeated	6	Man	Man to na Renna?	AU1061
Died on way to Rome as king of *na Renna* (later Wigtownshire), along with Donnchad son of Brian, his brother-in-law	7	Rome	Na Renna to Rome	AU1064; Marianus Scottus Chronicon s.a. 1087[=AD1065]

Interpreting Echmarcach's mobility

The figure named as Echmarcach mac Ragnaill in Irish sources represents an important case study in both social and geographical mobility. Twice ousted from Dublin, then from *Innsi Gall*, Echmarcach had a long and complex career, even if it is difficult to track Echmarcach's movements, not least in relation to where/over whom he was king and when. That he died either in or on the way to Rome sets him apart from the other two case studies. The relatively low number of references to Echmarcach is probably related to a declining interest in the Scandinavian diaspora on the part of Irish annalists as well as the preoccupation of English annalists with other matters during this time, and he is slightly too early to be covered by English administrative documents. This is compounded by the lack of a surviving chronicles from northern Britain in this period. This makes the analysis of the various gaps (Table 8.5) much more difficult than with the two figures (both named Óláfr) already discussed in this chapter. It might be possible, though, to assign further activities to Echmarcach indirectly, if the actions of people from the kingdoms he ruled while he ruled them are considered. It is tempting to see the *Margaðr konungr* in *Haralda saga Sugurðarsonar* as Echmarcach, not least due to the campaign he conducted in the Irish Sea with Guþormr, nephew of Óláfr *inn helgi* and Haraldr Hardrada, only to later betray Guþormr and be killed by him in battle.[75] Margaðr, however, is most likely an Old Norse rendering of Murchad, a very common name in Ireland and northern Britain, and the saga may be repurposing the Murchad (ob. as king of Dublin in AU1070) son of Diarmait mac Máel na mBó (AU1072), who had been among Echmarcach's main rivals.

Rather than being a son of the Waterford figures Rǫgnvaldr Ívarsson (ob.AU994) or Rǫgnvaldr Rǫgnvaldsson (killed in Dublin, AT[1031]),[76] Echmarcach is more likely to have been a son of Rǫgnvaldr Guðrøðarson, who died as "rí na nInnsi" ("king of the

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75 Snorri Sturluson, Heimskringla 3. Ed. *Jónsson*, 149–150.

76 E.g. *Duffy*, Irishmen and Islesmen (1992), 96–97; *Duffy,* Man (2015), 13–19.

islands") (AU1005) while in Mumu (AI[1004]).[77] This would be in line both with his associations in northern Britain and with the continuation of the alliance his grandfather and father maintained with the Dál Cais rulers of Mumu. Echmarcach's sister Cacht was married to Donnchad son of Brian Bóruma (AI[1032]; ob. as "[a/the] queen of Ireland" AT[1054]). Echmarcach and Donnchad both died on pilgrimage to Rome.[78] Furthermore, Echmarcach's daughter Mór was married to Tadc son of Toirdelbach Ua Briain.[79]

Echmarcach's first surviving appearance in the documentary record was his submission to Knútr, as "Iehmarc" along with "Mælcolm" (Máel Coluim son of Cináed, ob. AU1034) and "Mælbæþe" (Shakespeare's "Macbeth" son of Findláech, ob.AU1058), the kings of Alba and Moray. This occurred on Knútr's return to Britain following his pilgrimage to Rome and activities elsewhere (ASC/E1031; ASC/F[OE]1031).[80]

Considering that Echmarcach died about fifty-nine years after his father might indicate that he was relatively young when his father died, and he may thus have spent his youth outside his father's kingdom. *Ágrip* (§23) has Hákon Eiríksson of Hlaðir (ob.ASC/C1030) installed as king of the *Suðreyjar* ("southern islands", i.e. "the Hebrides" or *Innsi Gall*), by Óláfr *inn helgi* in the early eleventh century.[81] While the historicity of this could be doubted, it may reflect an attempt by figures from Norway to take advantage of Echmarcach's youth, or an attempt by one or more overlords to ensure stability in *Innsi Gall* while Echmarcach was so young. This interlude in leadership may explain why figures from *Innsi Gall* are listed among the opponents of Brian Bóruma at Clontarf (AU1014) and among the perpetrators of the attack on the west coast of Ireland and Shannon system (AI[1015]). Hákon Eiríksson attested six charters of Knútr around 1019–1030,[82] before his death in ASC/C1030, after which Echmarcach may have moved to have Knútr recognise his position. As Hudson points out,[83] with his alliance with the northern kings, Knútr/Cnut may have sought to install a buffer between his kingdom and any areas that may ally with factions in Norway against him, not least Orkney. This may indicate that Echmarcach spent his childhood elsewhere.

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77 *Hudson*, Cnut and the Scottish Kings (1992), 335–336; *Etchingham*, North Wales, Ireland and the Isles (2001), 180–184.

78 AU1064.; with important information in Marianus Scottus, Chronicon, Ed. *Waitz/Kilcon/Pertz*, in Codex Palatino-Vaticanus no. 830, s.a. 1087[=AD1065], 559 line 33; and the annals in the Book of Maol Conaire (British Library MS Add. 30512 f. 40rb), see Annála Gearra. Ed. *Mac Niocaill*, 339 [s.a. 1065].

79 The Ban-Shenchus. Ed. *Dobbs*, 196, 229.

80 The identification is by *Munch*, Det norske folks historie 1.2 (1852), 673 note 1. See also *Hudson*, Cnut and the Scottish Kings (1992), 350–60; *Woolf,* Moray Question (2000), 149; *McGuigan*, Máel Coluim III (2021), 85–86.

81 Ágrip, Ed. *Driscoll*, 97 §23 and note 78; also Encomium Emmae. Ed. *Campbell*, 72; *Woolf*, From Pictland to Alba (2007), 246); *Ó Ríagáin*, Colonialism, Continuity and Change (2020), 515–516.

82 *Ó Ríagáin*, Colonialism, Continuity and Change (2020), 1671–1672.

83 *Hudson*, Cnut and the Scottish Kings (1992), 358–359.

Echmarcach's move from *Innsi Gall* to become king in Dublin was at that point unprecedented. Echmarcach and his allies seem to have taken advantage of Sigtryggr Óláfsson (departed overseas AT[1036], died AI[1042]) seemingly outliving all of his sons, leaving a vacuum as regards a potential heir, combined with a succession crisis in Waterford (AU1035; AU1037; AFM1037), which likely removed another set of rival claimants. Echmarcach may have been installed by Donnchad mac Briain, either after the departure of Donnchad's uterine brother and one-time brother-in-law Sigtryggr,[84] or at Sigtryggr's expense. It may well have been that that Echmarcach's mother was the daughter of a previous king, which could have been used to legitimate his claim to the kingship of Dublin, similar to the eleventh-century claims by Donnchad and Mac Bethad in Alba, and, significantly, to claims later made on Man by Murchad son of Diarmait mac Máel-na-mBó of Laigin (AT[1061]),[85] and Amlaíb (AFM1096) and Domnall (CRMI1075[1095×1098]; AI[1111]), the sons of Tadc Ua Briain and Echmarcach's daughter Mór.

Having succeeded Sigtryggr, presumably in Dublin, Echmarcach was in turn replaced by Ívarr Haraldsson (AT[1038]). Ívarr's father was most likely Haraldr Óláfsson, who had been killed in a battle while allied with the Laigin against Donnchad's father Brian (AU999). Ívarr was later expelled and replaced again by Echmarcach in Dublin (AT[1046]; AFM1046). Echmarcach fled overseas from Dublin due to pressure from Diarmait mac Máel na mBó (AU1052; AT[1052], overking of Laigin and enemy of Echmarcach's main ally, Donnchad mac Briain. Echmarcach may have taken part in the alliance that involved Magnús Haraldsson or Óláfsson, Gruffud of Gwynedd, Orkney and *Innsi Gall* that invaded England seemingly to restore Ælfgar to the earldom of Mercia (AT[1058]; AC/B1078; Brut1056; ASC/D1058).[86] If he did, then the attack on Man by Murchad son of Diarmait (AU1061) may have been related to this as much as the events in Dublin. Whether or not Echmarcach was expelled from Man at this point is difficult to determine, but if he was, it would explain his obit as king of *na Renna*.

8.4 Conclusion

Before attempting some conclusions, it might be best to recapitulate a broad outline of the three case-study figures. There is no evidence that Óláfr was born in his father's kingdom of Laithlind, but he likely at some point spent part of his life there. The area

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84 Gormflaith was the mother of both Donnchad and Sigtryggr, see the Ban-Shenchus. Ed. *Dobbs*, 189, 227. On Gormflaith, see *Ní Mhaonaigh*, Tales of Three Gormlaiths (2002); Sigtryggr was married at one point to Sláine, daughter of Brian, who was the mother of Óláfr Sigtryggsson.

85 The wife of Diarmait mac Máel-na-mBó was Derbogil (AFM1080), the daughter of Donnchad mac Briain and presumably of Cacht, sister of Echmarcach, The Ban-Shenchus. Ed. *Dobbs*, 229.

86 See also John of Worcester s.a. 1058; for context, see *Ellis*, A plausible eleventh-century Welsh–Orcadian alliance (2020); *Ó Ríagáin*, Colonialism, Continuity and Change (2020), 527.

around Trondheimsfjorden remains the best fit for this, with the caveat that there are other options. That Óláfr had a son named Carlus hints at activity in Frankia prior to his taking up more permanent residence in Ireland, which would align with some of the material evidence, in addition to the documentary evidence demonstrating the activity of multiple Scandinavian groups between Aquitaine and Frisia. There is nothing to place Óláfr in England at any point, nor in any of the armies that were active there, but he certainly had three phases of activity in northern Britain in the 860s and 870s. What is perhaps most striking is that there is no evidence for Óláfr going back to Scandinavia, which needs to be better understood in the light of potential shifts in the flows of wealth from Frankia, Britain and Ireland back to Scandinavia. That he did not go back to succeed his father may indicate his motivations for his activities abroad: either to permanently settle or gather enough wealth to compete for succession in the homeland.

There is no evidence that Óláfr Cúarán ever set foot in Scandinavia, but that may be a reflection of the surviving sources. The gap between being ousted from York in 952 and returning to Dublin may have been (at least partially) spent with allies in Alba during the succession dispute there in the 950s. He may subsequently have been active in Brittany, Nantes and the Cotentin, but Denmark, Norway, Al-Andalus or Byzantium may all have presented opportunities to an opportunistic king without a kingdom in this period. After re-establishing himself in Ireland by 960, it would seem as though Óláfr's mobility was confined to Ireland until his ousting from Dublin in 980 and death on pilgrimmage or retirement to Iona in 981. It is worth noting that the narrowing of his mobility coincided with the wider decline in flows of Samanid silver into Scandinavia and its diaspora, as well as the establishment of the overkingship of Haraldr *blátǫnn* Gormsson in Denmark, Hákon of Hlaðir and Eiríkr Hákonarson in Norway. It also corresponds to other significant events, including the late Carolingian crisis in Frankia and Otto II's defeat by the Fatamids in Italy plus the rejection of Otto's rule by Polabian Slavic groups east of the Elbe.

Finally, Echmarcach's career was also characterised by opportunism. He seemingly made use of the death of Óláfr *inn helgi* and the succession crisis in Hlaðir to submit to Knútr and presumably gain a more secure hold over his father Rǫgnvaldr Guðrøðarson's kingdom of *Innsi Gall*, before somehow gaining the kingship of the Scandinavian diasporic settler community in Dublin at the expense of an aging Sigtryggr Óláfsson and Sigtryggr's nephew Ívarr Haraldsson. That he had the resources – even after losing all bar one of the elements of his polyfocal kingdom – to go to Rome on pilgrimage, and that he was regarded as enough of a near-equal for his sister to marry the most powerful king in Ireland, indicates his importance on an Insular level. It may well be that Echmarcach did not hold all of those kingdoms at once, and he may have had to relinquish one to take up another, similar to Óláfr Cúarán when moving between Dublin and York. If not, it appears that medieval Insular kingship was peripatetic, with kings having to move around to receive the various things owed to them and give the various things expected of them, aside from the regular need to engage in military activity. This must have been a

pressing concern for Echmarcach in his sea-based kingdom, necessitating a particularly high level of mobility. There may well have been trips to England, Denmark and Norway, which could account for some of the many gaps in his documented activities, as Irish annalists were largely only concerned with his activities when they affected Ireland.

What conclusions can be drawn from these data? Firstly, the range of any figure's mobility knowable to us today reflects the nature of the surviving sources as much as it does their actual mobility, something also highlighted when comparing against twelfth- and thirteenth-century kings among the Scandinavian diaspora(s). Secondly, this fact limits the utility of employing studies of elites as proxies for wider patterns of movement – including the establishment and operation of migration streams – and sets documentary evidence in an uneasy relationship with the equally imperfect material record. Thirdly, all three figures display the abilities of an elite largely dependent on military power resources to adapt to circumstances. As such, they each would have utilised unseen chains of interaction to obtain up-to-date information regarding political circumstances across a wide swathe of Eurasia, enabling them to adapt to shifting circumstances and maintain their positions.

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II Landscapes and Infrastructure

Michael Kahle and Rüdiger Glaser

9 Climatic conditions and mobility from 1000 to 1500. Hermeneutic and statistical approaches

9.1 Introduction

The present paper is based on two well-researched areas, namely medieval climate developments from 1000 to 1500 and patterns of historical mobility. However, the connection between climatic influences and mobility has been taken up only fragmentarily in both fields. For example, there are general references from the content-rich, historical research area on trade and transport,[1] which refer to weather and road conditions, including the risk posed to sea routes from storms, water depths and water levels, the cessation of navigation in the event of ice, and other effects of natural events on navigation.[2]

Elsewhere, historical climatology has produced reconstructions of climate developments that are rich in content and regionally differentiated. These mainly refer to general temperature trends,[3] temperature patterns[4] and precipitation patterns,[5] but also include extremes such as storms,[6] floods[7] and droughts.[8] Even in these, however, impacts on mobility are only marginally addressed, for example the ice conditions in the Öresund[9] and the impact on customs revenues.[10] The connection between climate, weather and mobility is also mentioned in works on environmental history,[11] but not analysed systematically there. This article shows to what extent this connection can be quantified and divided into temporal phases on the basis of the available sources

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1 *Schwinges*, Straßenwesen (2007).

2 *Oberste*, Handel (2017), 147–156; *Vavra*, Verkehr (2017), 156–164.

3 *Glaser/Riemann*, Temperature (2009), 435–449.

4 *Riemann*, Klimarekonstruktion (2012).

5 *Van Engelen/Buisman/Ijnsen*, Weather (2001).

6 *Lamb*, Storm (1991), 204.

7 *Himmelsbach* et al., Flood (2015), 4149–4164; *Glaser/Stangl*, Floods (2003), 93–98.

8 *Glaser/Kahle*, Droughts (2020), 1207–1222.

9 *Speerschneider*, Isforholdene (1915 and 1927).

10 *Koslowski/Glaser*, Ice winter severity (1999), 175–191.

11 *Hoffmann*, Environmental History (2014), 428.

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with the help of new statistical methods. Due to the current availability of sources, the temporal focus of the material discussed is the period between 1000 and 1500.

9.2 The general climate development of Central Europe 1000–1500

The climate regime of Central Europe from 1000 to 1500 was characterised by the so-called "Medieval Warm Period" and the gradual transition into the "Little Ice Age".[12] Between 1000 and 1500, however, the temperature level was 0.5 to 1 degree Celsius below the modern "warm period", dated from 1900 onwards. It also differed significantly from the modern warm phase beginning in 1900, and especially from the strong exponential warming taking place since the 1980s. Compared to the modern warming from 1980 onwards, temperatures in 1000 to 1500 were 1.5 degrees lower. This also puts the concept of the "heat optimum" into perspective. At best, it is justified from the perspective of the "Little Ice Age" that became particularly apparent after 1500.

The medium-term temperature development from 1000 to 1500 was mainly determined by higher summer temperatures, while winter temperatures remained significantly lower than in the modern warming period from 1900. The transitional seasons were also cooler than in the modern era from 1900 onwards. In addition to this fundamental seasonal pattern, the climate trend exhibits further medium-term fluctuations and structures. These become visible, when temperature or precipitation data is averaged over some decades, which is typically done for 30 years. During the "Medieval Warm Period", warming and cooling phases occurred alternately several times.

The temperature developments presented here are confirmed by further studies.[13] Deviations arise from other regional focuses and different methodological approaches, for example, when not only written sources but also natural proxies were used for the reconstructions. In addition to reconstructions of long-term developments, there are also elaborations on particularly striking phases, such as the "Spörer Minimum", which covers the years from 1430 to 1445.[14]

Since the precipitation situation is basically structured on a smaller scale, the research results of the present study show significantly greater spatial and temporal variability than temperature trends.[15] Basically, precipitation increased after 1000,

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12 *Glaser/Riemann,* Temperature (2009); *Glaser,* Klimageschichte (2013).

13 *Ladurie,* Histoire du climat (1983) I, 287 and II, 254; *Alexandre,* Climat (1987), 708–785; *van Engelen/ Buisman/Ijnsen,* Millennium (2001); *Büntgen* et al., Climate Variability (2011), 578–582; *Wanner,* Klima, (2016), 276.

14 *Camenisch* et al., Spörer Minimum (2016), 2107–2126.

15 *Glaser,* Klimageschichte (2013), 264; *Cook* et al., Megadroughts, 2015, 1–9; *Büntgen* et al., Drought (2021), 190–196.

and there was a tendency towards drier conditions between 1200 and 1300. This period was followed by a wet phase, developing between 1300 and 1350, after which point precipitation decreased again – especially in summer and spring – until 1500, while heavier precipitation was recorded in the winter months. The fluctuations in this season remained at a higher level, and autumn precipitation also increased in the long term.

The force of solar activity is the main energy source for the terrestrial climate system. The variations of solar radiation – which are documented in sunspots, among other phenomena – are, besides the variations of the orbital parameters, an essential cause for so-called 'natural forcing', a major cause for changes of the terrestrial climate system. All known phases of reduced solar activity in historical times are accompanied by global phases of cooling. These known phases of significantly reduced solar forcing are the so-called "Oort Minimum" from 1040 to 1080, the "Wolf Minimum" between 1280 and 1350, the "Spörer Minimum" 1460 to 1550, and the later "Maunder" 1645 to 1715, "Dalton" 1790 to 1830, and "Glassberg Minimum" 1880 to 1914. In particular, the "Spörer Minimum" is seen as one possible trigger for the transition from the "Medieval Warm Optimum" to the "Little Ice Age".

In addition to solar forcing, other natural forms of forcing exist, one noted example being volcanic activity that interacts with solar forcing.[16] Explosive volcanic events also had a cooling effect, such as the Lombok eruption of 1257,[17] the eruption of Tambora in 1815 and the following "year without summer", 1816, or the Krakatau eruption of 1883 and Pinatubo in 1991. Other natural forcings are the interactions between ocean and atmosphere, as can be seen in variations of the El Niño/La Niña occurrences and oscillations in the Northern Atlantic (NAO).

Of particular relevance to the questions of mobility pursued here are weather extremes, which could have very different effects. These include extremely cold and snowy winters, hot summers and droughts, high and low water levels, storms, and especially storm surges. Numerous works have already dealt with individual extremes – such as storm surges,[18] flood events,[19] and the occurrence of droughts.[20] Small-scale heavy rain, which sometimes led to landslides, and severe weather, also had impacts. Some relevant publications here include compilations, such as those by Weikinn[21] on weather history or Pfaff[22] on severe winters. These somewhat uncritical

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16 *Lamb*, Volcanic Dust (1970), 425–533; *Guillet* et al., Lunar Eclipses (2023), 90–95.

17 *Lavigne* et al., Eruption (2013), 16742–16747.

18 *Jakubowski-Thiessen*, Mandräken (2000), 122–133; *Schenk*, Meeresmacht (2009), 52–66.

19 *Glaser/Stangl*, Floods (2003), 93–98; *Glaser/Stangl/Lang*, Floods (2004), 63; *Himmelsbach* et al., Flood (2015), 4149–4164; *Blöschl*, Flood (2020), 560–566; *Tuset*, Floods (2022), 1–17.

20 *Cook* et al., Drought Atlas (2020), 2317–2335; *Büntgen* et al., Drought (2021), 190–196; *Ionita* et al., Megadroughts (2021), 1–9; *Stahl* et al., Drought (2016), 801–819.

21 *Weikinn*, Witterungsgeschichte (1958–1963).

22 *Pfaff*, Winter (1809).

text compilations are repeatedly criticised, for example by Alexandre.[23] In such compilations, passages of text were sometimes recompiled uncritically without indication of the original authors. On the one hand, then, it is unclear whether this is authentic information from contemporary witnesses. Moreover, the same sources were used again and again in different compilations without citing them, so that a density of content and spatial coverage is given that *de facto* did not exist. On the other hand, they help to compensate for source losses due to wars and fires. Overall, the climate history of Central Europe can be considered relatively well-researched.

9.3 Data and methods

In the framework of the present study, the impacts of climate change and extreme weather events on mobility were analysed by assessing data from the virtual research environment tambora.org. Tambora.org stores medieval evidence along with the coding of relevant locations and times as well as the content of the individual weather-climatic events. In particular, the weather and climate content has been transcribed into indices that are also available for further calibration, through which we can derive estimated values.[24] All information is critically reviewed in the sense of the hermeneutic principles.

In a first step, relevant sources from the period 1000 to 1500 were screened via keywords and codings including low water, floods, cold winters, frozen-over waters, extreme snowfall and storms. From this an impact on mobility could potentially be expected, and this information was subsequently compiled into a separate text corpus (Figure 9.1). Additionally, the texts were analysed for mobility-related keywords pertaining to transportation routes and infrastructure, modes of transportation, and means of travel. Search terms here included, for example, roads, bridges, driving, travelling, riding, horse, carriage, sled, and ships.

The selection is based not only on these key terms, but also on the damage, consequences, restrictions, and impacts caused by the events. Direct references to the effects and consequences of travel, such as walkability, navigability, passability and transport options, were identified. Descriptions of extreme weather events and statements about their effects on mobility are often placed next to each other, allowing for the determination of causal pathways. A total of 1628 quotations from relevant references in the written evidence were available and coded according to place, time and content.[25] The following quotations in sections 2.1 (and those that succeed it) provide

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23 *Alexandre,* Climat (1987), 9–19.

24 *Riemann,* Klimarekonstruktion (2012), 178; *Riemann* et al., tambora.org (2016), 63–67.

25 *Kahle/Glaser,* Mobility (2022).
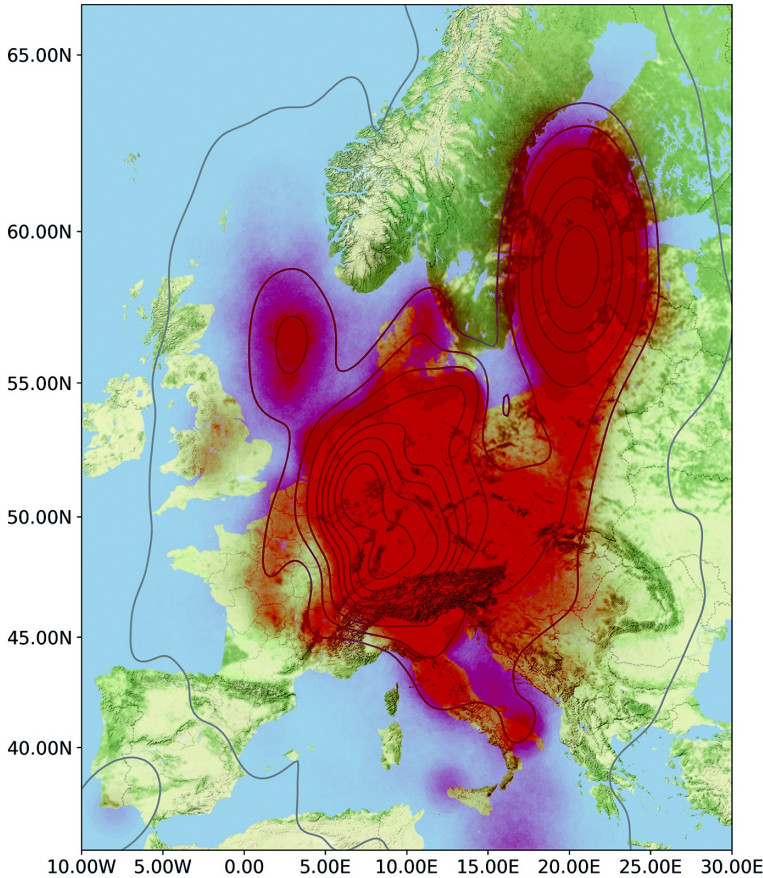
Figure 9.1: Density map of locations and events considered by the study.

insight into the structure of the sources by exemplifying the consequences of the particularly exposed extremes and their effects on mobility.

The written evidence discussed below illustrates the interrelations, impacts, and pathways from a contemporary perspective. An English translation is provided below the Latin original, while Early New High German originals are transcribed in their original wording, together with an English translation. The supplemented bibliographic references are complemented by a link to tambora.org, offering access to the original texts and further codings. The selection of quotes here is intended to represent the range of climatic stressors and impacts to be addressed in each case.

9.3.1 The impacts of extreme cold on mobility

The written sources are dominated by references to extreme cold, in particular the freezing-over of large bodies of water, and the resulting possibility of crossing coastlines, straits, and inland waters. The following discusses the effects of freezing – in a landscape made otherwise impassable by swamps and water bodies – in the context of war campaigns:

> [. . .] rex [. . .] moxque expeditionem contra Liutizos in ipso hiemis tempore paravi iussit. [. . .] Terra etenim illa paganorum aquis et paludibus est plena, sed tunc, hiemis scilicet tempore, nimium erat congelata, et ideo exercitui facta est facilis ingrediendi et egrediendi via.

> The king [. . .] soon ordered the preparation of an expedition against the Liutizians during the very time of winter. [. . .] For that, land of the pagans is full of waters and marshes, but at that time, during winter, it was excessively frozen, and therefore, it became an easy way for the army to enter and exit. Source: AAM:3045.

The following reference was made in relation to the possibility of travelling on frozen rivers, an important alternative to the usual "land routes":

> Nimio quippe frigoris congelamento Renus pariter et Eridanus, ut de fluviis caeteris taceatur, in tantum consolidati sunt, ut per longum tempus quasi per terram viam in se glacialem exhiberent cunctis itinerantibus.

> Indeed, due to the excessive cold, both the Rhine and the Po (Eridanus), not to mention other rivers, froze to such an extent that they remained solid for a long time, providing a frozen path to all travellers, as if walking on land. Source: BA3101.

The texts below discuss the freezing of isthmuses and sea bays, which obviously had an impact on shipping, and make reference to the use of sledges:

> 1496. Item diesen winter wars so lange kaldt und war so sehr gefroren, das man den 6 tag im Martio fur mit 4 pferden mit einem slitten mit dorsche geladen recht zu von Heel bisz hier in die elbe (Weissel). Auch furen sie aus Pomern in Denmarken mit hantslitten zu Gesso (Gester auf Falster) und zu Mone (Insel Möen). Es war so ausz dermossen kald, das das voryor vil eisz in die sehe treib; auf Philippi und Jacobi [1. Mai] kwemen erst schiffe ken Dantzke und hatten grosse not von eisz gehat.

> In 1496, during this winter, it was so bitter cold and frozen that on the 6th day of March, they travelled here to the Elbe (Weissel) from Heel with a sled loaded with codfish, pulled by four horses. They also travelled from Pomerania to Denmark with hand sleds to Gesso (Gester on Falster) and to Mone (Island of Möen). It was so intensely cold that a lot of ice drifted into the sea. Even on the feast days of Philippus and Jacobus [1st May], no ships arrived in Danzig (Gdansk), and they suffered greatly from the ice. Source: NWP10531.

> Das Meer war so stark gefroren, daß man auf dem Eise von Oslo (in Norwegen) nach Jütland (also übers Kattegatt) reiten konnte.

The sea was so much frozen that one could ride on the ice from Oslo (in Norway) to Jutland (across the Kattegat). Source: NSH6078.

Frozen rivers were crossed with wagons and with horses, as emerges from the following:

1292 giengen beladene Wagen über das Eiß bei Breisach.

In 1292, loaded wagons travelled over the ice near Breisach. Source: VCK6095.

Hiems temperata usque ad purificationem, postea invaluit frigus, quod Renus in Brisaco ex utraque parte pontis fuit congelatus, quod equis et bigis communiter transiverunt. Cives dederunt 10 libras, quo glacies scinderetur, ut naves possent transire.

The winter remained mild until the Feast of the Purification (February 2nd), but afterward, the cold intensified. The Rhine River at Breisach froze on both sides of the bridge, allowing horses and carts to pass over it. The citizens paid 10 pounds to break the ice so that boats could pass through. Source: ACM6092.

Frozen bays also allowed raids while, on the other hand, enabling merchants to communicate between their frozen ships:

Item ipso anno a festo beati Andreae ad medium quadragesimae sequentis gelu fuit inauditum. Fuit enim inter Daciam et Slaviam et Imbriam totum mare Balticum congelatum, ita quod latrones, de Slavia intrantes, quasdam partes Daciae depraedarunt, et tabernae in medio maris in glacie pro transeuntibus factae fuerunt. Inter Norwegiam etiam, Angliam et Flandriam multae naves in medio maris congelatae fuerunt in glacie, ita quod mercatores ex navibus se mutuo visitabant, eundo per glaciem, pro solatiis habendis. Cum autem resolveretur glacies, fere omnes naves, quae declinaverunt ad partes australes, salvatae fuerunt; sed quae versus aquilonem venerunt, paucae sunt salvatae.

In the same year, from the feast of Saint Andrew [30.11.1322] until the middle of Lent [6.3.1323], an unprecedented cold spell occurred. The entire Baltic Sea was frozen between Dacia, Slavia, and Imbria. Thieves from Slavia entered certain parts of Dacia and looted them, and there were makeshift shops on the ice in the middle of the sea for passers-by. Many ships were also frozen in the ice between Norway, England, and Flanders, and merchants from these ships visited each other by walking on the ice for comfort and support. As the ice began to melt, almost all ships that headed towards the south were saved, but few were saved for those that went towards the north. Source: AL6447.

Frozen bays were also crossed by horse and on foot:

Anno 1338 was so grodt Wynter und Frost dat men redt und gyngk over de Ostsee van Lubek yn Dennemerken und Prutzen.

In the year 1338, there was such a great winter and frost that people rode and walked over the Baltic Sea from Lübeck to Denmark and Prussia. Source: HR6684.

9.3.2 The impacts of heavy snowfall on mobility

Extreme snowfall made travelling difficult. Indeed, floods after snowmelt often led to the collapse of bridges:

Hoc anno ex habundantia nivium facta est inundatio, que subruit villas et pontes.

This year, due to the abundance of snow, a flood occurred, which destroyed villages and bridges. Source: ARC3984.

1275 Es gab viel Schnee: bei Basel war er erträglich, bei Ruffach konnte man kaum zu Pferde durchkommen, bei Bern und Münster lag er vier Fuß hoch.

In 1275, there was much snow: it was bearable in Basel, in Ruffach, one could barely pass through on horseback, and in Bern and Münster, it was four feet deep. Source: JB5773.

[between 01.02. and 14.04.] [. . .] Am Mittwoch nach Seragefima [20.02.] war ein gewaltiger Sturm, starker Schneefall und strenge Kälte. [. . .] Am Feste Peter und Paul [29.06.] zerstörte der Rhein die Brücke zu Basel, wobei an hundert Menschen ertranken.

[between 01.02. and 14.04.] [. . .] On Wednesday after Seragefima [20.02.], there was a tremendous storm, heavy snowfall, and severe cold. [. . .] On the Feast of Peter and Paul [29.06.], the Rhine destroyed the bridge in Basel, and around a hundred people drowned. Source: JB5773.

1442 war d. kälteste Winter, fielen 36 Schnee aufeinander, alle Wege gesperret, weil der Schnee rührig war.

In 1442, the coldest winter occurred, with thirty-six snowfalls stacking on top of each other, blocking all roads because the snow was cumbersome. Source: KLÖ8400.

1442 in diesem Jahr da war ein großer kalter Winter, daß sein kein Man nie gedacht und war gar viel Schnee. Es kamen bey 36 Schnee übereinander zusammen. Es konnt niemand wandern weder zu Roß noch zu Fuß noch mit Wagen, wan der Schnee war wenig und macht kein Bahn werden und man kund zu Augsburg nicht mahlen, man also das Korn in die Dörfer senden, daß man Mühlen, und gab armen Leuten ein Mezen Mehl und 4 Groschen, daß thet ein Rath zu Augsburg.

In 1442, there was a great cold winter, unlike any that anyone had ever experienced, and snow was abundant. Around thirty-six snowfalls accumulated on top of each other. No one could travel, whether on horseback, on foot, or by wagon, as the snow was deep and made it impossible to create paths. People could not even grind grain in Augsburg, so they had to send the grain to the villages where there were mills. The city council of Augsburg provided poor people with a small amount of flour and 4 *Groschen*, which was a charitable act. Source: GCH8399.

Desselben winters da lag ein grosser schnei, als kain man nye gedacht, das man nit wol wanndlen mocht auff dem lannd vnnd lag 9 wochen bis fassnacht, da gieng er hin weg vnd was fast darvnnder gefroren vnnd mochts wasser nitt wol wol ein vnnd warden gross gissen vnd gewesser das dem volck grosser schad geschache vnnd was vast theur.

The same winter there was a lot of snow like no man had ever imagined, so that you couldn't walk across the land. It stayed for nine weeks until carnival, then it went away and was frozen solid underneath. The water could not get away easily and there was a big outpouring leading to a flood that caused great damage to the people and incurred vast expense. Source: CCP10343.

9.3.3 The impact of low water levels on mobility

During periods of low water levels, rivers could be crossed on foot or with horses and wagons. This also had implications for navigation and towpath operations, as mentioned in one case. Low water levels on the Danube at Regensburg allowed the construction of bridges:

1117 [. . .] et fulmina, terra de glutiente, exsiccata sunt, ut qui vellent pedibus transire possent. [. . .]

In 1117 [. . .] and the lightnings, the earth from the sinking, were dried up, so that those who wished could cross on foot. Source: ASD3197.

1130 Auf der Annwend war so ein heisser Sommer, daß es gleich schiene, als gingen wir in die Erde durch die Risse in der Erde und ward lang sondern Wein und das Erdreich war so dürr, daß alle Bäume, Weihere und fliessende Wasser beinahe vertrugten. Der Rhein war so klein, daß man ober Rhein weit an allen Enden und mochte darüber wandeln und die Früchte in dem Felde verdorrte und verdarb ganz über all und daselbe brachte grosse Dürre iezt bey, daß viele Leute Hungers starben.

1130 On the Annwend, there was such a hot summer that it seemed as if we were walking into the earth through the cracks in the ground. The season was long, but the vineyards flourished, and the soil was so dry that almost all the trees, ponds, and flowing waters suffered. The river Rhine was so shallow that one could walk across it in many places. The crops in the fields dried up and perished everywhere. This brought about a severe drought, leading to many people dying of hunger. Source: KLÖ3766.

Anno domini MCCCLXXXIII zoe sent Remeyss missen was der Rijn so kleyne dat men dar ouer reit tuschen Collen Bunne ind Nuyssen.

In the year of our Lord 1383, the water level of the river Rhine was so low that one could ride across it between Cologne, Bonn, and Neuss. Source: MC7315.

1135 So trockner Sommer mit Winden, daß viele kleine Bäche austrokneten. Die Regensburger Brücke konnte damals gebaut werden.

In 1135, there was such a dry summer with winds that many small streams dried up. It was during this time that the Regensburg bridge was constructed. Source: KLÖ3889.

1304 war die Hize im Sommer so groß, daß man alle Furten in der Donau sehen konnte und zu manchen Orten bey trockenen Fuß darüber gehen konnte. Bey diesem Umstand bauten die Regensburger die Beschlachte.

In 1304, the heat during the summer was so intense that all the fords in the Danube River became visible, and in some places, people could cross over them with dry feet. Taking advantage of this situation, the people of Regensburg constructed the "Beschlachte". Source: GBH6237.

9.3.4 The impacts of heavy rainfall and severe weather events

Severe weather conditions affected paths and roads, strong winds and storms destroyed infrastructure, and heavy rainfall led to the collapse of bridges:

[1017] In der nächstfolgenden Nacht, nämlich Sonntag, den 7. Juli brach ein furchtbares Unwetter herein, welches Menschen und Vieh, Gebäude und Fruchtfelder weithin verzehrt. Und erschütterte ein ungeheures Donnern und Krachen die Wälder, und alle Wege und Straßen wurden auf eine gewaltige Weise mit umgestürzten Bäumen und Aesten bedeckt.

[1017] In the following night, that is Sunday, July 7th, a terrible storm broke out, which consumed people and livestock, buildings, and fields far and wide. An enormous thundering and cracking shook the forests, and all roads and streets were covered with uprooted trees and branches. Source: CTM2709.

Ventus validus partem pontis Brisacensis 10. Kalendas Octobris destruxit.

A strong wind damaged parts of the bridge of Brisacenis at the [22nd September]. Source: ACM6088.

[. . .] im Monat August ergoß sich der Main von vielem Platzregen so, daß mehrere steinerne Brücken ruiniert wurden.

[. . .] In the month of August, the Main River overflowed due to heavy and localised rain, causing several stone bridges to be ruined. Source: CM5808.

9.3.5 The impacts of flooding on mobility

Floods regularly had a strong impact on mobility. During floods, navigation, as well as timber rafting and towage, were impossible. Long-term effects regularly resulted from the destruction of important bridges. These were temporarily repaired and – as far as stone bridges were concerned – often replaced by wooden constructions and pontoons:

In Vigilia Mariae Magdalenae 1342 et in die usque ad aliam diem tanta fuit inundatio aquarum ut Moganus intraret in ecclesiam sancti Bartholomaei. pons etiam prope Sachsenhausen cecidit.

On the Eve of the Feast of Saint Mary Magdalene in 1342, and on the following day, there was such a great flooding of the waters that the Main River entered the church of Saint Bartholomew [in Mainz]. Additionally, a bridge near Sachsenhausen collapsed. Source: AF6751.

Fuit tanta inundacio aquarum in Erphordia in die Braxedis virginis, ut nemo in runcino equitqre posset, et destruxit longas temetes Erphordie, pontem ante valvam Sancti Augustini, Sancti Iohannis ante Kramphfentore, pontem in Herbipoli cum magna turri, pontem in Ratispona, in Dreseden, in Frankenfordia, in Wezindorf, in Babinberg et multa alia dampna peregit.

There was such a great flood in Erfurt on the day of Saint Braxeda the Virgin that no one could ride on horse-drawn carts. It destroyed the long fields in Erfurt, the bridge before the gate of Saint Augustine, the bridge before the Kramphfentor of Saint John, the bridge in Würzburg with a large tower, the bridge in Regensburg, Dresden, Frankfurt, Wezindorf, Babinberg, and caused many other [forms of] damage. Source: CSP6753.

Um Magdalena fiel Regenwetter ein, drey Tag an einander, dadurch alle Wasser, und der Rhein, mit solchem Brausen anlieffen, daß er am 15 Tag Heumonats über der mindern Stadt Basel Zwingelmauer einlieffe, und zwey gewaltige Joch von der Bruck hinführete. Nach Ablauffung des ungestümen Wassers, bande man drey Schiff in die Lucke, überschloß die zur Noht mit Dielen, stellte zu jeder Seiten fünf Leitern an, damit die Leut auf und absteigend hinüber kommen möchten, das bliebe vierzehn Tag also. Nachmalen ward besserer Kommlichkeit halben, auf ein jedes Schiff ein Joch, den übrigen gleich hoch, gesetzt, und gleicherweis bedecket, daß auch die Müller mit den Eseln hinüber fahren mochten. mit Karren und Wägen war es unmöglich. Uber einen Monat ohngefehr, bauete man eine andere Rüstung, welche auch Wägen truge, dieselbige brache hernach, daß fünfzehn Personen in das Wasser fielen, wurden wieder ausgebracht, item ein Wagen mit fünf Pferden, welche ohne das Stellroß alle ertruncken. Solches gab Ursach neuer Rüstung, daß man andere Schiff und Joch darauf also zurichtete, daß die Bruck an grossen Trottspinnlen dem Wasser nach, hoch und nieder konnte geschraubet werden, bis auf bequeme Zeit neue Joch zu schlagen. Dieser Uberschwall thät an Feldern und Wiesen überschwenglichen Schaden.

During Magdalena, rainy weather persisted for three consecutive days, causing all waters and the river Rhine to surge with such force that on the 15th day of the month of Heumonat (June), it overflowed the lower part of Basel's city walls and carried away two massive bridge spans. After the turbulent water subsided, three ships were moored in the gap, the opening was closed with planks, and five ladders were placed on each side so that people could cross over. This arrangement remained for fourteen days. Later, for improved convenience, one bridge span was added to each ship, equal in height to the others, and covered in the same way, allowing millers to cross over with their donkeys. It was impossible for carts and wagons to pass. Approximately a month later, another contraption was built, capable of carrying wagons, but it collapsed, causing fifteen people to fall into the water. They were rescued along with a wagon pulled by five horses, all of which drowned except for the leading horse. This incident led to the construction of a new device, where other ships and spans were prepared in such a way that the bridge, supported by large wooden spindles, could be raised and lowered as needed until new bridge spans could be put in place during more favourable conditions. This inundation caused excessive damage to fields and meadows. Source: BC138400.

9.3.6 The impacts of storm surges on mobility

Storm surges led to the destruction of houses and infrastructure in coastal regions. Ports and protective structures, such as dams, were also affected. Obviously, ships were likewise affected, which sunk after they were destroyed. Losses were high, many victims were mourned, and cargo was lost:

> Anno 1449 do sande koning Carsten vth 5 schepe tho rouen; de scholden nehmen vp Godtlandt, vnd allen den städten wehren; de ehn thofören wolden, de scholden se nehmen. Ein deel vorfro-ren se in der see, vnd vordruncken; men se voren so duel in dat lateste, vnd quehmen mit schan-den weddervmme tho huß.

> In the year 1449, King Carsten sent five ships to Rouen. They were supposed to take over Gotland and prevent all the cities from resisting. Those who resisted were to be captured. Some of them froze to death at sea, and others drowned. However, they were deeply sorrowful in their final moments and returned home in shame. Source: SC8596.

> Dessuluigen jahres van dem dingestage an beth vp den middewecken vor St. Gallen dage, do was thom Sunde so groth ein wather, vnd weiede so sehr van dem norden vnd nord-osten, dath alle de brügcken, de husecken alle mit einander enttwey brecken. Alle schepe, seuten, boete, zese-kahn, de thoschlogen althomale, wente se dreuen an den dammen, vnd vele degelicken lude vor-druncken an allen enden; wente idt waß ein schwar vnbegriplick storm, dath vele ehrlicke lude hadden des stormes gelicken nicht gedacht by erem leuende.

> In the same year, from the day of St. Gallen before midweek to the day of St. Gallen, there was an enormous water surge on Sunday, driven intensely from the north and northeast, causing all the bridges and gables to break apart together. All ships, boats, and barges were smashed to pieces as they crashed into the dams, and many decent people drowned in various locations. It was an unprecedented and indescribable storm, something many honourable people had never experi-enced in their lives. Source: SC8596.

> Anno 1449 vp St Gallen nacht was hier en so grot storm van dem norden vnd nordosten, des-gliken ken minsch gedacht hedde; denn he makede hir grot water, dat idt ouer den steendamm in de döhre floth beth in de straten, ock in etlicke keller. Kene brüggen bleuen vor der stadt hele; vele schepe, schuten vnd bote, item zesekahne zerstötten, dat se hernamals thor seewerts edder tho water nemande nutte wurden; ock vordruncken vele lüde. Und geschach solk schaden nicht allene hir, sondern ock an andern orten mehr; als tho Lübeck schlog idt in de soltkeller vnd in de boden by der Trauen; der dede idt groten vnd grulicken schaden. Vor der Weichsel bleuen wol by de 60 schöne schepe, vnd wurden thor Dliue int kloster in de druddehalf hundert mann vp enem dag begrauen, vnd was der andern kene tall, de noch van dagen tho dagen gefunden vnd thor erden bestediget wurden. Disse storm warde twe dage.

> In the night after St. Gallen's day in 1449, there was an immense storm from the north and northeast, the likes of which no one could have imagined. It caused such high water that it flowed over the stone dam into the streets and flooded several cellars. No bridges remained intact in the city. Many ships, boats, and barges were destroyed, rendering them useless for seafaring or any other purpose, and many people drowned. This damage did not only occur here but also in other places. In Lübeck, it flooded the salt cellars and the floors near the town hall, causing significant and dreadful damage.

On the Vistula River, around 60 beautiful ships were lost, and about 150 people were buried in one day at the monastery in Dliue, while others could not be counted as they continued to be found and buried day after day. This storm lasted for two days. Source: SC8596.

Na gades bort 1449 jar in sunte Gallen (16.10.) nacht do was altomechtich eyn grot storm, also dat desgheliik un gehort ys edder ghedacht, unde warde bette an den anderen dach beth an den avent. De storm was so swar, also dat vor deme sunde nicht ene hele brugghe bleff of te Schythuseken, unde alle schepe tofloghen, also dat dar nouwe fos hele lude vorzopeden unde vordrunken tusschen deme sunde unde de veren der jamer, de dar so schach, dat kan nement na segghen. Unde dat water was so hoch unde grot, dat yd ghynck in de dore der stat unde lep in de kelre der lude, de vor deme dore waneden, also dat se nouwe ere lyf konden redden. Unde ok lep dysse fulve vlot to Lubeke in de solt kelre unde ok in de boden by de Traven, unde allent, dat dar inner was, dat vordorf, unde des gheliken vor de Wytzelen 6 leven wol 40 schone holke wol gheladen unde vele andere schepe [. . .].

After God's birth in the year 1449, on the night of St. Gallen (October 16), there was an exceedingly great storm, the likes of which had never been heard or imagined. It continued until the next day and into the evening. The storm was so severe that not a single intact bridge remained near the Schythuseken, and all ships were tossed around so violently that very few people could escape from drowning and perishing between the sea and the waves of misery. The terrible events that occurred were beyond description. The water was so high and immense that it entered the city's doors and flooded people's cellars, leaving them with little chance to save their lives. This same violent flood also reached Lubeck, entering the salt cellars and the floors near the Trave River, devastating everything inside. Similarly, on the Vistula River, around 40 beautiful cargo ships and many other vessels were destroyed [. . .]. Source: SC8610.

9.3.7 Methodological approach – classification and merging

The present corpus was exported from tambora.org and processed using Python[26] and the pandas library.[27] Python is a well-established programming language, widely used for statistics, machine learning and data visualisation. Pandas is a library in python used for efficient handling of data structured in tables. The coded quotes were then grouped according to the criteria of "same time" and "same place". From these codings, the four criteria or subgroups "Hazard", "Zone" for transportation routes, "Means" for means of transportation, and "Impact" for the effects and type of impairment or strengthening were extracted. In summary, the key terms and the impact relationships were used for further analysis via the quadruples "Hazard, Transport Route, Transport Means and Impact". In this way, a total of around 600 events containing direct and indirect references to mobility were identified. To document the connections and depict the corresponding causality, the stressors (Hazards) were vi-

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26 *Van Rossum/Drake*, Python (2009).

27 *Reback* et al., Pandas (2021).

sualised with the transportation routes (Zones), means of transportation (Means), and impacts as connecting lines using the parallel categories diagram type (Parcats).[28]

9.4 Results

The relationship between hazards, zones, means and impacts is shown in Figure 9.2. The colours in the top part reflect the different impacts, while the lower part highlights the different hazards. This provides an illustration of the respective proportions. The analyses primarily allow conclusions to be drawn about the individual proportions in the various groups. Accordingly, hazards related to cold weather dominate in the "Hazards" category. Secondarily, there are indications of floods, followed by storms, droughts, and snowfall.

The second group, "Zones" mainly refers to rivers, flowing to the sea, in most cases to the North Sea and the Baltic Sea. The next two groups refer to bridges and streets in nearly equal numbers. Minor evidence is related to plains and lakes or unknown features.

In the third category, "Means", walking or "foot" is the most frequently mentioned mode of transportation for the time between 1000 and 1500, followed by "ships". The next two features are "wagons" and "horses", which make up approximately equal shares. In terms of "Impacts", surprisingly, both positive, indicated by "enabled" or "possible" and negative proportions, indicated by "restricted" or "impossible" are equal.

The graphical representations also allow conclusions to be drawn about the cause-effect relationships. When comparing the proportions of impacts in the other categories, cold and drought events are found to be mostly positively connoted, while floods, storms, and snow are mostly described with negative effects. This is also reflected in the "Transportation Zone" category. Here, waters are mostly positively connoted, while infrastructure such as "bridges and roads" is predominantly negative. Regarding the means of transport, the distribution is generally balanced, except for ships, which are almost exclusively negatively connoted, because they perished and were lost.

The lower part of the figure, with the color-coded hazards, shows the distribution of the hazards among the other categories. Relating to transport, water-related mobility is dominated by cold hazards, while bridges are mainly affected by floods, and roads and plains are mainly affected by snow. Regarding the means of transportation, the proportions are roughly equally distributed, except for ships, which are unilaterally affected negatively by storms. Negative impacts are distributed approximately equally among the hazards. In terms of positive impacts, cold and drought dominate, while the others play no role.

The following overall relationships can be observed: The most frequently mentioned climatically relevant stressors are cold and frost, ice formation and, in particu-

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28 *Plotly*, Plotly Technologies (2015).

lar, the freezing over of water bodies. While negative consequences are emphasised, positive opportunities, such as using sleds and traversing frozen bodies of water, are also described. This accounts for approximately 25% of the references. Harsh winters were long-lasting and widespread phenomena.

Floods had a major impact on mobility, particularly when corresponding infrastructure was affected. They represent the second largest climatic stressor that had negative effects and hindered transportation. In terms of time, they tend to be short-term events of a few days or a few weeks at most – unlike severe cold spells. However, destroyed bridges, roads or paths had long-lasting impacts. If bridges were destroyed, makeshift constructions were used; in one case, ships were tied together to form pontoons.

The particularly destructive ice floes and ice rafting were causally related to harsh winters and were therefore attributed to this type. Although floods occurred only for a few days or weeks, at most, the destruction persisted for a long time. Besides the removal of soil by erosion, sedimentation of paths with mud, debris and rubble was also relevant.

Storms mainly affect or destroy shipping or ships on the coasts and on lakes, as well as on rivers, although these are rarely mentioned. In addition to the often-tragic accidents with high human losses, mobility and transport capacity were also impaired during longer periods of time when ships were destroyed.

Droughts affect the water levels of rivers, with particular emphasis on the ability to cross them. Most frequently, wading and riding through during low water were mentioned. There are fewer references to impairments of shipping, particularly in terms of "towing". Furthermore, a low water level facilitates the laying of the foundation of bridges and thus leads to better mobility in the medium term. Similar to winters, droughts are also a large-scale phenomenon.

Intense snowfall primarily hindered walking, travelling, and riding on trails and thus trade, even on the plains. Small-scale events such as heavy rain and storms had more local and regional impacts. Landslides occurred as a result of heavy rain.

The temporal distribution and development of hazards, zones, means and impacts is shown in Figure 9.3. The data is averaged over 61 years to better represent the overall climatic trend, with the data being triangularly weighted. The summer and winter situations are also presented to assess seasonality.

The source density, given by the "number of events", shows an increase between 1000 and 1500, resulting from the data availability and source density. As shown in the second plot of Figure 9.3, the information regarding winters dominates. This is remarkable because the overarching climatic imprint generally assumes a medieval warm optimum. Information related to summer is only more frequent between 1100 and 1200, as well as between 1250 and 1330. From the individual categories, the following patterns and findings emerge. In the first period, it is mainly droughts, while in the second, flood events characterise this imprint. Pronounced cold stressors shape the periods between 1050 and 1100, as well as 1200 to 1250, and also after 1330. The
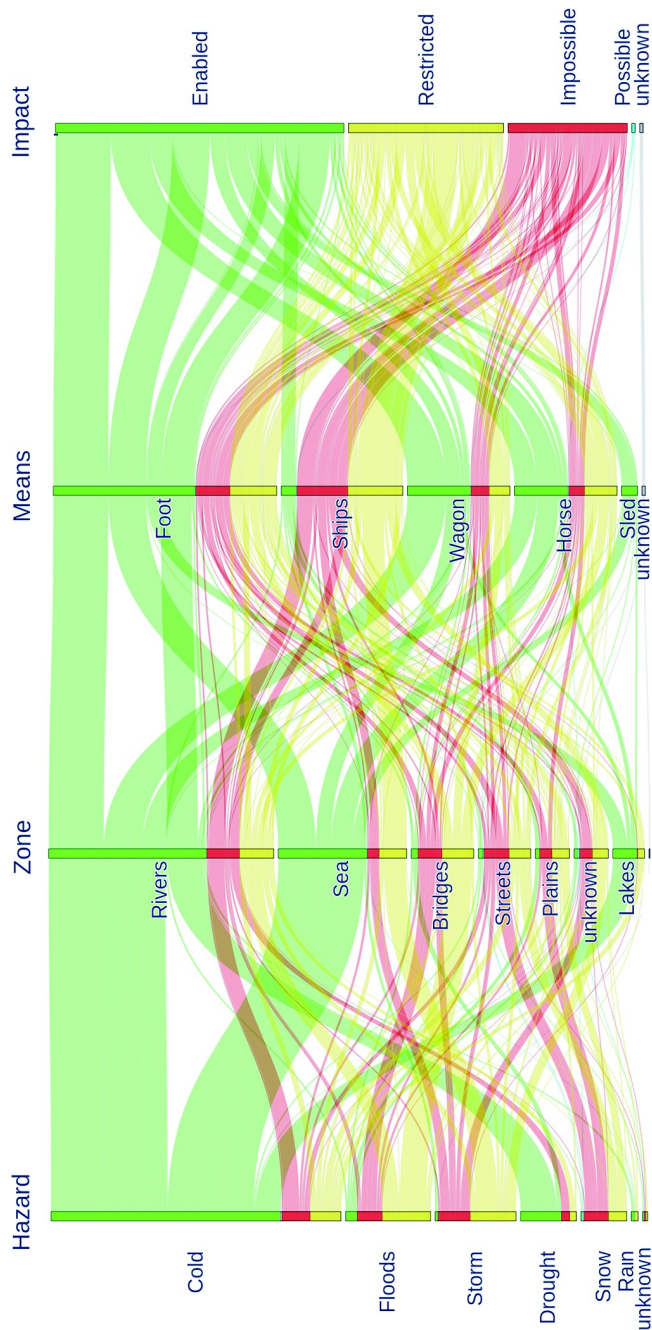
Figures 9.2 and 9.3: Quadruples consisting of different hazards, zones of transportation, means of transportation, and consequences. The colours reflect the different consequences in the upper part of the figure, and the different hazards in the lower part. This makes the respective proportions visible.
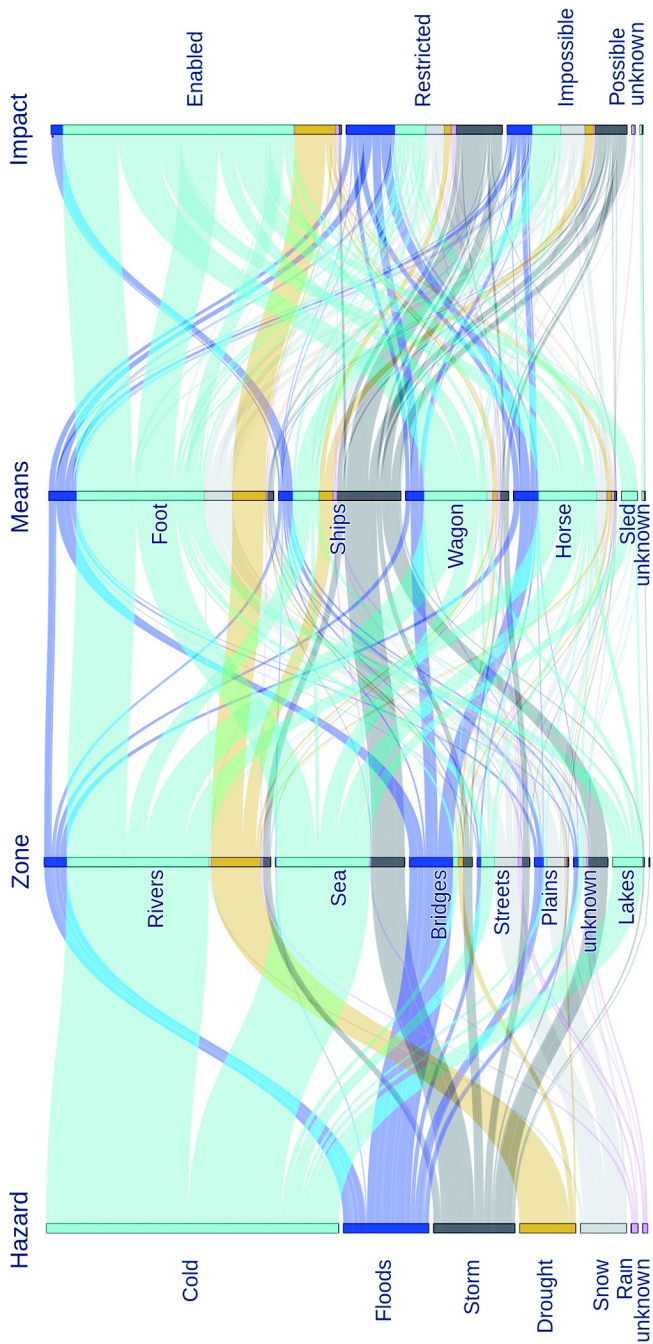
Figures 9.2 and 9.3 (continued)
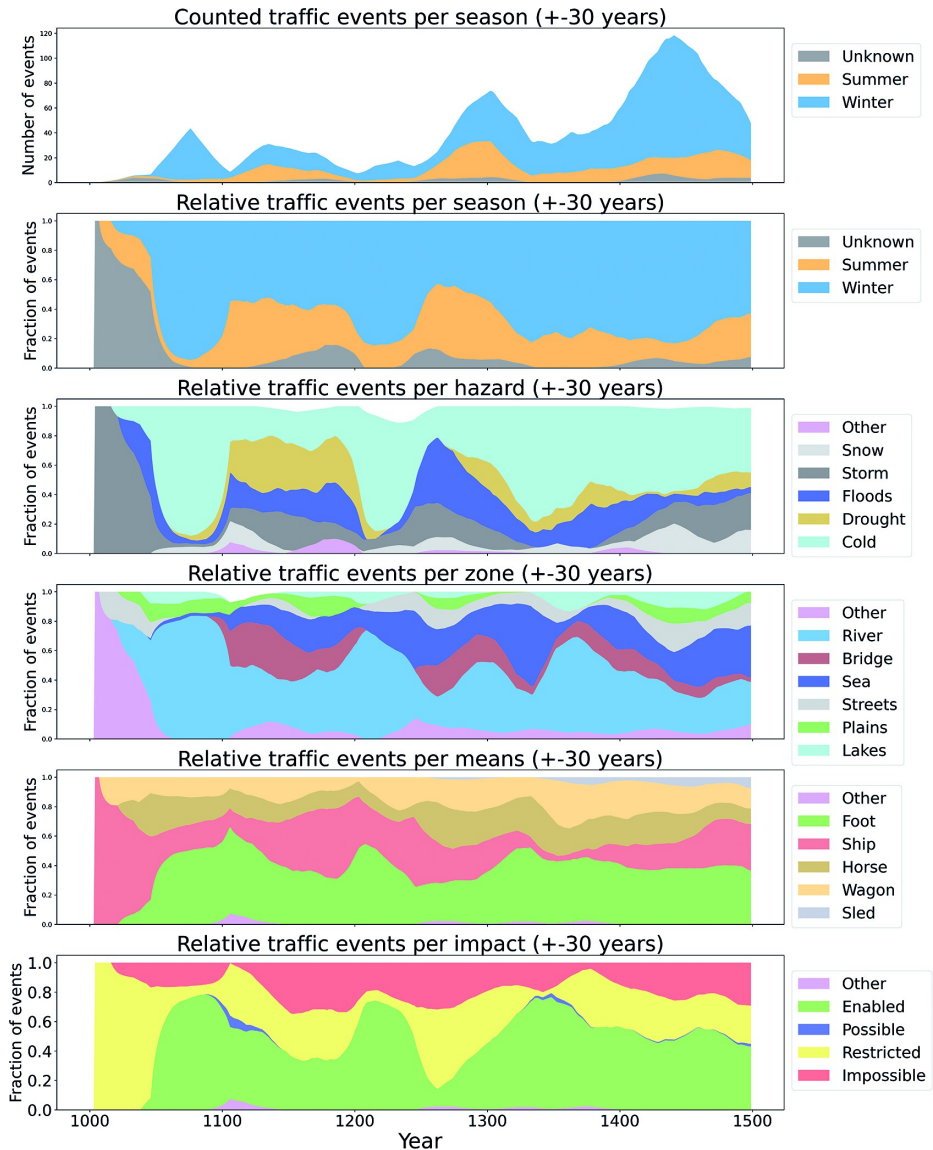
Figure 9.4: Temporal development of information and the respective proportions of hazard, zones of transport, means of transport, and impacts.

cold phases correspond to the class "enable", while the other two, floods and droughts, fall into the classes "restricted" and "impossible". Severe flood phases correspond with damage to bridges. Only few structural changes are discernible regarding the means of transportation: at the beginning, references to ships dominate, while references to sledges slightly increase at a low level after 1300.

9.5 Summary and discussion

The available sources allow conclusions on mobility and climate. They refer to the weather-climatic causes, the transport routes and means of transport, and the effects. The methodological approach presented here has proven to be viable. Stringent impact paths can be mapped using written references: The complex illustrations of the content-related and temporal structures via the parallel categories diagram type and time series provide insights into the causal relationships, the frequencies and temporal progressions.

Basically, certain types or groupings and interrelationships can be identified: First, the general structures and classification in "Hazards", "Zones", "Means" and "Impacts" can be grouped and assigned. Their synopsis shows the combinations and causal relationships that occurred in real life. Interestingly, indications and consequences of cold and, secondarily, floods and storms dominate. This is remarkable given that this phase is usually called the "Medieval Warm Optimum" Obviously, the reports primarily focussed on the exceptions and had a stronger impact than the "ordinary", average events.

Further interesting patterns and structures emerge from the synopsis of the temporal trajectories: Source density and data availability map out as a time trend, meaning that information increases over time. Within this overarching trend, however, there are also pronounced peaks. In the synopsis with the content aspects, these can be explained as follows: The first peak, around 1080, corresponds to an accumulation of cold-related information. The second, from 1100 to 1200, is not as pronounced, but shows correlations with summer droughts. Floods dominate a third peak around 1250 to 1300. The last dominant phase, with a peak around 1450, has a more complex structure and is determined by weather situations, storms and also, obviously, cold events.

There are numerous works on mobility in the Middle Ages,[29] as well as on climate and climatic extremes.[30] Some are not based on written sources, but on natural proxies such as tree-rings, sediments and speleothems.[31] These multi-proxy approaches arguably provide valid climate reconstructions, but they do not allow for conclusions on consequences and effects. In summary, well-known phenomena such as the "Medieval Warm Optimum" can be derived from these research results, as well as numerous extremes such as floods, droughts and heat waves, and cold snaps.

Another aspect that is dealt with in historical climatology is the analysis and presentation of consequences and effects. These mostly refer to individual phases[32] or outstanding extremes, such as droughts.[33] Even though these mostly address socio-economic consequences such as water shortages, crop losses and hunger, as well as

29 *Schwinges*, Straßenwesen (2007), 9–18.

30 *Glaser/Riemann*, Temperature (2009), 435–449.

31 *Cook* et al., Megadroughts (2015), 1–9; *Wilhelm* et al., Future Floods (2018), 1–22; *Büntgen* et al., Climate Variability (2011), 578–582; *Büntgen* et al., Drought (2021), 190–196.

32 *Camenisch* et al., Spörer Minimum (2016), 2107–2126.

33 *Glaser/Kahle*, Droughts (2020), 1207–1222; *Ionita*, Megadroughts (2021), 1–9.

price increases, the impact pathways can be used methodologically and conceptually to map the issues of impacts on mobility.

Nevertheless, research works of the relationship between mobility and climatic conditions are rare. Works on the context of travel and climate are largely limited to travel literature. These include accounts of long-distance travel to exotic countries and regions such as the Near East, to particular travels such as pilgrimages, or to specific trade routes. As these accounts sometimes contain references to weather, weathering, and climate in the context of travel, they have been used in the past to reconstruct climate,[34] but without connecting this topic to mobility. Exceptions are elaborations referring to the perceptions and impressions of weather and climate on travellers and their reliability regarding reconstruction.[35]

Another approach is represented by research on the reception of weather and climate in medieval literature, in which manifold references exist and weather phenomena were seen, among other things, as challenges for chivalric heroism and also other forms of life and expression, "In particular love affairs could be severely impacted by bad weather" due to difficulties of travelling, as presented by Clasen.[36]

Elaborations on mobility in the Middle Ages refer to numerous facets and aspects, such as the background, purpose of travel, social issues and trade opportunities as well as strategic and socio-political content.[37] The collection, edited by O'Doherty and Schmieder[38] focuses on "key medieval modes of travel and mobility" and their connections to religion, diplomacy, migration, governance and other topics and thus underlines the importance of smoothly functioning mobility and the societal consequences of disrupted mobility due to weather extremes.

In the few studies exploring the direct relationship between mobility and climate, such as by Hindle on the seasonality of weather conditions and travel opportunities in England,[39] the findings made here may be confirmed with the examples described. This applies to the impairments in winter as well as to the poor road conditions in rainy periods, which are described as "rainy seasons".

From this point of view, the approach presented here represents a new approach to this important topic, both in terms of the subject matter and the findings and, above all, the methods used. It must be understood as a first step, which can be extended and refined by further analyses in terms of space, content, time and method. It can be assumed that the means of transport and routes available and used (riding, wagons, sledges) have not changed significantly compared to the Early Middle Ages. The impact chains from weather extremes to the effects on mobility also remain unchanged, even

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34 *Bell/Ogilvie*, Weather compilations (1978), 331–348; *Matuschek*, Data Mining (2014).

35 *Metzler*, Hot Climate (1997), 69–105.

36 *Classen*, Bad Weather (2010), 3–20.

37 *O'Doherty/Schmieder*, Travels (2015); *Gascoigne/Hicks/O'Doherty*, Journeying (2016), 296.

38 *O'Doherty/Schmieder*, Travels (2015).

39 *Hindle*, Variations in Travel (1978), 170–178.

until modern times. However, the frequency and relative number with which the various extremes (cold, snow, drought, storms, etc.) occur can change, particularly in cold periods such as the "Late Antique Little Ice Age" in the sixth and seventh centuries,[40] which were more similar, climatically, to the Little Ice Age from 1500.

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40 *Büntgen* et al., Cooling (2016), 231–236.

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10 Die ottonische Machtbasis im Fokus. GIS als Mittel zur Analyse mittelalterlicher Raumstrukturen

10.1 Einführung

> Nachdem [Sturmi; Erg. d. V.] sich ein wenig [...] von seiner Erschöpfung erholt hatte, sattelte er seinen Esel und machte sich, mit Reiseproviant versehen, allein auf den Weg. Er empfahl Christus, welcher der Weg, die Wahrheit und das Leben ist, seine Reise und begann dann ganz allein, auf seinem Esel sitzend, die verlassensten Gegenden der Wüste zu durchziehen. Als eifriger Kundschafter musterte er überall mit scharfem Blick gebirgiges und ebenes Gelände, Berge, Hügel und Täler erkundend, auf Quellen, Bergbäche und Flußläufe achtend. So zog er seines Weges. (...) Nur dort gönnte er sich Ruhe, wo ihn die Nacht haltzumachen zwang. Wenn er irgendwo übernachtete, schlug er mit dem Eisen, das er in der Hand trug, Holz ab und erbaute eine ringartige Umzäunung zum Schutze seines Reittiers, damit die wilden Tiere von denen es dort eine große Menge gab, es nicht zerrissen. Er selbst jedoch zeichnete im Namen Gottes das Zeichen des Kreuzes Christi auf seine Stirn und schlief dann ruhig ein.[1]

Dieses Zitat stammt aus der Feder Eigils und ist dessen *Vita Sturmi* entnommen. Sie ist Ende des 8. Jahrhunderts entstanden und schildert das Leben des ersten Fuldaer Abtes Sturmi, und zugleich die Anfänge eines der für Ostsachsen und Thüringen wichtigsten Klöster des Frühmittelalters.[2]

Auf der einen Seite bezeugt das Quellenzitat, dass Sturmi „die verlassensten Gegend der Wüste durchziehen",[3] des nächtens im Wald campieren musste und letztlich nur mit Gottes Hilfe von Angriffen wilder Tiere verschont blieb. Es wird somit nachdrücklich herausgestellt, er sei in einer unbesiedelten Gegend unterwegs gewesen; sicher um dem Wunsch nach Abgeschiedenheit des künftigen Klosters Rechnung zu tragen. Doch bereits durch die Nennung zweier Wege an späterer Stelle der *Vita* wird

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1 Eigil 7. Ed. *Engelbert*, 25–26: *Cumque parumper penes (...) fessus respirasset, stravit asinum suum sumptoque viatico solus profectus est, iter suum Christo qui est via veritas et vita commendans, solus omnino sedens super asinum per vastissima deserti loca pergere coepit. Tunc avidus locorum explorator ubique saga ci obtutu montuosa atque plana perlustrans loca, montes quoque et colles val1esque aspiciens, fontes et torrentes atque fluvios considerans pergebat. (...) ibi tantumodo quiescens, ubi eum nox compulit habitare. Et tunc quando alicubi noctabat, cum ferro quod manu gestabat sepem caedendo ligno in gyro composuit ad tutamen animalis sui, ne ferae, quarum perplurima ibi multitudo erat, illud devorarent. Ipse autem in dei nomine signo crucis Christi fronti impresso securus quiescebat.*
2 *Rösener*, Grundherrschaft (1996), 213, 215 sowie *Werner*, Thüringen (2005), 313.
3 Eigil 7. Ed. *Engelbert*, 25: *per vastissima deserti pergere.*

Pierre Fütterer, Magdeburg

die Einsamkeit des künftigen Klosters als Topos entlarvt.[4] Während seiner Erkundungen traf Sturmi auf einen Weg, den die Kaufleute von Thüringen nach Mainz beschritten, und den Ortesweg.[5]

Die genannten Wege weisen auf die fortschreitende, und in vielen Gebieten schon weit fortgeschrittene Erschließung des karolingischen Reiches hin, denn tatsächlich waren weite Teile des Karolingerreiches dicht besiedelt. Dörfliche und andere Siedlungen lagen selten mehr als ein bis zwei Kilometer auseinander.[6] Verbunden waren sie durch ein bereits recht dichtes Wegenetz. Mithin darf das karolingische Reich als ausgesprochen gut erschlossen gelten. Das trifft gleichermaßen für den östlichen Teil des Reiches und gerade auch für Thüringen und das mittelalterliche Ostsachsen zu, deren Siedlungsgefilde aufgrund naturräumlicher Gunst seit dem Neolithikum eine ununterbrochene und intensive Nutzung erfahren haben.[7] Obschon stets besiedelt, ist der Raum erst seit dem 8. Jahrhundert durch die schriftliche Überlieferung konkreter zu fassen. Nur schemenhaft zu greifen sind die hier in dieser Zeit agierenden Kräfte. Unstrittig ist gleichwohl das Wirken der ersten Liudolfinger, denen es gelang, durch verschiedene Maßnahmen im weiteren Harzumland ihre zentrale Machtbasis zu formen.[8] Das resultiere vor allem aus der großen Menge nutzbarer Eigen- und später Reichsgüter. Diese wiederum bildeten die Basis für die hohe Aufenthaltszahl und -dauer seit der 919 erfolgten Erhebung Heinrichs I. zum König und sind damit Grund für die Charakterisierung des ostsächsisch-thüringischen Raumes als Kernlandschaft.[9] Dass dies freilich nicht allein Ursache für die Bedeutung des Circumharzlandes ist, sondern vielmehr weitere Faktoren in Verbindung mit naturräumlicher Gunst die Entwicklung Ostsachsens und Thüringens im Zeitraum von 919 bis 1024 förderlich waren, wird im Folgenden zu diskutieren sein.[10] Konkret wird auf den Raum zwischen Thüringer Wald und Ohre sowie zwischen Hainich, Westharz, Oker und Weißer Elster, Saale und Elbe fokussiert, der über Böden verfügt, deren Ertragspotential zum höchsten in Deutschland zählt,[11] und eine klimatische Begünstigung, die sich nach Eck-

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4 Zur Lage von Klöstern an Fernverkehrswegen, vgl. *Störmer*, Fernstraße (1966).

5 Eigil 7. Ed. *Engelbert*, 26: *ad viam, quae a Turingorum regione mercandi causa ad Mogontiam pergentes*; Eigil 8. Ed. *Engelbert*, 27: *semita fuit, quae antiquo vocabulo Ortesveca ducebatur.* Zu den Wegen in Auswahl *Görich*, Ortesweg, (1955).

6 *Müller*, Siedlungsformen (2002), 97.

7 *Bahn*, Kulturlandschaft (2014).

8 Zur Geschichte Thüringens und Sachsens an der Wende vom Früh- zum Hochmittelalter in Auswahl *Patze/Schlesinger*, Geschichte (1985); *Schubert*, Geschichte (1997); *Ehlers*, Ostsachsen (2013); *Schulze*, Harz-Elbe-Saale-Unstrutraum (2010).

9 Vgl. dazu *Müller-Mertens*, Verfassung (2001); *Alvermann*, Königsherrschaft (1998). Dass sich die Struktur des Reiches bis ins 12. Jahrhundert erhalten hat betont *Hermann*, Lothar III. (2000), bes. 64–65.

10 *Bahn*, Kulturlandschaft (2014); auch *Fütterer*, Hilfsmittel (2019); *Fütterer*, Kernzone (2022).

11 Vgl. dazu *Altermann*, Überblick (1995); *Gehrt*, Lössbörden (2014), bes. 32–34. Zum Bewertungsverfahren, vgl. *Schrödter/Altermann*, 100er Boden (2023).

hard Oelke „in erhöhter Sonnenscheindauer, einer relativ langen Vegetationsperiode und niedrigen Niederschlägen äußert".[12]

Ausgehend von Betrachtungen zum Siedlungsnetz und seinen Strukturen, deren Kenntnis aus dem innovativen Einsatz eines Geographisches Informationssystems (GIS)[13] resultiert, wird zudem zu untersuchen sein, inwieweit vom Herrscherhaus gelenkte Maßnahmen zur Herrschaftssicherung und räumlichen Erfassung der Königslandschaft nachweisbar sind und ob, auch inwiefern, diese umgesetzt wurden.[14]

10.2 Die Entwicklung des Siedlungsraumes

In karolingischer Zeit noch Ziel von verschiedenen Eroberungs- und später Integrationsmaßnahmen,[15] wandelten sich die altbesiedelten Räume Thüringens und insbesondere Ostsachsens in ottonischer Zeit zur zentralen Königslandschaft. Zweifelsohne bauten die ottonischen Könige und Kaiser auf den von ihren Vorgängern geschaffenen Strukturen auf, konnten aber ebenso ihr umfangreiches Hausgut nutzen, das im Verlauf ihrer Herrschaft vermehrt als Reichsgut die ökonomische Basis ottonischer Macht bildete. Parallel dazu intensivierten sie die Erschließungsmaßnahmen. Die Ottonen errichteten zahlreiche Herrschaftsmittelpunkte oder nutzten ältere weiter. Unter Herrschaftsmittelpunkten oder Zentralorten sind Siedlungen mit mindestens einer überörtlichen Funktion beziehungsweise einem Bedeutungsüberschuss zu verstehen.[16] Es zählen dazu Klöster sowie Markt-, Münz- und Zollorte, deren Zahl in der Zeit von 919 bis 1024 beträchtlich anwuchs.[17] Darüber hinaus fallen in diese Kategorie Plätze mit Schutzfunktion und/oder spezialisiertem Handwerk oder solche, die als königliche Aufenthaltsorte genutzt wurden. Sie alle haben überdies mit einiger Sicherheit als administrative Zentren gedient. Allerdings beschränkt sich die Zuschreibung

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12 *Oelke*, Aschersleben (2003), 13.

13 GIS ist als System aus Software sowie der notwendigen Hardware mitsamt den erforderlichen Daten und den Anwender*innen definiert. Es erlaubt die Erfassung, Bearbeitung, Organisation, Analyse und Präsentation räumlicher Daten; vgl. dazu *Bill*, Grundlagen (2010), 4–9. Wenn auch die Anfänge von GIS bereits in den 1960er-Jahren liegen, so begann ein verstärkter Einsatz seit den 1990er-Jahren zunächst in der Archäologie und mit einigen Verzögerungen dann auch in den Geschichtswissenschaften; vgl. dazu der kurze Abriss bei *Fütterer*, Wege (2016), 67. Ein Suchanfrage im OPAC der Regesta Imperii mit dem Stichwort "GIS" zeigt eine Zunahme GIS-basierter Studien jenseits der Archäologie erst deutlich nach dem Jahr 2000.

14 *Nitz*, Grenzzonen und der Sammelband *Beck/Aschauer/ Hofmann,* Nitz (1994); mit Blick ebenfalls auf durch herrschaftliche Lenkung gegründete Siedlungen mit orientierten oder schematischen Ortsnamen *Jochum-Godglück*, Verhältnis (1997), 187–188. Raumkonzepte, insbesondere kirchlich, sieht ebenfalls *Ehlers*, Integration (2007), u. a. 50.

15 *Ehlers*, Die zweifache Integration (2002); *Ehlers*, Integration (2007).

16 Zur Theorie zentraler Orte in Auswahl *Dix*, Zentrale Orte (2013); *Nakoinz*, Concepts (2010).

17 Vgl. dazu *Fütterer*, Wege (2016), hier Bd. 2, 469 mit Karten 114a–c.

überörtlicher Funktionen oft allein auf überlieferte Königsaufenthalte oder auf den Nachweis einer Befestigung, da weitere Aussagen aufgrund fehlender schriftlicher Überlieferung oder ausstehender archäologischer Untersuchungen nicht möglich sind. Insbesondere auf die Königspfalzen und Herrschaftsmittelpunkte wird zurückzukommen sein.

Parallel zur fortschreitenden herrschaftlichen Durchdringung des Raumes mittels zentraler Plätze und einer administrativen Gliederung in Gaue und Grafschaften,[18] lässt sich bereits ein äußerer Landesausbau feststellen. Der erfasste nach Ausweis einschlägiger Ortsnamen, mit den für Mitteldeutschland typischen Grundwörtern auf -rode, -hain-/hagen oder -feld, vor allem den Ost- und Mittelharz, aber auch andere Bereiche in Altsiedelgebieten selbst oder deren Randlagen.[19] Gemäß schriftlicher Überlieferung und onomastischer Befunde schritt die Erschließung des Gebirges rasch voran und hob sich deutlich von den vorsichtigen Unternehmungen der karolingischen Zeit ab. Dass dabei auch die bisherigen Siedlungsgunstlagen verlassen wurden, bestätigt eine Projektion der Siedlungen über einen WMS-Layer, der die aktuellen Ertragskennzahlen zeigt (Abbildung 10.1).[20] Üppig mit Siedlungen besetzt sind die Gebiete, deren Böden beste Erträge erwarten ließen. Die Rodungsorte hingegen wurden überwiegend in Mittelgebirgslagen, die mehrheitlich durch Böden mittlerer Güte gekennzeichnet sind, gegründet. All diese Maßnahmen führten zu einer Erweiterung des Siedlungsraumes, dem Zugang zu wichtigen Ressourcen, insbesondere im Harz,[21] sodass dieser zentrale Herrschaftsraum am Ende ottonischer Herrschaft als dicht besiedelt und von einem engmaschigen, polylinearen Wegenetz durchzogen charakterisiert werden kann (Abbildung 10.2).

Die bisher vorgestellten Befunde resultieren aus der Erfassung umfangreicher Daten zur Siedlungsgeschichte der heutigen Bundesländer Thüringen und Sachsen-Anhalt.[22] Vorüberlegungen ließen ein beachtliches Datenvolumen erwarten. Daher

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18 Ausdehnung und Umfang sowohl der Gaue als auch der Grafschaften sind nicht zweifelfrei zu bestimmen. In der Forschung ist auch umstritten, ob bereits zur Karolingerzeit eine Grafschaftsverfassung in Ostsachsen und Thüringen eingeführt wurde. Vgl. dazu *Warnke*, Grafen (2019), 275.

19 Dazu *Fütterer*, Hilfsmittel (2019), 100–105 mit weiterer Literatur.

20 WMS = Web Map Service. Der WMS-Layer wird von der Bundesanstalt für Geowissenschaften und Rohstoffe bereitgestellt: services.bgr.de/wms/boden/sqr1000/?REQUEST=GetCapabilities&SERVICE= wms&VERSION=1.3.0 (Zugriff 07.03.2023); zur Datengrundlage vgl. bgr.bund.de/DE/Themen/Boden/ Ressourcenbewertung/Ertragspotential/Ertragspotential_node.html (Zugriff: 07.03.2023); alternativ kann Karte 45 aus *Schlüter/August*, Atlas (1959–1961) verwendet werden, nach dem diese georeferenziert wurde. Die seinerzeit erhobenen Kennzahlen decken sich nahezu mit den heutigen Bodenwertzahlen.

21 Der Harz bot neben Wild- und Waldreichtum natürlich auch Zugang zu verschiedenen Erzen, die bereits in der Vorgeschichte, dann wieder seit karolingischer Zeit gewonnen wurden. Zum Harz als Wirtschaftsraum, vgl. *Brachmann*, Harz (1992); zu jagdlichen Nutzung *Freund*, „Jagdpfalzen" (2019); zum Bergbau *Alper*, Eisengewinnung (2011); ders., Königslandschaft (2014).

22 *Fütterer*, Wege (2016), Bd. 2, 30–255 und CD-Beilage.
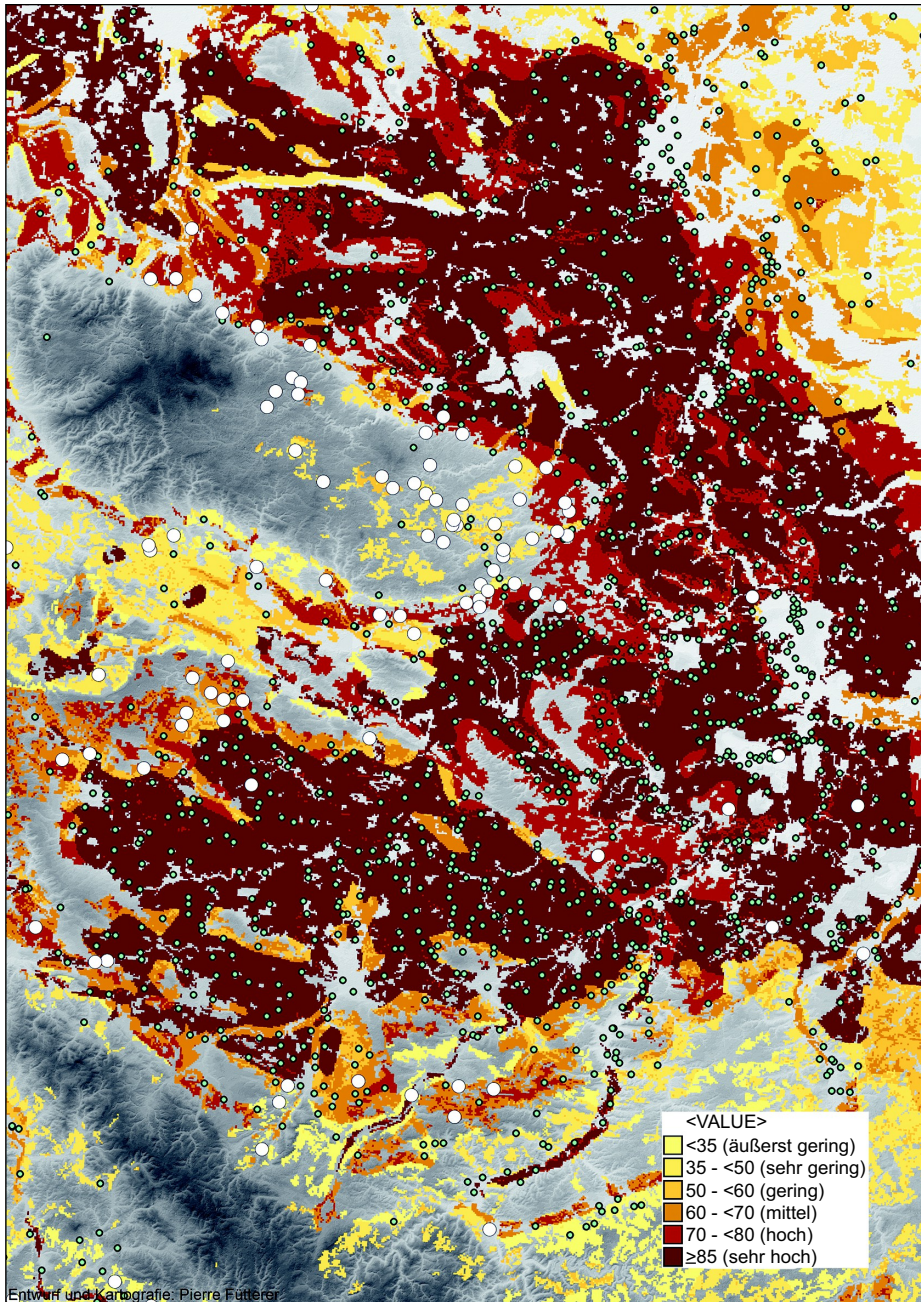
Abbildung 10.1: Verhältnis von Siedlungen (grüne Punkte) und Rodungsorten (weiße Punkte) zu den Bodenwerten; Karte: Verf.
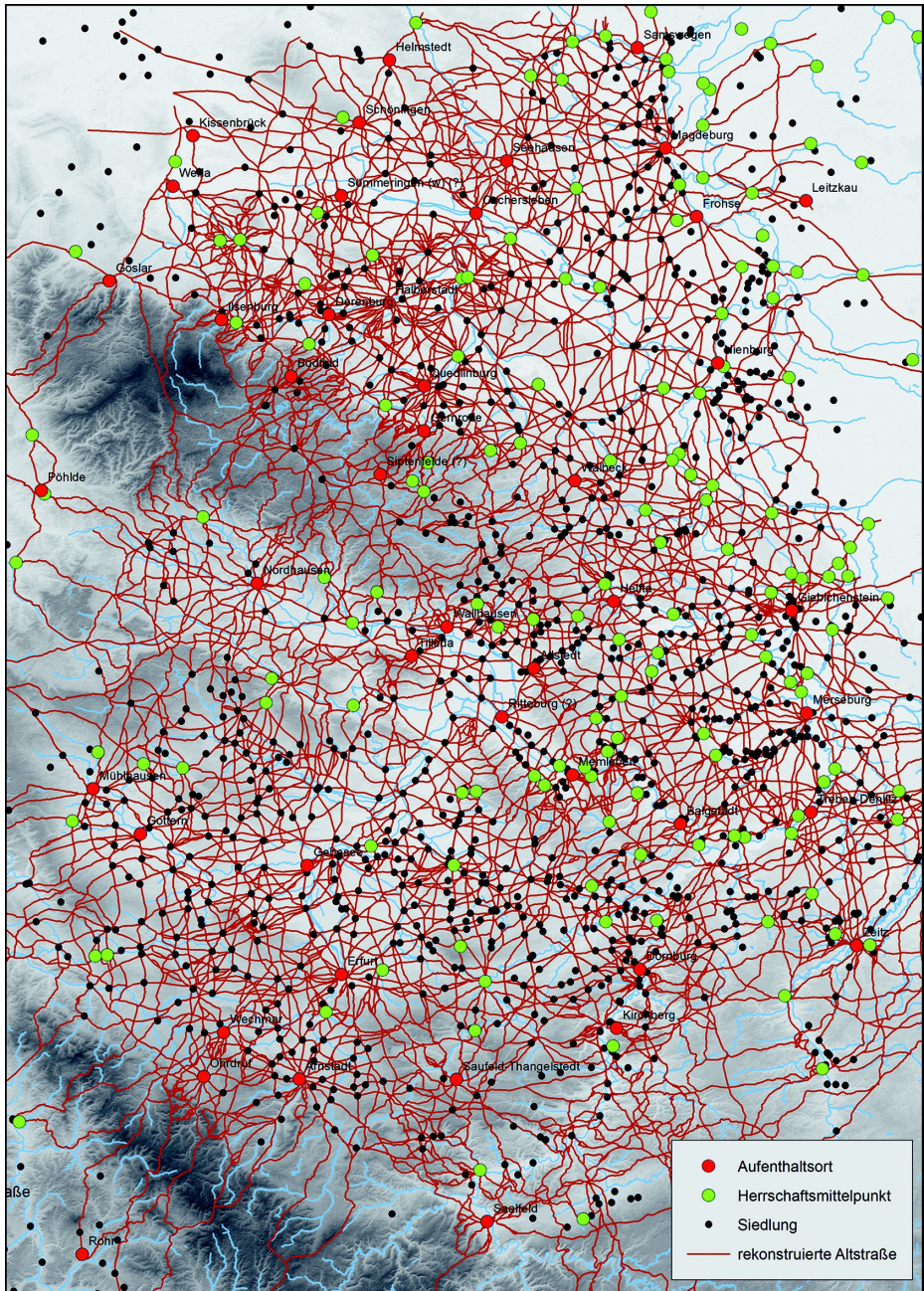
Abbildung 10.2: Siedlungs- und Verkehrswegenetz der Zeit um 1000 in Ostsachsen und Thüringen; Karte: Verf.

stand von Anfang an fest, die Informationen in eine Datenbank einzupflegen.[23] Der darin enthaltene Datenbestand umfasst 1749 Siedlungen, deren Existenz sich schriftlich und/oder archäologisch bis in die erste Hälfte des 11. Jahrhunderts nachweisen ließ. Die Datenerhebung erfolgte auf der Grundlage von Urkundenbüchern, Regestenwerken und anderen in edierter Form vorliegenden Quellen.[24] Archäologische Informationen wurden der Literatur oder den Ortsakten, die in den Archiven der Landesämter für Denkmalpflege und Archäologie Sachsen-Anhalt (Halle/Saale) und Thüringen (Weimar) liegen, entnommen.[25]

Da in jeder historischen Epoche Siedlungen mit überörtlichen Funktionen existierten, wurde zusätzlich für jeden Ort nach einer solchen Funktion gefragt, um weitere Hinweise auf die Siedlungsstruktur und den Grad herrscherlicher Raumerfassung zu erhalten. Zu den zentralörtlichen Funktionen zählen die schon genannten Befestigungen, königliche Aufenthalte, spezialisiertes Gewerbe, geistliche Einrichtungen am Ort sowie Markt, Münze, und/oder Zoll, außerdem qualifizierende Bezeichnungen wie *civitas*, *urbs*, *castellum*, *palatium* usw. Auf diese Weise gelang es, im Untersuchungsraum 162 Herrschaftsmittelpunkte zu identifizieren. Sie wurden zunächst in einer Tabelle erfasst. Für weitere Analyseschritte war die Integration beziehungsweise der Import der Tabellen in ein GIS notwendig. Zur Verfügung steht dazu eine ganze Reihe von Geoinformationssoftware, etwa ESRI ArcMAP, Quantum GIS oder SAGA GIS, dabei sind die beiden letztgenannten im Gegensatz zu ESRIs ArcMAP kostenfrei. Sie alle sind für sich genommen leistungsstark und bieten vielfache Möglichkeiten zum Betrachten, Bearbeiten, Erfassen und Analysieren räumlicher Daten. Darüber hinaus sind sie durch zusätzliche Tools oder Werkzeuge in ihrem Leistungsumfang erweiterbar.

Vor dem Import der Analyse der Daten in das GIS bestand die Notwendigkeit, alle Orte mit geographischen Koordinaten zu verknüpfen, die zum Beispiel der freien geographischen Datenbank GeoNames[26] entnommen oder über die ebenfalls freie Anwendung GoogleEarth ermittelt werden können. Durch die Verbindung historischer mit geographischen Informationen wurde das GIS zu einem Historisch-Geographischen Informationssystem.[27] Obschon kaum erwähnt werden braucht, dass mit GIS eine kartographische Darstellung raumbezogener historischer Daten möglich ist, liefert dies allein oftmals bereits neue Erkenntnisse. Dank der integrierten Analysewerkzeuge, wie Kern-

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23 Ein Auszug dieser Datenbank steht seit einiger Zeit als frei zugängliches Repositorium zur weiteren Be- und Verarbeitung unter miami.uni-muenster.de/Record/273af4bc-1ff7-4dc4-9a43-7c87a23271ab (Zugriff: 07.03.2023) zur Verfügung.

24 In Auswahl DD O I. Ed. *Sickel*; DD O II. Ed. *Sickel*; Regesten. Ed. *Lübke* (1985; 1986); RI II.1. Ed. *von Ottenthal*; RI II.2. Ed. *Mikoletzky*.

25 Literatur in Auswahl *Timpel/Spazier*, Corpus (2014); *Herrmann/Donat*, Corpus (1973), *Herrmann/Donat*, Corpus (1985); *Rempel*, Reihengräberfriedhöfe (1966).

26 Siehe dazu: geonames.org (Zugriff: 05.07.2023). Allerdings lassen sich hier nicht alle Orte finden, insbesondere wüstgefallene Siedlungen fehlen meist.

27 Vgl. dazu *Gregory*, place (2007); *Horstkemper/Sorbello*, Klio (2010); *Laczny*, Friedrich III. (2014).

dichteschätzer oder Netzwerktools, gelingen zudem weitere Einblicke in räumliche Strukturen, die nun vor- und zur Diskussion zu stellen sind.

10.3 Zur Verteilung von Königspfalzen und anderen Herrschaftsmittelpunkten

Herrschaftsmittelpunkte wie Pfalzen und Königshöfe spielten im Kontext von Mobilität und vor allem im Rahmen ambulanter Herrschaftspraxis als Teil der Verkehrsinfrastruktur die entscheidende Rolle. Für die Untersuchungszeit und das -gebiet sind durch schriftliche Überlieferung 47 Pfalzen und weitere königliche Aufenthaltsorte bekannt.[28] In der Forschung, die allein Orte als Pfalzen betrachtet, für die zeitnahe Bezeichnungen wie *palatium regis* oder ähnliches überliefert sind,[29] liegt das Augenmerk hier naturgemäß eher auf den herrscherlichen Aufenthalten und den in diesem Kontext überlieferten politischen Aktivitäten. Dass Pfalzen darüber hinaus als Produktionsstätten genutzt wurden, bezeugen die Befunde archäologischer Untersuchungen.[30] Parallel dazu gewährten sie Schutz, waren Handelsplätze und ebenso kirchliche Mittelpunkte. Da sie Möglichkeiten zur Rast, zur Versorgung und mit einiger Sicherheit auch für einen Pferdewechsel boten, werden sie zudem als wiederholt genutzte Etappenstationen auch jenseits der durch Urkunden und andere Schriftzeugnisse belegten Aufenthalte regelmäßig aufgesucht worden sein. Sie wurden demnach nicht nur von Herrschern, sondern auch von nachgeordneten Eliten, Boten oder Kaufleuten in Anspruch genommen.[31]

Durch archäologische Untersuchungen sind die Strukturen der Pfalzen einigermaßen bekannt.[32] Demgegenüber sind Mitteilungen zu Pfalzen, von qualifizierenden

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28 Vgl. dazu die Übersicht bei *Ehlers*, Erforschung (2014), 41–45 und *Gockel*, Königspfalzen (2000).

29 *Ehlers*, Erforschung (2014), 38.

30 Eine Zusammenstellung der gewerblichen Produktion an Pfalzstandorten bietet *Baumhauer*, Studie (2004).

31 So besaß Markgraf Gero in Magdeburg einen eigenen Hof; vgl. dazu *Böttcher/Gosch*, Magdeburg (2001), 412; ein kaiserlicher Meier, der 1014 den verwundeten Markgrafen Werner von Walbeck an Kaiser Heinrich II. verriet, amtierte in Wiehe an der Unstrut. Werner wurde über Memleben und Helfta, wo er von seinem Vetter, dem bekannten Chronisten und Bischof Thietmar von Merseburg empfangen und im Anschluss an die Bestattung der Viscera, nach Walbeck/Aller überführt. Helfta war Aufenthaltsort Ottos I. und Ottos II., aber bereits unter Otto I. war die dortige Kapelle an Merseburg übertragen worden, sodass auch hier eine vom König unabhängige Nutzung bezeugt ist; zur Episode mit Quellen und weiterer Literatur *Fütterer*, Thietmar (2021), 47, Anm. 42 und 70.

32 Noch immer grundlegend *Gauert*, Struktur (1965). In Thüringen und Sachsen-Anhalt sind bislang eingehend untersucht Tilleda (in Auswahl: *Dapper*, Pfalz [2002]; *Dapper/Gärtner/Northe*, Grabungsergebnisse [2017]), Gebesee (dazu: *Donat*, Gebesee [1996]) und Helfta (in Auswahl: *Donat*, Königshof [1988]; *Donat*, Helfta [1988]), wo auch seit 2021 wieder Ausgrabungen stattfinden; vgl. dazu archlsa.de/de/oeffentlichkeitsarbeit/presseinformationen/26062021-helfta.html (Zugriff: 07.03.2023).

Bezeichnungen abgesehen, in den Schriftzeugnissen rar und noch weniger geben die Quellen über Baulichkeiten oder die Gründe der Standortwahl preis. Zweifellos wird man sich das Prozedere ähnlich wie Sturmis Suche nach einem geeigneten Ort für sein künftiges Kloster vorstellen dürfen. Während Sturmi freilich eher einen abgeschiedenen Platz suchte, werden Standorte an Verkehrswegen für die Königspfalzen ein entscheidendes Moment gewesen sein. Dementsprechend zeigt sich ein Großteil der Pfalzstandorte als Verkehrsknotenpunkt, eingebunden in ein dichtes polylineares Wegenetz, von dem Ostsachsen und Thüringen durchzogen war.[33] Aus diesem Wegenetz lassen sich bevorzugt für den Fernhandel genutzte Trassen herauslesen, die der Verknüpfung zahlreicher reichsweit verteilter Handelsplätze dienten.[34] Parallel dazu sind konkrete Straßenzüge zu erkennen, die mit hoher Wahrscheinlichkeit vom reisenden Hof genutzt wurden. Grundlage für die Bestimmung dieser "Königsstraßen" waren Itineraretappen mit einer dichten Folge von Aufenthaltsorten und einer Tagesreiseleistung von mindestens 15 km pro Tag. Dadurch wurden Etappen ausgeschlossen, bei denen ein Abweichen von der direkten Route, wie sie bei geringeren Tagesreiseleistungen denkbar sind, möglich wäre. Durch die Aneinanderreihung der so sichtbar werdenden Wegstrecken und deren Überlagerung entstand ein Bild der "Königsstraßen", die – anders als von der Forschung bislang rekonstruiert – weite Teile der Kernlandschaft um den Harz erfassten und in ihrer Orientierung auf die übrigen Kernräume ottonischer Herrschaft in Niederlothringen, dem Rhein-Main-Gebiet und auch Bayern wiesen.[35] Ihr Verlauf ist dabei überwiegend durch die Geomorphologie des Raumes vorgezeichnet. So zeigen sich etwa zwischen Großem Bruch und Harz oder zwischen Harz und den Höhenzügen, die das Thüringer Becken im Norden begrenzen, regelrechte Verkehrskorridore, durch die seit langer Zeit genutzte Fernverbindungen verliefen.[36]

Da die ottonische Historiographie nahezu allein im Kontext von militärischen Unternehmungen über Zeltlager berichtet, in denen der König übernachtete und bisweilen auch urkundete oder anderweitige reichsrelevante Entscheidungen traf,[37] steht zu

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33 *Fütterer*, Wege (2016), bes. 88–103.

34 *Fütterer*, Handel (2017), 39–64.

35 *Fütterer*, Wege (2016), bes. 436. Die bisherige Darstellung von *Hans Jürgen Rieckenberg*, Königsstrasse und Königsgut in liudolfingischer und frühsalischer Zeit (919–1056). Darmstadt 1965, ist, weil sie vormodernen Verkehrsverhältnissen nicht entspricht, als ungenügend abzulehnen. Das gilt auch für mehr oder weniger daran anknüpfende Arbeiten, unter anderem von *Eckhard Müller-Mertens*, Die Reichsstruktur im Spiegel der Herrschaftspraxis Ottos des Großen. Mit historiographischen Prolegomena zur Frage Feudalstaat auf deutschem Boden, seit wann deutscher Feudalstaat? (Forschungen zur mittelalterlichen Geschichte 25) Berlin 1980, Kartenanhang.

36 *Ehlers*, Reisewege (2015); *Ehlers*, Straßensysteme (2018). Zu den Nord- und Südharztangenten, vgl. auch *Fütterer*, Wege (2016), bes. 99, 494–496.

37 So erfolgte bspw. 976 im kaiserlichen Lager *ante Ratisponam* die Bannung Herzog Heinrichs des Zänkers sowie seiner Verbündeten (vgl. dazu: RI II.2. Ed. *Mikoletzky*, n. 717a{a}, in: Regesta Imperii Online, URI: regesta-imperii.de/id/0976-07-00_1_0_2_2_0_265_717a{a} [Zugriff: 28.03.2023]); 977 unter-

vermuten, königliche Aufenthaltsorte könnten im Abstand einer durchschnittlich pro Tag (25–30 Kilometer) zu bewältigenden Distanz errichtet worden sein. Dieser Eindruck verstärkt sich noch durch die relativ gleichmäßige Verteilung der Pfalzen im Raum. Dementsprechend gilt es zu überprüfen, ob die räumliche Verteilung der Pfalzen sowie der übrigen Herrschaftsmittelpunkte einem derartigen Muster folgt und sich hinter ihrer Errichtung planvolles Handeln verbirgt.

Wesentliche Voraussetzung für diese Analyse ist die Kenntnis der Tagesreiseleistung, nicht etwa der Reisegeschwindigkeit, die sich nur in Ausnahmefällen bestimmen lässt.[38] Die von der älteren Forschung ermittelte Tagesreiseleistung des reisenden Hofes oder auch von Gesandtschaften betrug durchschnittlich zwischen 25 und 30 Kilometer.[39] Eine Auswertung von 111 Itineraretappen des ottonischen Königshofes sowie einiger nachgeordneter Herrschaftsträger mit konkretem Bezug zu Ostsachsen und Thüringen kam zu vergleichbaren Ergebnissen.[40] Zu ergänzen ist, dass zwischen den im Sommer oder Winter überwundenen Distanzen kein signifikanter Unterschied erkennbar ist. Lediglich auf dem Wasserweg waren die der Überlieferung nach stets flussabwärts zurückgelegten Entfernungen – erwartungsgemäß – deutlich größer.[41]

Um den durchschnittlichen Abstand der Pfalzen im Untersuchungsgebiet festzustellen, bot sich die Erstellung eines Unregelmäßigen Dreiecksnetzes (TIN) an, in dem

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warf sich der böhmische Fürst Bolelav II. im Feldlager Kaiser Otto II. [vgl. dazu RI II.2. Ed. *Mikoletzky,* n. 750a, in: Regesta Imperii Online, URI: regesta-imperii.de/id/0977-08-00_1_0_2_2_0_309_750a [Zugriff: 28.03.2023]); aus RI II.3. Ed. *Uhlirz*, n. 1035i, in: Regesta Imperii Online, URI: regesta-imperii.de/id/0991-09-09_1_0_2_3_0_394_1035i (Zugriff: 28.03.2023) ergibt sich eine mit DO III, 73 a. 991 verbriefte Schenkung an Bischof Milo von Minden im Feldlager bei der Belagerung der Brandenburg; 993 beurkundete Otto III. *iuxta civitatem Nienburch vocatam* mit DO III.136 eine auf Bitte Bischof Milos von Minden veranlasste Schenkung an das Kloster Wegedenburg (vgl. dazu RI II.3. Ed. *Uhlirz*, n. 1105, in: Regesta Imperii Online, URI: regesta-imperii.de/id/0993-08-15_1_0_2_3_0_527_1105 [Zugriff: 28.03.2023]). Die Liste ließe sich leicht fortsetzen.

38 Zwar bedarf diese Tatsache sicher keiner weiteren Erläuterung, doch soll der Unterschied zwischen Tagesreiseleistung und Reisegeschwindigkeit an einem Beispiel illustriert werden: Bischof Thietmar von Merseburg begab sich am 8. August 1012 von Merseburg zur ca. 18 Kilometer entfernten Burg Giebichenstein, wo Erzbischof Walthard krank danieder lag, und blieb bis zum Abend des gleichen Tages. Er kehrte noch am selben Abend wieder an seinen Amtssitz zurück und bewältigte somit 36 Kilometer. Allein der Umstand, dass sich Thietmar über Stunden bei Walthard aufgehalten hatte, verdeutlicht, dass die Reisedauer nur sehr kurz gewesen sein kann. Mit Rücksicht auf die Geschwindigkeit eines trabenden Pferdes von 12–18 km/h dürfte die Strecke jeweils in etwa einer Stunde bewältigt worden sein. Zur Episode zuletzt *Fütterer*, Thietmar (2021), 52–53.

39 Vgl. dazu zuletzt mit der einschlägigen Literatur *Scior*, Boten (2021), bes. 450–456, dort auch konkrete Überlegungen zur Geschwindigkeit von Boten, deren Geschwindigkeit vor allem von der Dringlichkeit der zu übermittelnden Nachrichten beeinflusst wurde; ebd., 455–456.

40 *Fütterer*, Wege (2016), bes. 448–451.

41 Vgl. dazu die Übersicht bei *Fütterer*, Wege (2016), 450.

die Pfalzen die Stützpunkte bildeten (Abbildung 10.3).[42] Gedankenleitend war dabei die Struktur vormoderner Wegenetze. Denn grundsätzlich gilt für benutzerorientierte Wegesysteme, wie sie für die Zeiten vor dem Chausseebau vorherrschend waren, das Prinzip der Energie- respektive Kostenersparnis.[43] Das äußert sich darin, dass die Verläufe der Verkehrslinien nahezu regelhaft einer Geraden angenähert sind. Abweichungen von der Ideallinien sind durch die Geomorphologie bedingt oder durch – modern gesprochen – verkehrspolitische Maßnahmen.[44] Man kann daher durchaus soweit gehen, die Kanten des Dreiecksnetzes als idealtypische Wegeverläufe anzusprechen. Die Länge der aus der Vernetzung der Aufenthaltsorte resultierenden 121 Kanten beträgt im Durchschnitt 25,96 km, allerdings ohne die Berücksichtigung der Geomorphologie des Untersuchungsgebietes. Bereinigt wurden bei der Berechnung Unschärfen am Rande des Dreiecksnetzes, insbesondere in jenen Bereichen, für die keine Wegeverbindungen wahrscheinlich sind.

Mit Blick auf die durchschnittliche Länge der Kanten scheint sich die Hypothese von planmäßig in Tagesetappen errichteten Pfalzen zu bestätigen. Gleichwohl bleibt fraglich, ob tatsächlich ein Konzept zugrunde liegt. Vielmehr könnten die Erfordernisse des Reisens nach dem Zurücklegen bestimmter Etappen die Errichtung eines festen Platzes zur Beherbergung verursacht haben. Konkreter Planung, die ohne schriftliche Zeugnisse nicht nachzuweisen ist, steht aber vor allem entgegen, dass die Entfernungen zwischen den königlichen Aufenthaltsorten von 7 bis 70 Kilometern betragen. Auch wenn sich etwas mehr als die Hälfte der Kanten in einer Gruppe, deren Distanzen zwischen 15 und 33 Kilometern messen, zusammenfassen lässt, liegt ein erheblicher Teil unterhalb der durchschnittlichen Tagesreiseleistung, ein anderer deutlich darüber.[45]

Gleichwohl erlaubt der Befund die Schlussfolgerung, dass die Versorgung und Unterbringung des reisenden Hofes keine Schwierigkeiten verursachten. Gerade in Gebieten mit einer gewissen Häufung von Aufenthaltsorten ist sogar an Einquartierungen an unterschiedlichen Plätzen bei größeren Zusammenkünften zu denken. Bei längeren Etappen waren hingegen Zwischenstationen zur Unterbringung notwendig. Dafür werden die – so die These – 162 Herrschaftsmittelpunkte des Untersuchungsgebietes genutzt worden sein. Deren mittlerer Abstand belief sich auf 12,33 Kilometer, ebenfalls mit einem 575 Kanten aufweisenden Unregelmäßigen Dreiecksnetz berechnet. (Abbildung 10.4). Das entspricht etwa einer halben Tagesreise. Man könnte demnach ebenfalls vermuten, die Herrschaftsmittelpunkte seien als zusätzliche Etappen-

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42 Behilflich war mir dabei der Archäologe Jan Miera (Münster), dem dafür mein herzlicher Dank gebührt. Die Berechnung der Abstände erfolgte mittels eines in SAGA GIS generierten TIN. Die Kanten des TINs wurden anschließend exportiert und mit MS Excel statisch ausgewertet.

43 *Tanner*, Fürstbistum (2008), 148.

44 Zur Linienführung vormoderner Wege unter anderem *Denecke*, Linienführung (2007).

45 Entsprechende vom Verfasser 2016 (*Fütterer*, Wege [2016], 86, 398, 442–443) formulierte Ansichten sind damit zu korrigieren.
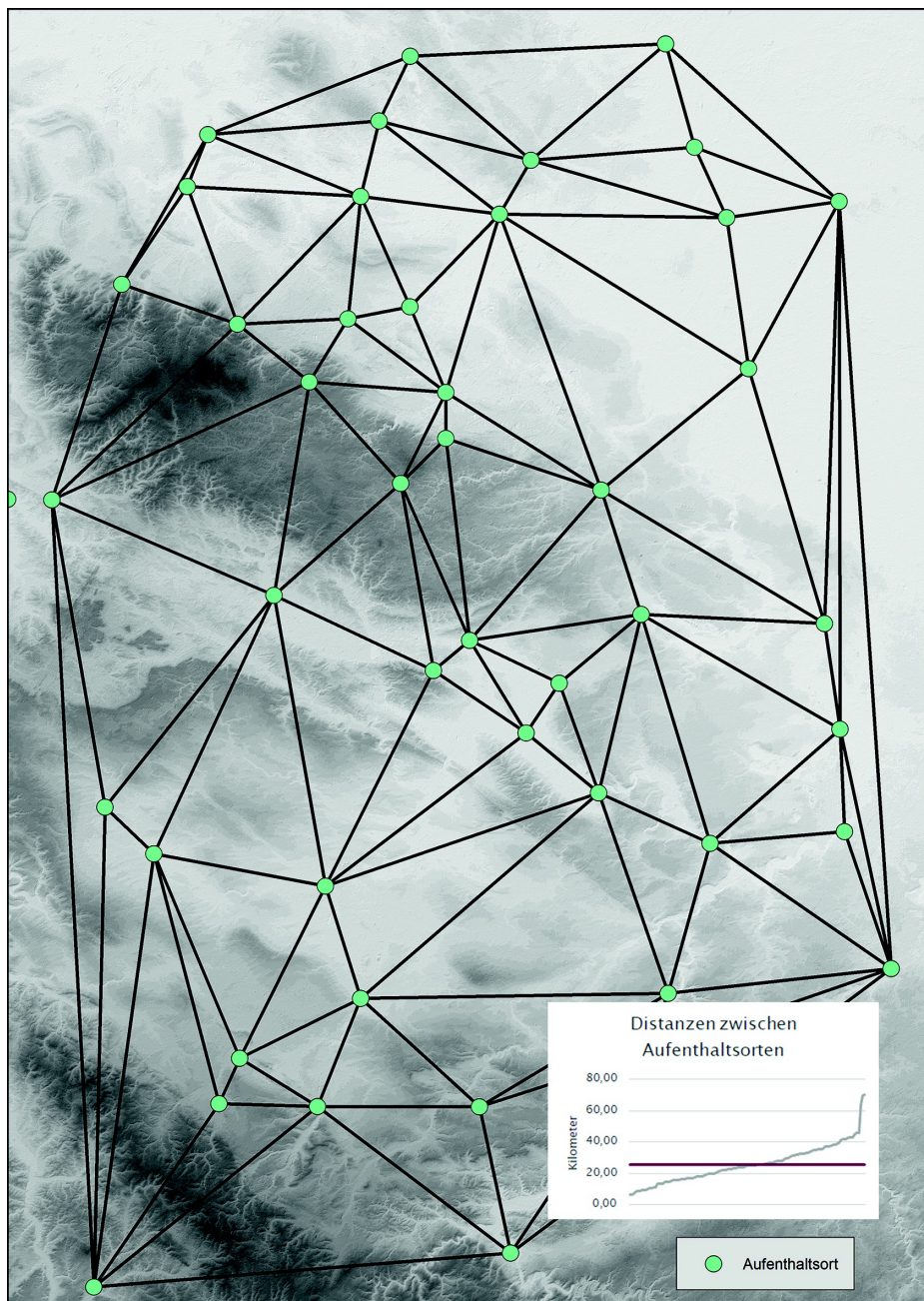
Abbildung 10.3: Unregelmäßiges Dreiecksnetz der Pfalzen und Distanzen zwischen den Aufenthaltsorten; Karte Verf.
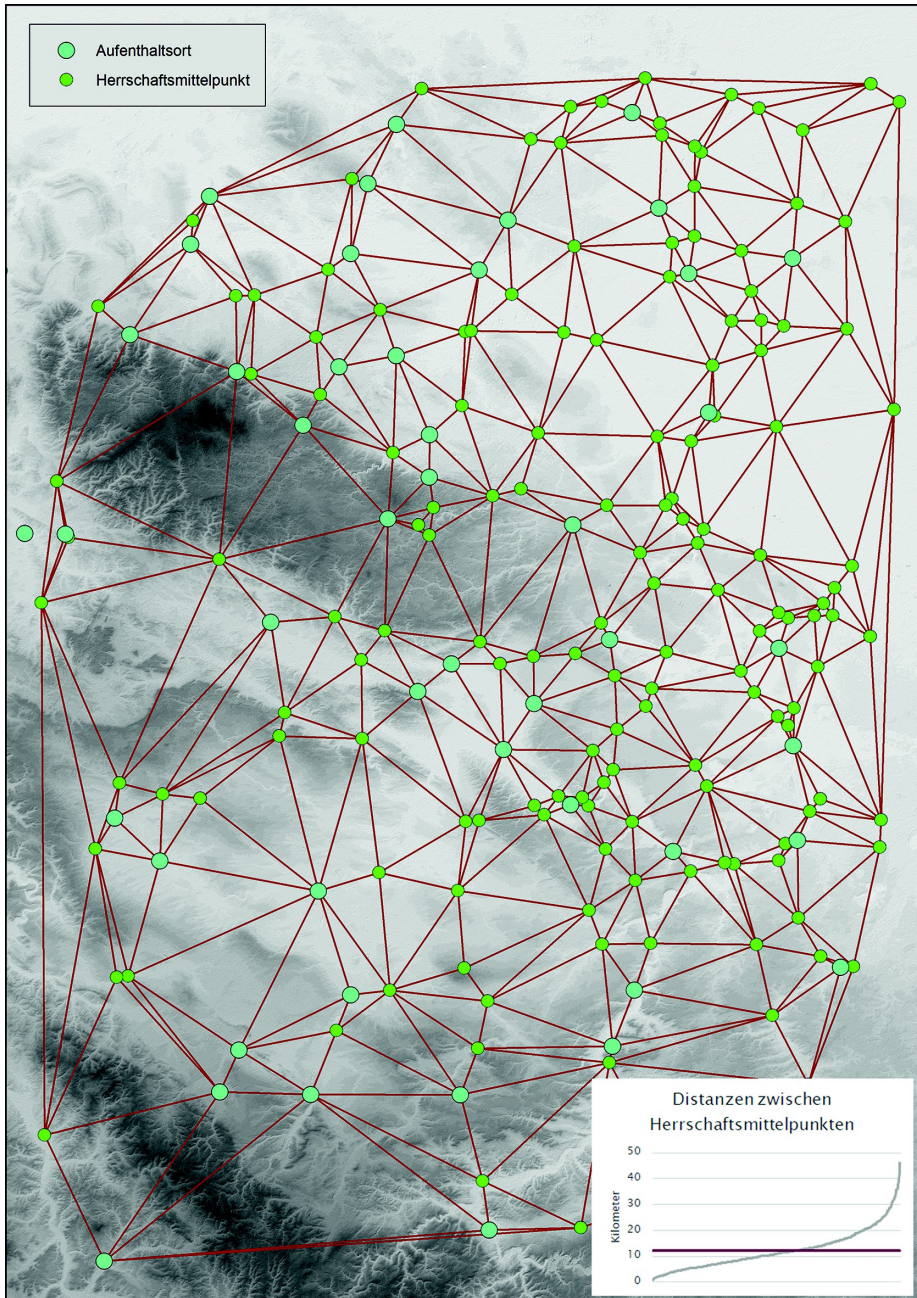
Abbildung 10.4: Unregelmäßiges Dreiecksnetz der Herrschaftsmittelpunkte und Distanzen zwischen den zentralen Orten; Karte Verf.

station errichtet worden. Doch auch hier variiert der Abstand zwischen weniger als einem bis hin zu annähernd 47 Kilometern. Die Masse der Verbindungen gruppiert sich jeweils im Bereich bis 10 Kilometern, mit 251, und im Bereich von 10 bis 20 Kilometern, mit 236 Verbindungen. Ein Konzept scheint ebenfalls nicht vorhanden. Dennoch mag die Berücksichtigung der Herrschaftsmittelpunkte, als potentielle Etappenstationen, viele Lücken im Beherbergungssystem geschlossen haben. Sicher dienten einige der zentralen Plätze als Rastorte entlang der vom König genutzten Straßen, zumal ihre Verteilung mit den Trassen der rekonstruierten "Königsstraßen" korreliert (Abbildung 10.5).

Dies auf eine planmäßige Errichtung zentraler Plätze als Teil einer Verkehrsinfrastruktur zurückzuführen, ist mittels des beschrittenen Weges nicht zu belegen. Wenn auch die Abstände im Mittel bei den Aufenthaltsorten einer und bei den Herrschaftsmittelpunkten einer halben Tagesreise entsprechen und dies eine gleichmäßige Verteilung im Raum suggeriert, so ist letztlich die Gesamtheit der tatsächlichen Distanzen zu disparat. Hinzukommt, dass die Analyse mit den Herrschaftsmittelpunkten arbeiten musste, die am Ende der Untersuchungszeit existierten. Damit blieb deren tatsächlicher Errichtungszeitpunkt ebenso unberücksichtigt, wie die daran gekoppelte räumliche Entwicklung innerhalb der Königslandschaft. Aussagekräftiger wird daher eine Untersuchung sein, die zeitscheibenweise die konkrete Erbauung der Zentralorte, etwa als Ergänzung zu bestehenden Infrastrukturen, und die damit fassbare räumliche Dynamik herrschaftlicher Durchdringung besser aufzeigen kann. Dafür ist es erforderlich, bislang undatierte Befestigungen in oder in der Nähe von in ottonischer Zeit bestehenden Ortschaften, etwa durch archäologische Untersuchungen, zeitlich präziser einzuordnen.[46]

10.4 Zur Struktur der ottonischen Kernlandschaft Ostsachsen

Während sich die regelhafte Platzierung königlicher Aufenthaltsorte und Herrschaftsmittelpunkte nicht verifizieren lässt, geben sich bei genauerer Betrachtung dennoch Muster in ihrer räumlichen Verteilung zu erkennen.

Trotz unterschiedlicher Entfernungen der Herrschaftsmittelpunkte zueinander wirkt der Raum um den Harz nahezu gleichmäßig erfasst. Ein Dichteraster, das per

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46 Jüngst laufende Ausgrabungen auf der Altenburg bei Großwangen erlauben nun beispielsweise, diese sehr große Burg, die auch als Standort der Pfalz Memleben diskutiert wird (vgl. dazu *Fiedler*, Altenburg [2008]), sicher in das 10. Jahrhundert zu datieren; vgl. dazu die Pressemitteilung unter: archlsa.de/de/oeffentlichkeitsarbeit/presseinformationen/2022/5822-altenburg-grosswangen.html (Zugriff: 16.03.2023).
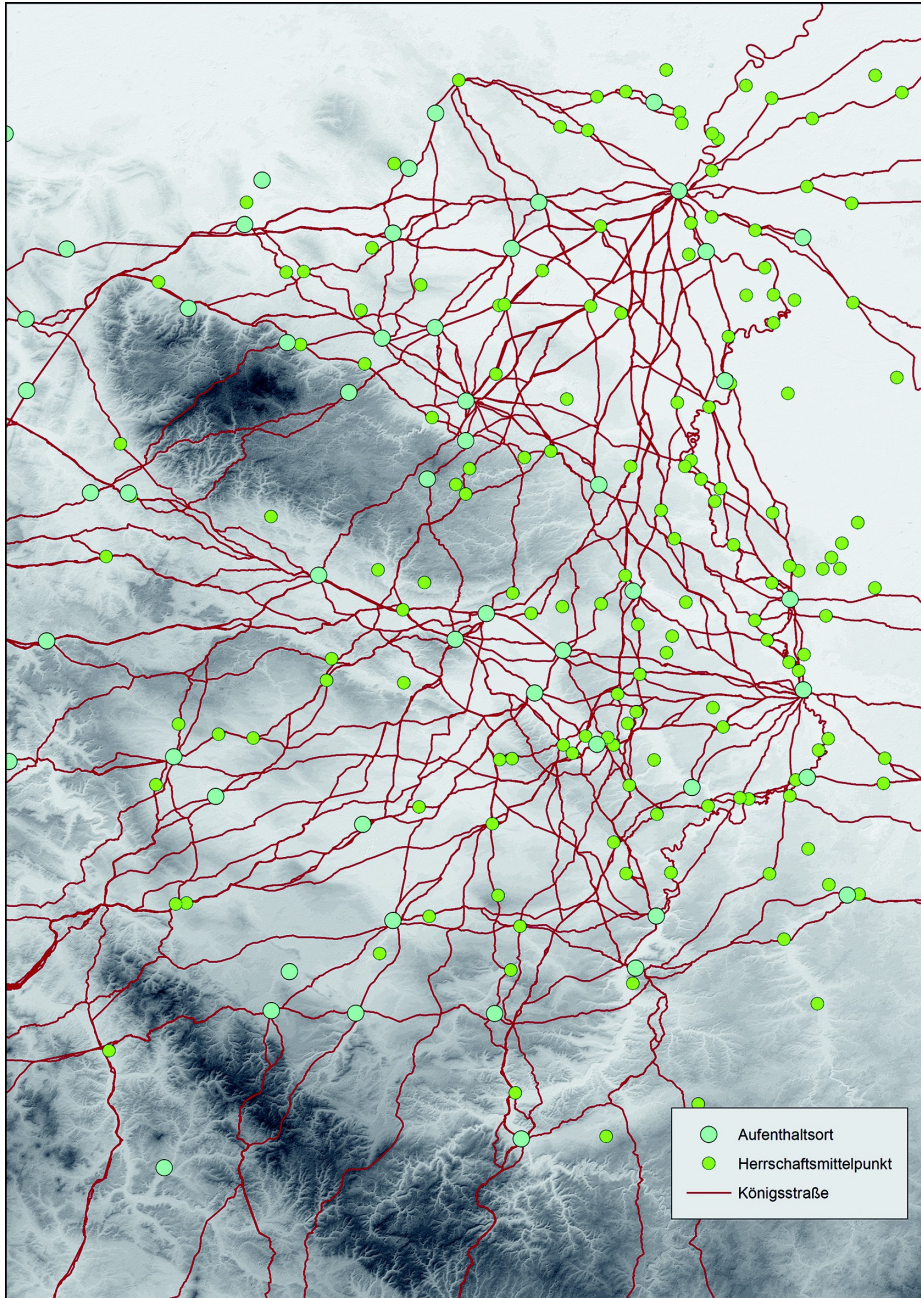
Abbildung 10.5: Netz der Königsstraßen und Verteilung von königlichen Aufenthaltsorten und anderen Herrschaftsmittelpunkten, Karte Verf.

Kerndichteschätzung im GIS unter Nutzung der voreingestellten Parameter erzeugt wurde,[47] zeigt, dass die gleichmäßige Erfassung des Raumes mit zentralen Orten jedoch trügt (Abbildung 10.6 rechts). Konzentrationen von Herrschaftsmittelpunkten weisen vor allem das östliche Harzvorland von der Unstrut im Süden bis zur Bode im Norden, weiterhin das Gebiet um Halle, der Raum südlich von Bernburg sowie die Region um Magdeburg auf und schließlich tritt eine besondere Konzentration im nördlichen Unterharz mit Siptenfelde, Thankmarsfelde und Gernrode entgegen.

Da nun den Herrschaftsmittelpunkten als Teil des Burgwardsystems eine Reihe von Siedlungen (10–20) zugeordnet waren,[48] müsste in den Regionen mit einer starken Häufung von zentralen Orten eine vergleichbare Konzentration der Siedlungen nachzuweisen sein. Darüber hinaus sollte die Häufung von Siedlungen in den Lösszonen mit ertragreichen Böden generell hoch sein, dabei in Richtung der Ränder infolge abnehmender Bodenqualität jedoch ausdünnen. Innerhalb der Bereiche bester Böden ist überdies eine annähernd gleichmäßige Verteilung der Siedlungen anzunehmen.[49] Zu prüfen ist somit einerseits, ob sich die Verbreitung der auf Löss gebildeten Schwarz- und Parabraunerden mit Siedlungskonzentrationen deckt und andererseits, ob die Häufung der Siedlungen mit den Ergebnissen der Kerndichteschätzung der Herrschaftsmittelpunkte korreliert.

Mit mehr als 1700 Siedlungen wirken Ostsachsen und Thüringen tatsächlich ziemlich dicht und nahezu gleichmäßig besiedelt (Abbildung 10.2). Demgegenüber zeigt ein ebenfalls per Kerndichteschätzung generiertes Dichteraster mehrere Gebiete, die eine besonders dichte Besiedlung aufwiesen (Abbildung 10.6 links). Siedlungskonzentrationen weisen das nördliche Thüringer Becken, die Nordspitze der Ilm-Saale-Platte, die Regionen um Magdeburg sowie der unteren Saale um Nienburg und Bernburg, schließlich die Goldene Aue mit Allstedt und Wallhausen sowie das Gebiet zwischen Halle und Merseburg auf.[50] Zwar stimmen sie erwartungsgemäß und überwiegend mit jenen Räumen überein, die über fruchtbare Böden verfügen, doch die Siedlungskonzentrationen erfassen nicht das komplette Gebiet mit besten Böden. Eine Ursache wird womöglich darin zu suchen sein, dass mitnichten alle Siedlungen des 10. und frühen 11. Jahrhunderts in die Berechnung einbezogen wurden. Nicht alle sind früh erwähnt oder es fehlen archäologische Funde, die ein hohes Alter der Siedlung bestätigen. Man muss dementsprechend von einer deutlich höheren Zahl existierender Ortschaften ausgehen. Die Vielzahl von Plätzen, die auf das Grundwort -ithi oder -leben enden, aber auch solche, die das fränkische -hausen oder -stedt als Grundwort aufweisen, legen dies nahe.[51] Ein Problem sind überdies nicht oder nicht sicher lokalisierte

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47 Kerndichteschätzung (KDE) als geeignetste Methode um Siedlungsdichten zu berechnen, vgl. dazu *Herzog*, Simulationsexperimente (2007), 8; *Herzog*, Analyse (2009), 78.

48 Vgl. dazu *Schulze,* Burgward (1983), 1102.

49 In diesem Sinne *Herzog*, Analyse (2009), 72.

50 Vgl. dazu zuletzt *Fütterer*, Hilfsmittel (2019), *Fütterer*, Kernzone (2022).

51 *Gringmuth-Dallmer*, Entwicklung (1983).

Wüstungen.[52] Deren Anzahl von 45 ist gleichwohl nicht besonders hoch, sodass eine Veränderung der Kernzonen nicht zu erwarten ist. Darüber hinaus stellt die Erfassung archäologischer Fundstellen, wie zum Beispiel im Stadtgebiet von Halle, ein Problem dar.[53] Einzelfunde oder nur punktuell erfolgte Ausgrabungen verursachen eine große Zahl von Fundstellen, für die nicht immer zweifelsfrei zu bestimmen war oder ist, in welchem Verhältnis sie zueinanderstehen. Es ist also nicht sicher, ob jeder Fundpunkt Teil einer separaten Siedlung war oder mehrere Fundstellen zu einer Siedlung gehörten. Schließlich ist eine Verzerrung der Ergebnisse besonders in jenen Bereichen nicht auszuschließen, die an den Rändern des Untersuchungsgebietes liegen. Obschon auch Siedlungen jenseits dieser fiktiven Grenze erfasst wurden, erreichen sie längst nicht die Menge wie innerhalb des analysierten Raumes. All das könnte die durch die Kerndichteschätzung gewonnenen Ergebnisse bei einer Fortführung der Untersuchung noch beeinflussen und die Interpretation verändern.
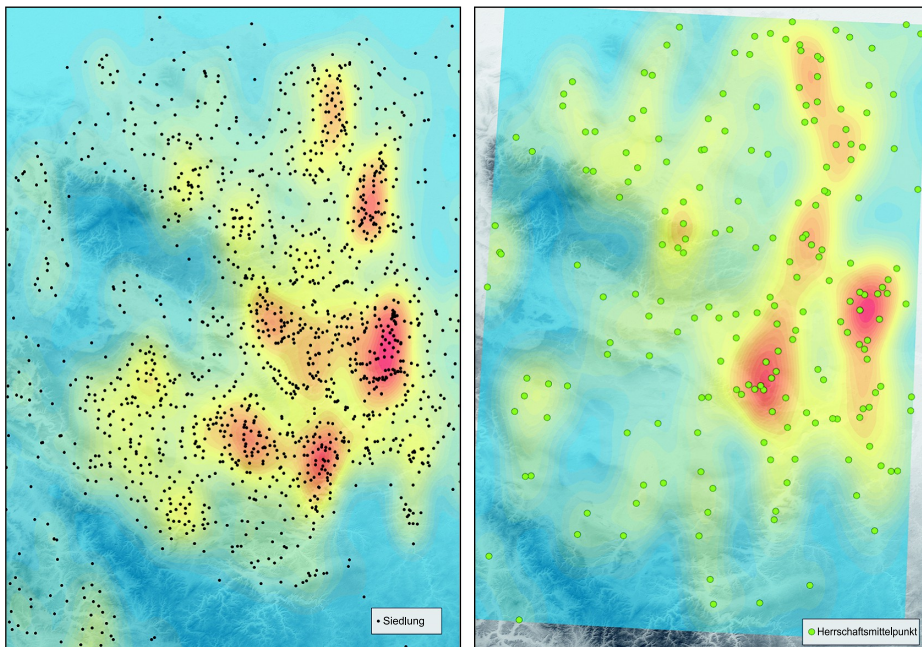
Abbildung 10.6: Vergleich der Ergebnisse der KDE von Siedlungen (links) und Herrschaftsmittelpunkten (rechts); Karten: Verf.

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52 Eine Lösung für derartige Unsicherheiten zeigte unlängst *Breier*, Representing (2019), 177–178, der vorschlägt, statt eines Sicherheit suggerierenden Punktes eine polygonale Fläche, in der die Wüstung sicher zu verorten ist, für die Verarbeitung in einer Datenbank zu verwenden.
53 Vgl. dazu die Übersicht bei *Fütterer*, Wege (2016), hier Bd. 2, bes. 160–163.

Das gilt es auch für den Vergleich der Dichte von Herrschaftsmittelpunkten und Siedlungen zu berücksichtigen. Doch anders als bei der nicht komplett übereinstimmenden Verbreitung von "Hotspots" der Besiedlung mit ertragreichen Böden, decken sich die Konzentrationen der Zentralorte weitestgehend mit denen der Siedlungen. Sie bilden einen sich von Süden nach Norden verjüngenden, insgesamt recht breiten Streifen überwiegend westlich von Saale und Elbe.

10.5 Schlussfolgerungen und Interpretation der Befunde

Was lässt sich aus den bis hierhin gewonnenen Einsichten in die ottonenzeitliche Siedlungsstruktur Ostsachsen und Thüringens schlussfolgern? Zunächst ist festzuhalten, dass der Befund ungleichmäßiger, gleichwohl generell intensiver Besiedlung der Lösszonen mit einiger Sicherheit auf eine unvollständige Datenerfassung zurückzuführen ist. Dessen eingedenk ist die Berechnung der Siedlungsdichte und der Dichte der Herrschaftsmittelpunkte nur mit Vorsicht zu interpretieren, da auch hier eine Erweiterung und Präzisierung des Datenbestandes zu anderen Ergebnissen führen dürfte. Davon unbenommen bleibt die Übereinstimmung der Dichtezonen von Siedlungen und Herrschaftsmittelpunkten, die den Zustand am Ende ottonischer Herrschaft abbilden. Wiewohl dieser Befund auf den ersten Blick bemerkenswert erscheint, so logisch ergibt sich die Konzentration zentraler Orte aus der Siedlungsdichte. Kurz gesagt sind viele Ortschaften beziehungsweise eine große Bevölkerung ursächlich für viele Herrschaftsmittelpunkte, deren Funktion als Verwaltungsmittelpunkt damit mehr als wahrscheinlich wird.

Mittels der georeferenzierten Karte 15 "Gaue und Burgwardhauptorte im 10. und 11. Jahrhundert" aus dem "Atlas des Saale- und mittleren Elbegebietes" lässt sich dieser Befund weiter interpretieren. Auffällig ist die Übereinstimmung der Dichtezonen mit bestimmten Gauen.[54] Sie entsprechen dem Engilingau, Teilen des Nordthüringgaues, den slawisch benannten Gauen Nudzizi, Coledizi, Serimunt, Neletici sowie Zitici.

Ein besondere Dichtezone aber bildet das östliche Harzvorland, also die Region zwischen Wallhausen, Helfta und der Saale mit Halle und Merseburg. Sie stimmt zweifelsfrei mit dem viel diskutierten Hassegau überein. Dieser Raum hat bereits früh das Interesse der Forschung geweckt.[55] Es soll hier schon vor dem übrigen Sachsen – und als Sturmi suchend durch die Wüstenei der Buchonia wanderte – gegen

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54 *Schlüter/August*, Atlas (1959–1961), Karte 15; vgl. dazu *Heßler*, Gaue (1959–1961). Die Überlagerung des Dichterasters mit der Karte 15 findet sich als Abb. 6 in *Fütterer*, Hilfsmittel (2019), 107.
55 Zuletzt dazu *Warnke*, Grafen (2019) mit der älteren Literatur.

Ende des 8. Jahrhunderts die Grafschaftsverfassung eingeführt, eine Unterteilung in Pfarrsprengel erfolgt und ein bis in diese Zeit zurückreichendes gestaffeltes Burgensystem zur Verteidigung gegen die Slawen errichtet worden sein.[56] Einige dieser Annahmen sind inzwischen von der Forschung widerlegt, während die besondere Bedeutung des Raumes für die Ottonen unstrittig ist. Indem sich Heinrich I. mit seiner 906 erfolgten Heirat mit der Merseburger Adelstochter Hatheburg einen ausgedehnten Güterkomplex einverleibte, der nach der wenig später erfolgten Scheidung bei Heinrich verblieb, gelangten möglicherweise Bemühungen zum Ziel, die ihren Anfang bei Heinrichs Vater Otto dem Erlauchten nahmen.[57] Dieser soll als Laienabt des Klosters Hersfeld klösterliche Besitzungen zwischen Harzrand und Saale entfremdet haben. In Verbindung mit den weiteren, sich westlich des Harzes konzentrierenden Besitzungen der Ottonen bildete dieser Raum so etwas wie die Ausgangsbasis für deren weitere Machtentfaltung, die schließlich im Königtum Heinrichs I. gipfelten. Von Vorteil für den Griff nach der Krone war eine geschickte Güterpolitik in Verbindung mit der erfolgreichen Fortführung der von den Karolingern begonnen Erschließungsmaßnahmen. Ihre Intensivierung brachte die durch den Einsatz von GIS visualisierte Siedlungsstruktur mit zahlreichen Orten und multifunktionalen zentralen Plätzen am Ende ottonischer Herrschaft hervor. Einfluss auf diese Entwicklung hatten aber ebenso die Gunstfaktoren des Raumes und schließlich eine Vielzahl sich hier kreuzender Fernverkehrsverbindungen.

10.6 Fazit

In Ergänzung zu eher allgemeinen Einblicken in die Siedlungsstruktur einer Königslandschaft verfolgte die Studie das Ziel, Möglichkeiten und Grenzen des Einsatzes von Geographischen Informationssystemen in Verbindung mit Datenbanken für die mediävistische Forschung aufzuzeigen. Dazu wurde parallel zur Kerndichteschätzung von Siedlungen und Herrschaftsmittelpunkten anhand der Verteilung und der Distanzen der zentralen Orte zueinander gefragt, ob gezielte Maßnahmen zur räumlichen Erschließung und damit zur Herrschaftssicherung und zum -ausbau nachzuweisen sind. Die These von in regelmäßigen Abständen errichten Pfalzen und anderen Herrschaftsmittelpunkten im Kontext der ambulanten Herrschaftspraxis ließ sich nicht verifizieren, da die Distanzen zueinander doch insgesamt zu ungleich bemessen waren und sich beispielsweise im Ostharzvorland mit dem Hassegau eine deutliche Konzentration zentraler Orte zeigte. Aber eine gezielte, nicht nur an strategischen Gesichtspunkten gemessene Errichtung wird man doch unterstellen dürfen, da die Dichte der

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56 *Grimm*, Burgen (1940); kritisch dazu *Altmann/Grabolle*, Burgenbau (2011); zum Hassegau auch *Wenskus*, Hassegau (1986).

57 Hierzu und zum Folgenden in Auswahl *Jordan*, Harzraum (1977), 166.

Herrschaftsmittelpunkte und der Siedlungen nahezu deckungsgleich sind. Besonders dicht besiedelt waren verschiedene Gaue im Osten des Untersuchungsgebietes entlang der Saale und Elbe. Insbesondere der Hassegau tritt auch hier deutlich hervor, wodurch sich dessen Bedeutung in der vorliegenden Untersuchung für die Aufrichtung ottonischer Herrschaft bestätigt.

Es drängt sich aus heutiger Perspektive der Gedanke auf, dass mit wachsender Bevölkerung eine steigende Zahl administrativer Mittelpunkte notwendig wurde. Als Vergleich mag die Entwicklung der Pfarreien von ursprünglich großen Pfarreien zu territorial immer kleiner werdenden Sprengeln größerer Zahl zur besseren seelsorgerischen Versorgung der Gläubigen dienen.[58] Inwieweit den Zeitgenossen solche Überlegungen zu eigen waren, steht freilich dahin, obschon der Hinweis auf die Pfarrsprengel Planungen oder zumindest pragmatische Anpassungen an veränderte Bedingungen beim mittelalterlichen Menschen offenlegt oder auch die Bauplatzsuche Sturmis ein gezieltes Vorgehen mit Blick auf räumliche Gegebenheiten zeigt.

Dabei bleibt insgesamt die Einschränkung, dass die unternommenen Untersuchungsschritte hinsichtlich der zeitlichen Einordnung aller inkludierten Ortschaften stark vom Forschungsstand abhängig sind. Darüber hinaus würde die Berücksichtigung von Orten, deren Namen auf eine frühe Gründung schließen lässt, die Datengrundlage erweitern, wodurch die Analysen andere Ergebnisse zeitigen könnten. Obschon mit GIS auch dynamische Darstellungen historischer Entwicklungen möglich sind, bilden die vorgestellten Erkenntnisse jeweils nur eine Momentaufnahme vom Ende der Herrschaft Kaiser Heinrichs II. Positiv gewendet zeigt sich der Entwicklungsstand zu einem konkreten Zeitpunkt. Das Instrumentarium zu seiner Auswertung in GIS kann, entsprechende Daten vorausgesetzt, aber für jede beliebige Zeitstufe angewandt werden und bietet damit immer neue Einblicke in räumliche Strukturen, die sonst verborgen blieben würden. Das betrifft im vorliegenden Fall neben der Verteilung der Siedlungen, Herrschaftsmittelpunkte und königlichen Aufenthaltsorte nachgerade deren Grad an Vernetzung untereinander, der durch die Kanten des TINs angedeutet wird. Zudem entsprechen – das offenbart ein Blick auf Abbildung 10.4 und 10.5 – diese Kanten in Teilen rekonstruierten Altwegen, sodass – quasi en passent – erste Erkenntnisse zur Verkehrslage der zentralen Orte zu gewinnen sind und Potential für weitere Forschungen zum Vorschein gebracht ist. Mithin erweist sich der bisweilen steinige Weg bei der Anwendung digitaler Werkzeuge vor allem deshalb als lohnenswert, weil selbst in stark beforschten Gebieten neue Erkenntnisse gewonnen werden. Es bleibt Aufgabe des Historikers, diese – natürlich – historisch-kritisch zu interpretieren und auszuwerten.

Schließlich, das ist ein weiterer Vorteil von GIS in Verbindung mit Datenbanken, stehen die einmal gesammelten raumbezogenen historische Daten für künftige Frage-

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58 Zur Pfarrorganisation allgemein *Bünz*, Pfarrei (2008), der aber auf Seite 42 betont, eine zusammenhängende Kirchenorganisation sei erst seit dem hohen Mittelalter geschaffen worden.

stellungen und Untersuchungen zur Verfügung und vermitteln damit Impulse für neue Forschungen,[59] mithin – so ließe sich zusammenfassend formulieren – erfordert der Einsatz von GIS einen hohen Aufwand, lockt aber mit großem Gewinn.

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[59] Idealerweise stehen die gesammelten Daten, sofern nicht über Schnittstellentechnologien verfügbar gemacht, als frei zugängliche Datenrepositorien zur Verfügung.

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Irmela Herzog

11 Reconstructing past movement patterns on the basis of known old roads. A case study on pre-industrial roads in a hilly area in Germany

11.1 Introduction

Many ancient roads serve as evidence of continuous movement over extended periods of time. Their analysis provides insights not typically found in historical travel accounts. However, identifying the historical network of major travel routes within a specific study area – based on both historical and archaeological evidence – is a complex task. This is precisely what the geographer Herbert Nicke has accomplished in his publications on ancient trade routes in a mostly hilly region situated east of Cologne, Germany (Figure 11.1).[1] Nicke's work utilises historical maps, travel records, and other historical sources, in addition to landscape observations. Regarding Nicke's descriptions of the medieval and early modern routes as faultless, the objectives of the present analysis are, firstly, to quantitatively ascertain the factors that influenced route selection using least-cost path (LCP) modelling and, secondly, to identify the primary reasons for substantial disparities between known old routes and the best performing LCPs.

The study region consists of two sections. The smaller, western section comprises the fluvial terraces of the River Rhine and a 5-kilometre hilly fringe. Moving eastwards from the Rhine, these elevations climb from 42 to 660 metres above sea level. In contrast to the relatively flat fluvial terraces of the Rhine, which were inhabited in prehistoric times, the hilly eastern part of the study region contains few archaeological remnants predating the Middle Ages.[2] This paucity is likely due to less fertile

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1 *Nicke,* Brüderstraße (2000); *Nicke,* Wege (2001); *Nicke,* Heidenstraße (2001).
2 *Herzog,* Issues (2022), 134.

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soils, cooler temperatures, higher precipitation rates, and steeper slopes – all of which hinder efficient agriculture.

It appears that, for a significant duration of time, most medieval and early modern roads remained in use, with some being adapted to new requirements, and new roads emerging as new locations gained importance. Regrettably, determining the age of the Nicke roads is seldom possible due to the absence of archaeological investigations and historical sources. Hans Leonhard Brenner postulates that some of the old pathways described by Nicke had prehistoric predecessors (cf. Table 11.1).[3] He contends that the presence of individual prehistoric sites near a route indicates the route's significance during that time. This assumption forms the basis of many LCP studies. However, both old maps[4] and statistical tests[5] suggest that this hypothesis may not hold true in every situation. In this study area, no Roman roads have been documented. According to Reinhold Wacker, during the Merovingian era, travellers primarily used Roman roads and pack animals were the preferred mode of transport, while wheeled vehicles were mainly employed for agricultural purposes.[6] During the Carolingian era, the road system expanded into areas east of the Rhine, with Cologne serving as one of the primary points of origin for this expansion.[7] Some authors propose that this development began during the Merovingian period.[8] Consequently, roads commencing in Cologne or Siegburg – and mentioned in medieval historical sources or depicted on early modern maps – are often presumed to have been constructed in the early Middle Ages.

In the study region, medieval roads were typically formed and maintained through daily usage, with some exceptions being bridges and paved fords.[9] Many clusters of sunken lanes, predominantly found in wooded areas, serve as archaeological evidence of medieval and early modern road systems. These sunken lanes – also known as "hollow ways" – come into existence when soil must be cleared due to heavy vehicles repeatedly getting stuck in the mud.[10] Consequently, embankments are formed on both sides of the pathway. On slopes, rainwater erosion can wear away any remaining soil on the track. Occasionally, to avoid muddy tracks, new pathways were established parallel to existing ones. This practice explains why bundles of sunken lanes are frequently encountered.

Medieval and early modern roads in the studied region were designed to be as direct as possible, generally following ridges and attempting to circumvent water-

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3 *Brenner*, Straßen (2016), 11.

4 E.g. Mercator, Grundtliche Beschreibungh. Ed. *Weirich*.

5 *Herzog,* Testing Models (2014).

6 *Wacker*, Verkehrswesen (2008), 37–38.

7 *Wacker*, Verkehrswesen (2008), 39.

8 E.g. *Berges*, Eisenstraße (2016), 24.

9 *Nicke,* Wege (2001), 14.

10 *Brenner*, Straßen (2016), 11; *Nicke,* Wege (2001), 14.

Table 11.1: Old road sections in the study area.

No.	Road name	Length (m)	References (route)	Waypoints	Date
1	Bergische Eisenstraße	45275	Nicke, Wege (2001), 106–109; map p. 102; Berges 1993	Remscheid-Bergisch Born, Wipperfürth, Marienheide, Gummersbach, Drolshagen-Gelslingen	Nicke, 102, 178: high to late Middle Ages; Berges: fourteenth century
2	Bergische Eisenstraße, alt. route III	10521	Nicke, Wege (2001), 109	Gummersbach-Bernberg, Bergneustadt-Belmicke	Nicke, 102, 178: high to late Middle Ages
3	Brüderstraße	45634	Nicke (2000); Brenner (2016); Wacker (2008), 41	Bergisch Gladbach-Frankenforst, Reichshof-Erdingen	Nicke, 210: late Iron Age; Brenner: since Roman times; Wacker: Carolingian
4	Heerweg	37948	Nicke, Wege (2001), 85, map p. 78; Brenner (2016)	Bergisch Gladbach, Wipperfürth, Halver	Brenner: Neolithic
5	Heerweg II	20333	Nicke, Wege (2001), 87–88	Bergisch Gladbach-Romaney, Lindlar-Buchholz	
6	Heidenstraße	53683	Nicke, Heidenstraße (2001), 35–48; Brenner (2016); Gaudich (2016); Scherer (2016); Wacker (2008), 69	Bergisch Gladbach-Frankenforst, Hohkeppel, Marienheide-Gimborner Galgen, Meinerzhagen-Vestenberg	Brenner: Neolithic; Gaudich: Protohistory; Berges: since about 1000; Wacker: medieval
7	Hileweg	26274	Nicke, Wege (2001), 49–50; map p. 45	Drolshagen-Wegeringhausen, Halver	Nicke, 52: early medieval?
8	Homburgische Eisenstraße	21766	Nicke, Wege (2001), 109; map p. 102	Engelskirchen, Gummersbach-Derschlag	Nicke, 102, 178: high to late Middle Ages
9	Köln-Dortmunder Straße	22168	Nicke, Wege (2001), 83, map p. 78; Wacker (2008), 68	Leverkusen-Neuboddenberg, Remscheid-Bergisch Born, Remscheid-Lennep	Wacker: thirteenth century
10	Märkische Eisenstraße	14350	Nicke, Wege (2001), 104; map p. 102	Meinerzhagen-Schnüffel, Lüdenscheid-Bierbaum	Nicke, 102, 178: high to late Middle Ages
11	Mauspfad	17896	Nicke, Wege (2001), 42–43; map p. 71; Brenner (2016)	Siegburg, Köln-Heumar	Brenner: Neolithic

Table 11.1 (continued)

No.	Road name	Length (m)	References (route)	Waypoints	Date
12	Nutscheid	36377	Nicke, Wege (2001), 80–82; map p. 59	Hennef-Schloss Allner, Reichshof-Eichholz	
13	Oberbergische Diagonale, southern route	16933	Nicke, Wege (2001), 116–117	Wiehl-Jägerhof, Reichshof-Hespert	
14	Polizeiweg	44789	Nicke, Wege (2001), 115; map p. 88; Scherer (2016)	Siegburg, Hohkeppel, Wipperfürth	
15	Zeitstraße	58334	Nicke, Wege (2001), 89–96; map p. 88; Berges (1993)	Siegburg, Much, Marienheide, Halver	Berges: since about 1000 (section Much to Marienheide)
16	Zeitstraße, alt. route 1	12425	Nicke, Wege (2001), 92	Much, Oberfrielinghausen/ Heidenstraße	
17	Zeitstraße, alt. route 2	6670	Nicke, Wege (2001), 94–95	Gummersbach-Birnbaum, Gimborner Galgen/Heidenstraße	
18	Zeitstraße, access from Gummersbach	5738	Nicke, Wege (2001), 95–96	Gummersbach-Birnbaum, Gummersbach	

courses, which were often surrounded by marshy areas, impeding swift movement.[11] The layer of soil on these ridges was rather thin, and wheeled vehicles gradually eroded it, keeping the roads relatively dry. Over time, the road network evolved, particularly with the increasing significance of the iron industry in the valleys.[12] As a result, more construction activity focused on roads in wet areas. This development culminated in the Industrial Revolution, which reached its zenith in the nineteenth century.

According to Nicke, pack animals were likely the swiftest mode of transportation on most routes prior to road construction commencing in the late eighteenth century. Oxcarts were primarily used for short-distance transport, while pack animals were preferred for longer journeys.[13] Two-wheeled horse carts gained popularity as a

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11 *Nicke,* Brüderstraße (2000), 25, 32–33; *Nicke,* Wege (2001), 7–9; *Berges,* Eisenstraße (2016), 30; *Brenner,* Straßen (2016), 11.

12 *Nicke,* Wege (2001), 10–11; *Geurts,* Verkehrsentwicklung (2016), 30.

13 *Nicke,* Wege (2001), 21.

means of transport during the seventeenth and eighteenth centuries. In the hilly study area, the introduction of wheeled transport on routes previously utilised exclusively by pedestrians, pack animals and occasional riding animals necessitated specific alterations. The critical slope – which indicates the point at which using hairpin curves becomes more efficient than the direct uphill or downhill route – is higher for pedestrians than for wheeled vehicles. The physiologist Alberto Minetti discovered that the critical slope for pedestrians is approximately 25% for both descending and ascending paths.[14] Roman roads and modern forest roads typically maintain slopes below 12%, with only brief sections exceeding this value.[15] After vehicles gained popularity, these now dictated the road's trajectory in areas of steep slopes, even though most travellers still walked, and pack animals handled the bulk of transportation, Sunken lanes were mainly formed by vehicles. Thus, most of the routes described by Nicke were probably utilised by wheeled vehicles for an extended period.
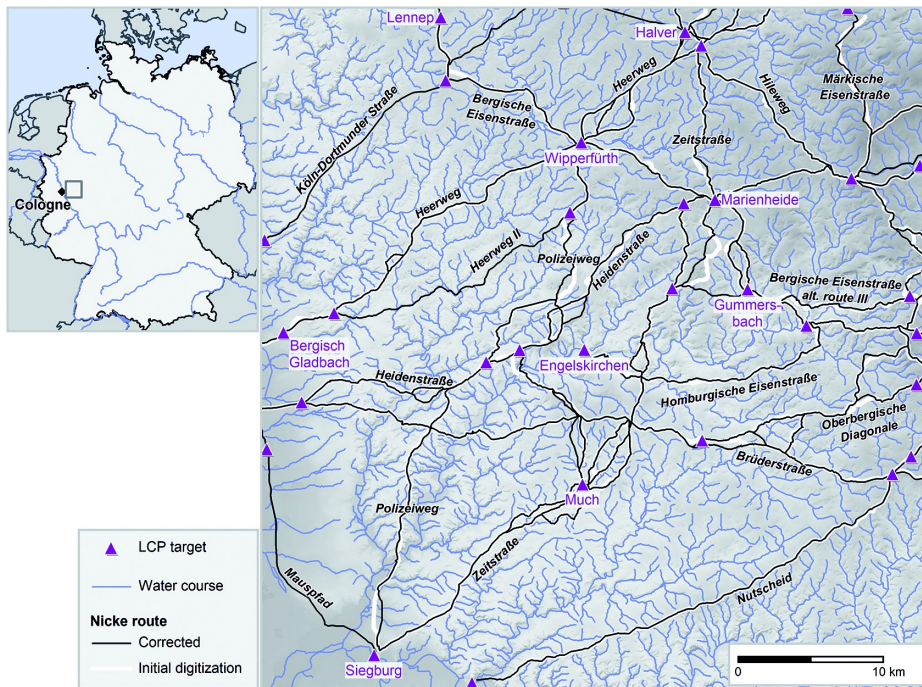
Figure 11.1: Depiction of the study area, covering 2107 square kilometres, with a dense network of mostly small watercourses. It shows the digitisation of the roads published by Nicke (initial digitisation used in previous studies plus a new updated version), as well as the LCP (Least-Cost Path) targets used in this paper.

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14 *Minetti*, Gradient (1995), 1699–1700.

15 E.g. *Cretu/Rusnac,* Forest Roads (1998); *Grewe,* Wege (2004), 30.

The roads documented by Nicke in the study area (see Figure 11.1) were digitised using a Geographic Information System (GIS). Research published previously focused on identifying and quantifying the parameters of historical movement patterns in the study region.[16] This was accomplished by employing LCP algorithms to reconstruct the known roads. By stepwise introducing the cost factors slope, crossing water-courses, and traversing wet areas, I attempted to identify the cost model that most accurately replicated the known old roads. Model performance was assessed by calcu-lating the total percentage of LCPs within the buffered Nicke roads (buffer radius: 200 metres). For the nineteen Nicke road sections considered, the best-performing and most refined model achieved a performance of 68%. The individual replication rates ranged from 25% to 100% and, for eleven road sections, less sophisticated cost models outperformed the overall top-performing model. This article delves into the reasons behind these unexpected outcomes.

In the first step, the reliability of the digitised Nicke roads was checked and cor-rected using several approaches. The initial digitisation of the roads was mainly based on two out of three nineteenth century map sets provided in the Web Map Services (WMS) of the Ordnance Survey Institute of North Rhine-Westphalia in Germany (Geo-basis NRW),[17] which often show a denser network of roads and paths than recent maps. This – coupled with some missing equivalents to Nicke road sections on these nineteenth-century maps – complicates the digitalisation.[18] A re-examination of Nicke's texts led to both alterations and the identification of additional road sections omitted in the initial digitisation. This verification process also involved two supplementary sets of digitised historical routes: (1) independent digitisation of Nicke roads by Markus Mertens and (2) the freely available digital roads of the Viabundus project.[19] Additional-ly, routes depicted on old maps and sunken lanes visible in Airborne Laser Scanning (ALS) data were taken into account whenever the initial digitisation substantially dif-fered – either from the independent digitisation by Mertens or the Viabundus roads. Based on the assumption that the pre-industrial road system had not changed signifi-cantly, the following maps created before 1800 (and which cover parts of the study area) were considered when checking the Nicke roads: the Mercator map,[20] the

16 *Herzog*, Issues (2022). In what follows, I will use the term SDH study to refer to this publication.
17 The earliest set of nineteenth century map sheets covering part of the study area were created between 1817 and 1828. These maps go back to Tranchot and von Müffling, but were rarely considered due to their limited coverage and lower accuracy compared to the second set of maps, known as "Ur-aufnahme", dating from around 1845. The third set ("Neuaufnahme") was produced approximately fifty years later. "Uraufnahme" and "Neuaufnahme" cover the entire study area.
18 Additional issues include roads ending at the edge of a map sheet and map distortions (mainly near the edges of the "Uraufnahme" map sheets). The corresponding WMS provides rectified map sheets, improved during the project. The original digitised roads often no longer coincide with the lines shown on the rectified WMS map.
19 *Holterman* et al. (Ed.), Viabundus (2022).
20 Mercator, Grundtliche Beschreibungh. Ed. *Weirich*.

Waye map,[21] the Ploennies maps[22] and the map of the territory of Gimborn-Neustadt published by Nehls.[23] The corrected Nicke roads were aligned with modern roads wherever possible, assuming that the modern road is a successor to an earlier route and that LCPs tend to be attracted to modern roads anyway. Figure 11.1 displays the corrected digitisation of trade roads in the study area. New LCP targets were selected either near the edges of the study area or at locations where a Nicke road changes its general direction (Table 11.1).

The next section illustrates the process of checking the digitised Nicke roads by presenting and discussing the course of two segments of the old road known as Brüderstraße. The state-of the-art LCP methodology is then introduced. In what follows, I present the LCP results for the corrected Nicke roads, and investigate the impact of road section attributes – such as length or mean slope – on the LCP's replication performance. Finally, the discussion of the old road sections with low replication performance identifies several reasons for this outcome.

11.2 Brüderstraße – the road of the friars

This section discusses the challenges associated with digitising historical roads by focusing on the Brüderstraße, connecting Cologne with Siegen. Nicke's extensive documentation of this route includes references to historical sources as well as descriptions of settlements and landmarks along the road.[24]

According to Nicke, the name "Brüderstraße" (referred to as "die alde broeder straisse" at the time) was first documented in 1464.[25] The earliest historical sources mentioning the existence of this road date back to the first half of the fourteenth century.[26] Nicke assumes that the Brüderstraße had a late Iron Age predecessor.[27] Brenner, on the other hand, believes that this road has existed since Roman times.[28] Wacker refers to a Carolingian road that linked Cologne with the Siegen area.[29] The Brüderstraße is one out of two roads shown on the earliest map depicting roads in the study region – this map was created in 1500 by Erhard Etzlaub.[30]

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21 Van der Waye/van der Waye, Eigentliche Description. Ed. *Weirich*.

22 Ploennies, Topographia. Ed. *Dietz*.

23 *Nehls*, Täler (1996), frontispiece.

24 *Nicke,* Brüderstraße (2000).

25 *Nicke,* Brüderstraße (2000), 15, 209. The attribute "alde" (i.e. old) signifies that the road already had a long tradition at that time.

26 *Nicke,* Brüderstraße (2000), 13.

27 *Nicke,* Brüderstraße (2000), 210.

28 *Brenner*, Straßen (2016), 13.

29 *Wacker*, Verkehrswesen (2008), 41.

30 *Berger*, Karten (2021), 9.
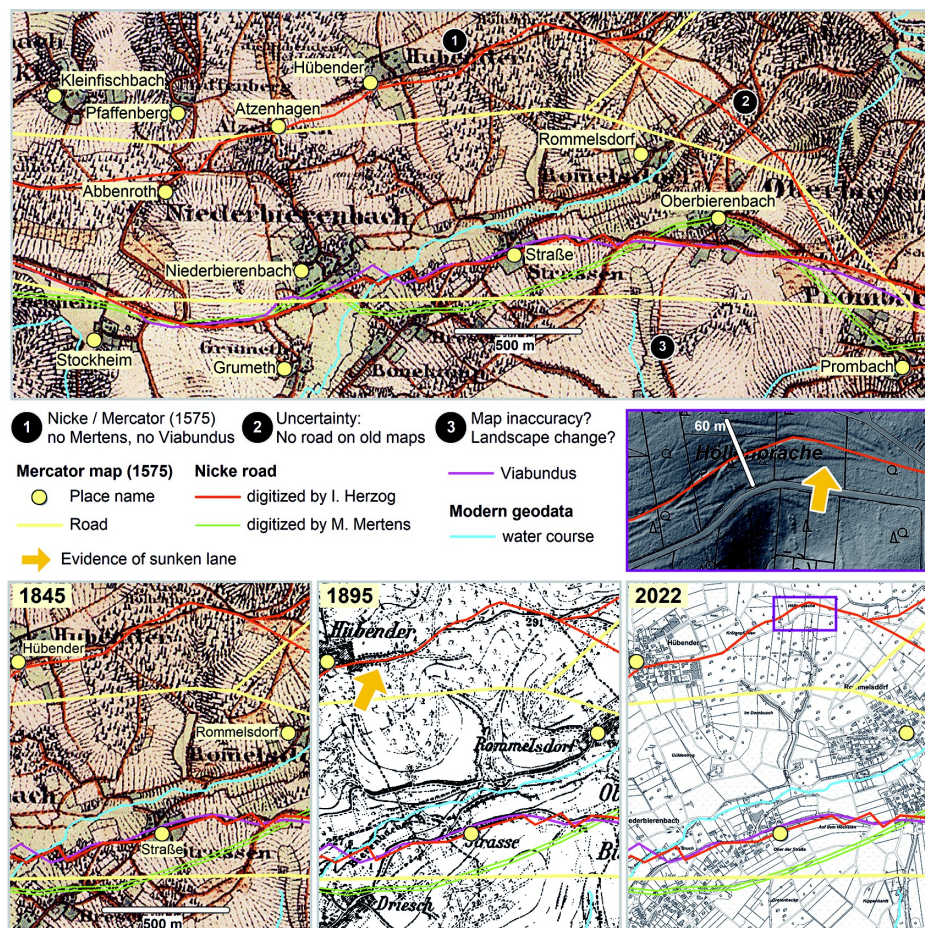
Figure 11.2: Digitalisation of two variants of a Brüderstraße section based on historical maps and ALS data, cross-referenced with Viabundus and an alternative digitalisation by Markus Mertens. Background maps were provided by Geobasis NRW.

The study area covers only a portion of the Brüderstraße, extending from Bergisch Gladbach-Frankenforst in the west to Reichshof-Erdingen in the east, with a digitised road length of nearly 46 kilometres. Figure 11.2 illustrates the process of checking the accuracy of the digitised Nicke road segments. The map at the top of Figure 11.2 displays two variants of a Brüderstraße segment, with the "Uraufnahme" map serving as a background reference. According to Nicke, the earlier variant passed through Abbenroth and Hübender, proceeding north of Rommelsdorf.[31] For the alternative later variant, Nicke lists the place names Stockheim, Grumeth, Niederbierenbach, Straße,

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31 *Nicke,* Brüderstraße (2000), 39.

and Oberbierenbach. In Nicke's view, these two variants converge approximately 500 metres east of Oberbierenbach. Nicke's earlier variant is also depicted on Mercator's map;[32] however, it is neither included in the Nicke road digitisation by Mertens, nor in Viabundus. East of Hübender, sunken lanes along a bend can be observed in the ALS data, providing additional evidence of an old road (Figure 11.2). The sunken lane bundle spans approximately 60 metres. Unfortunately, these sunken lanes do not extend in an easterly direction, and no nineteenth-century map displays a road corresponding to Nicke's description of the road segment leading to the junction east of Oberbierenbach. Consequently, the digitised road segment may significantly deviate from the route Nicke had in mind. Similar issues have been encountered multiple times, resulting in varying levels of accuracy in the digitised Nicke roads, even in the corrected dataset. Another issue is the differences between the modern and nineteenth-century depictions of the watercourses (e.g. no. 3 in Figure 11.2), caused by changes in the landscape or inaccuracies in the maps. These differences complicate the digitisation of potential ford locations based on the old maps. Similarly, those roads digitised according to historical maps often do not coincide with modern roads due to changes in the road infrastructure (such as the introduction of roundabouts) or errors in the original maps.
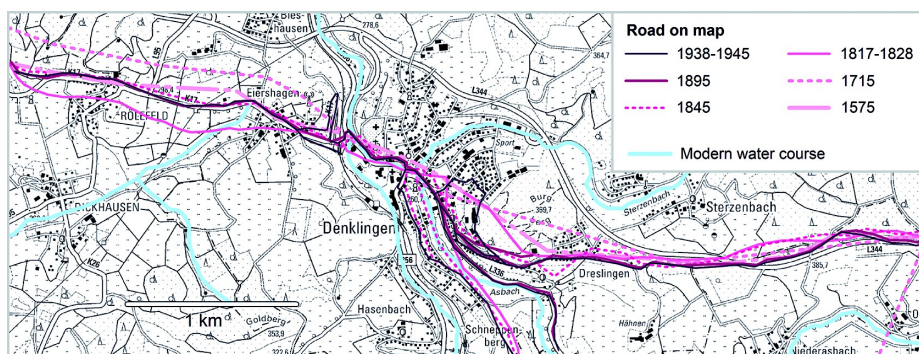
Figure 11.3: Brüderstraße: roads digitised from historical maps in the area of Reichshof-Denklingen. Background: a recent map provided by Geobasis NRW.

This issue is further illustrated in Figure 11.3, which was created with the objective of identifying the locations where the early modern Brüderstraße crossed the watercourses in the Reichshof-Denklingen area. Denklingen is located approximately four kilometres west of Erdingen, the easternmost waypoint of the Brüderstraße included

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32 Mercator, Grundtliche Beschreibungh. Ed. *Weirich*. The roads on the map dated 1575 were manually transferred to a modern map by connecting waypoints, resulting in long straight-line segments with limited accuracy.

in the study area. According to Nicke, the Brüderstraße crosses two watercourses separately that converge west of the centre of Denklingen.[33] However, the roads depicted on the available nineteenth-century maps intersect with the combined watercourse to the north of the confluence point. Ploennies's map sheet of the Windeck administrative unit[34] displays only one of the watercourses, and it suggests that the old road passed to the north of the church, implying that it intersected the joint watercourse. According to Mercator[35], the Brüderstraße crosses the watercourse to the north of the confluence but to the south of the church – a boundary is also depicted to the south of the confluence, crossing both streams. In medieval and early modern times, a path along a boundary was commonly established to ensure that all relevant individuals were aware of the demarcation.[36] Thus, probably an older alternative path existed south of the main Brüderstraße in 1575. This path is challenging to reconstruct within the built-up area of Denklingen, which includes a railroad line set up in the early twentieth century. This is not the only case where contemporary landscape changes complicate accurate reconstruction of the Nicke roads in the study area. For instance, the western portion of the Brüderstraße is impacted by a motorway.

11.3 Computing LCPs

Past and present roadways often deviate from straight lines, implying that factors beyond simple map distance influenced route selection. Estimates of daily travel distances during the Middle Ages[37] provide only a starting point for determining the cost of travel several centuries ago. The underlying assumption in many LCP studies is that historical roads were designed or evolved to minimise travel costs. Nicke shares this viewpoint, suggesting that crafting the final route required years of experience and a deep understanding of the landscape.[38] Identifying the parameters leading to the most accurate LCP replication of known historical routes offers new insights into contemporary mobility patterns. This is one of the reasons why archaeologists have frequently employed LCP calculations.[39] State-of-the-art LCP methodology between a starting and destination point[40] is outlined in Figure 11.4, though with some simplification.

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33 *Nicke,* Brüderstraße (2000), 51.

34 Ploennies, Topographia. Ed. *Dietz*, map no. 15.

35 Mercator, Grundtliche Beschreibungh. Ed. *Weirich*.

36 *Rutz*, Beschreibung (2018), 151–167.

37 E.g. *Nicke,* Wege (2001), 22; *Ohler*, Reisen (Mittelalter) (2009).

38 *Nicke,* Brüderstraße (2000), 52.

39 For references, see *Herzog,* Spatial analysis (2020).

40 *Herzog,* Spatial analysis (2020). Computing least-cost networks, that link several locations, is more complex, see *Herzog*, Networks (2013).

A large majority of the archaeological LCP studies employ cost models that factor in slope-dependent cost functions, based on slope data derived from a digital elevation model (DEM). Figure 11.4 (box "Input") displays a tiny and simple raster DEM with altitudes descending in a northerly direction. The quality of the DEM depends on its resolution and accuracy.[41] Many LCP algorithms require DEMs with square raster cells, but the cells of the popular ASTER and SRTM DEMs are rectangular. High-resolution DEMs more accurately model the deeply incised valleys. Lower resolution DEMs tend to smooth the terrain, causing modern features like roads and buildings to appear less pronounced. Furthermore, the LCP calculation effort increases inversely with the area of the DEM grid cell. Therefore, the highest resolution DEM available may not be the ideal basis for slope-dependent LCP calculations. For the study area, highly precise elevation data with a 25-metre resolution was provided by Geobasis NRW. The explanation of the methodology shown in Figure 11.4 uses a DEM with 100-metre cells, as this simplifies the calculations involved.

A path within a raster grid, such as the DEM, is constructed through links connecting adjacent raster cells (Figure 11.4, box "Grid to graph conversion"). The drawback of this method is that an error-free reconstruction of a straight-line path is only possible if the path runs in the direction of one of the adjacent cells considered. Figure 11.4, box "Neighbour number", illustrates the pros and cons of increasing the number of neighbours considered. For the sake of simplicity, the example in Figure 11.4, box "Grid to graph conversion", shows only the links to the eight nearest neighbours. However, the software employed in reconstructing the Nicke roads incorporates links to forty-eight neighbours, with longer links subdivided to ensure appropriate costs for traversing high-cost barriers.[42] Even with this complex implementation, the worst-case difference between the computed and the true optimal path remains at 8% of the actual path length.

Most GIS software includes procedures for computing slope raster grids. When utilising a slope-dependent cost component reliant solely on such a slope grid, the direction of cell traversal is disregarded. But it is crucial to consider the direction of travel.[43] The approach presented in Figure 11.4, box "Computing link weights", "Slope (percent)", tackles this problem by computing the slope of a path traversing a raster cell from the raster DEM.

Figure 11.4, box "Slope-dependent costs", displays various slope-dependent cost functions applied in archaeological research.[44] Assuming that the old roads were used with similar frequency in both directions, the costs for moving uphill and downhill

41 A discussion of issues encountered when creating LCPs based on elevation data is also found in *Verhagen/Nuninger/Groenhuijzen*, Pathways (2019), 227–228.

42 For details, see *Herzog,* Spatial analysis (2020).

43 For the slope that is actually experienced when traversing a grid cell, the term *effective slope* is used (*Conolly/Lake*, GIS [2006], 292).

44 For references, see *Herzog,* Spatial analysis (2020).
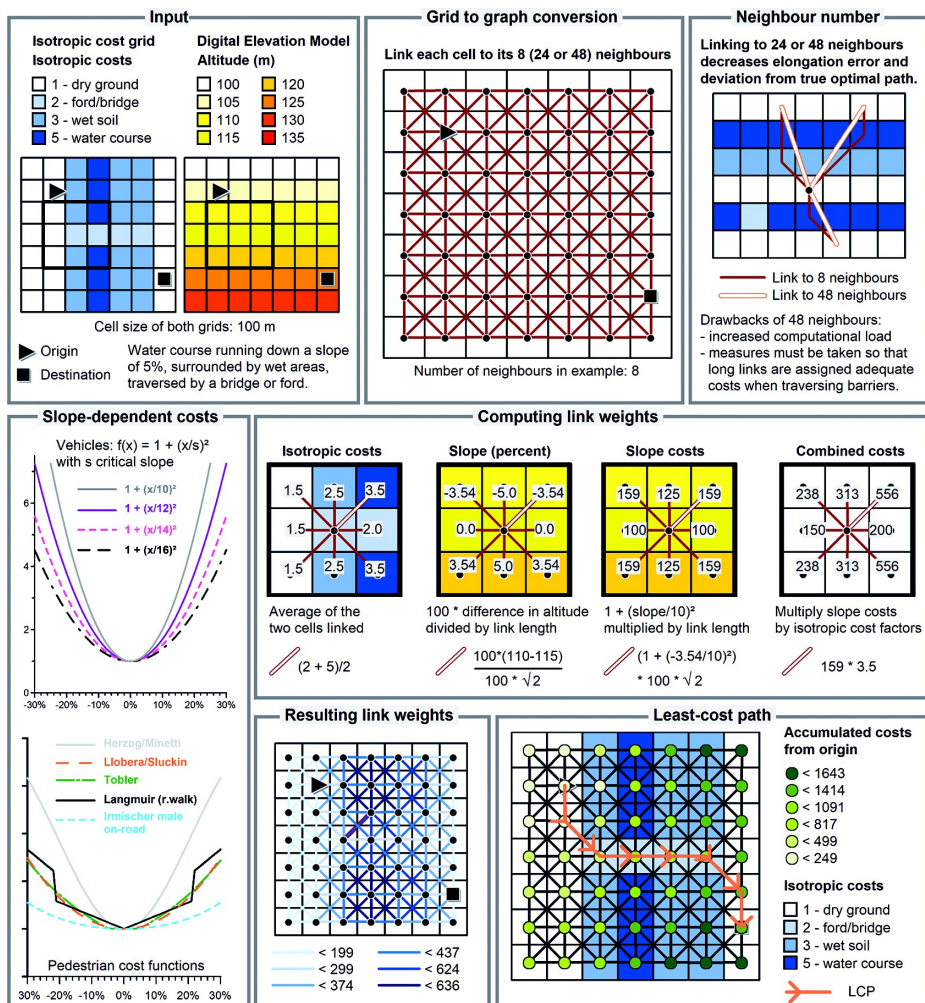
Figure 11.4: Simplified LCP methodology.

are averaged, resulting in symmetric cost functions. The pedestrian cost functions estimate either time (Figure 11.4, box "Slope-dependent costs": Tobler; Langmuir (r. walk); Irmischer male on-road)[45] or energy expenditure (Figure 11.4, box "Slope-dependent costs": Herzog/Minetti; Llobera/Sluckin).[46] Each cost function has been standardised to assign a cost of one unit for a selected distance unit when moving on

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45 *Tobler,* Geographic modeling (1993); *Langmuir,* Mountaincraft (³2004), 40; *Irmischer/Clarke,* Speed (2017), 5–6.

46 *Herzog,* Cost Functions (2013), 377; *Llobera/Sluckin,* Zigzagging (2017), 210.

level terrain, thus facilitating the comparison of the impact of slope on costs. For instance, the estimates provided by Irmischer's male on-road cost function for steep slopes are much lower than those given by the Herzog/Minetti cost function.

Due to the considerable variation in wheeled vehicles used in the past, it is challenging to identify plausible cost curves.[47] The class of generic quadratic cost functions with a critical slope parameter offers more reasonable cost estimates for vehicle movements than functions derived from measurements of pedestrians (Figure 11.4, box "Slope-dependent costs", Vehicles).[48] For the sake of simplicity, Figure 11.4 (box "Computing link weights") employs a vehicle cost function with a critical slope of 10% to estimate slope costs.

When selecting a cost function, it is advisable to reference the original publication to minimise the risk of introducing errors.[49] The SDH case study presents the results of systematic tests of slope-dependent cost functions, revealing that the quadratic vehicle cost function with a critical slope of 17% yields the most accurate replications of the Nicke roads. The use of two-wheeled vehicles, which can generally handle steeper slopes compared to four-wheeled vehicles, is the likely reason for the discrepancy to the critical slope of the Roman roads and modern forest roads discussed in the Introduction.[50] Figure 11.4, box "Input", outlines an approach for modelling penalties for watercourses and wet areas by utilising an isotropic cost grid. The slope costs are multiplied by the penalties saved in the isotropic cost grid (Figure 11.4, box "Computing link weights"). In this simplified model, the penalty factor for traversing watercourses is five, for wet soils three, and for possible ford locations two; however, for the SDH study, systematic testing identified different factors that yielded the best-performing cost model for replicating Nicke roads. These values include twenty-five for watercourses wider than 3 metres, ten for smaller watercourses, four for wet areas, and 1.7 for ford locations. The watercourse and soil data were obtained from state organisations, while ford or bridge locations were digitised from nineteenth-century maps. Buffering of watercourses is essential to prevent the LCPs from crossing them without incurring additional costs.

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47 See *Verhagen/Nuninger/Groenhuijzen*, Pathways (2019), 220.

48 *Llobera/Sluckin*, Zigzagging (2017), 209–210.

49 For instance, there has been some confusion about units of measurement in several archaeological publications presenting or applying slope-dependent cost functions. This applies for the popular slope-dependent hiking function originally published by *Tobler*, Geographic modeling (1993), which is neither correctly copied by *Wheatley/Gillings*, Spatial Technology (2002), on p. 155 nor by *Conolly/Lake*, GIS (2006), on p. 219. Moreover, a formula may be misprinted, e.g. Tobler's formula in *Batten*, Pathways (2007), 170. According to *Tobler*, Geographic modeling (1993), the hiking function was estimated from empirical data given by *Imhof*, Gelände (1950), 217–220. But *Herzog*, Cost Functions (2013), revealed relevant differences between *Imhof*'s and *Tobler*'s time estimates.

50 *Nicke*, Brüderstraße (2000), 199–201. *Burmeister*, Wagen (2004), points out on p. 25 that two-wheeled carts are better suited for hilly terrain.

After establishing the graph of linked neighbouring cells with weights representing the combined isotropic and slope costs (Figure 11.4, box "Computing link weights"), the LCP is computed by applying Dijkstra's algorithm.[51] Starting from the origin, this spreading algorithm successively calculates the minimum accumulated costs of movement to each grid cell until the destination is reached. Additional raster grids store the accumulated costs for each cell (Figure 11.4, box "Least-cost path") and the link to the previous cell in the spreading process. The LCP is derived from the accumulated cost grid by backtracking from the destination to the origin, connecting the backlinks. Alternative, less reliable LCP methods are nowadays outdated: these include Tomlin's algorithm, steepest descent approaches (instead of backlinks), or the push-broom method.[52]

Compared to the early days of archaeological LCP applications, most researchers now have access to more precise and higher-resolution topographic data, as well as faster computers with greater memory capacity, and more reliable implementations of LCP algorithms for graphs. However, the number of neighbouring cells considered in the grid-to-graph conversion step is often still inadequately limited to eight. Moreover, the selection of a suitable cost model remains a challenge. Publications providing cost estimates for pack animal transport, riding animals, and water travel are scarce and may not be readily transferable to diverse landscapes and modes of transport. Furthermore, nearly all walker cost models disregard variations in travel costs due to gender, age, weight, load, and the fitness of the walker, as well as the number of travellers in the pedestrian group. For both walkers and vehicles, factors like vegetation, climate, seasonality, and weather influence travel times and energy expenditure. For vehicles, the risks of loss of traction or catastrophic overturning are not included in the model. While some of these issues may be addressed in future developments, all LCPs are and will continue to be computed based on simplified models of past reality. In this context, Eve and Crema remind us of two important quotes regarding models in general: "All models are wrong, but some are useful. A 'true model' is in this sense an oxymoron".[53]

By gradually introducing new factors, the SDH study generated more complex and more accurate cost models of past movement patterns in each step. Initially, the best performing slope-dependent cost function was selected, resulting in a performance indicator of nearly 57%. When barriers for rivers were incorporated, performance improved to almost 63%. As mentioned above, the final model, which included all the listed factors, yielded a performance indicator of 68%, with individual replication rates ranging from 25% to 100%. This means that a cost model reconstructing one Nicke road section well does not guarantee successful replications for other Nicke road sections. Another issue warranting further investigation was the fact that less refined cost models outperformed the overall best performing model for several Nicke road sections.

51 *Dijkstra*, Note (1959).

52 *Conolly/Lake*, GIS (2006), 221–223, 252–254.

53 *Eve/Crema*, House (2014), 272.

After correcting and supplementing the Nicke roads, waypoints were introduced close to the border of the study area, at points where these roads changed direction or where multiple roads converged and shared the same route for some distance. This division resulted in thirty-six road sections with a combined length of 528 kilometres. Omitting sections that offered shorter alternative routes, twenty-eight sections covering 497 kilometres were chosen for generating LCPs. Considering that a significant portion of the corrected Nicke roads coincided with modern roads, the performance indicator was adjusted by reducing the radius of the Nicke roads' buffer to 100 metres.

11.4 LCP results for corrected Nicke roads

Table 11.2 lists the twenty-eight Nicke road sections mentioned above in the same order as Table 11.1, with the additional waypoints considered. For each road section, LCPs were generated based on four cost models M1 to M4 that increase in complexity, with M1 depending only on slope, M2 including an additional penalty for traversing rivers (width greater than 3 metres), M3 introducing penalties for minor watercourses, and finally, M4 also taking into account higher friction costs in wet areas but reducing costs at ford or bridge locations depicted on the "Uraufnahme". The parameters of the models were selected based on the results of the SDH study outlined in the section 'Computing LCPs'.[54] In Table 11.2, the performance indicators are given in columns M1 to M4. The M1- and M4-LCPs are shown in Figure 11.5.

Table 11.2: Road section attributes and performance of the LCPs generated based on the four cost models M1 to M4.

Road name	Length (m)	Detour factor	Elevation range (m)	Mean slope	Confirmed (%)	M1	M2	M3	M4	Best %	Best M
Bergische Eisenstraße, west	11805	1.14	87	8.8	100.0	15	6	16	16	16	M3
Bergische Eisenstraße, Marienheide-Wipperfürth	10733	1.07	148	7.6	100.0	38	38	62	66	66	M4

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54 Buffers of twenty metre radius were created for watercourses, wet areas, and ford or bridge locations, to ensure that LCPs traversing them incur the due costs.

Table 11.2 (continued)

Road name	Length (m)	Detour factor	Elevation range (m)	Mean slope	Confirmed (%)	M1	M2	M3	M4	Best %	Best M
Bergische Eisenstraße, Marienheide-Gummersbach	8759	1.33	146	12.4	42.2	45	45	58	70	70	M4
Bergische Eisenstraße, east	13978	1.16	260	13.9	85.6	38	43	65	77	77	M4
Bergische Eisenstraße, alt. route III	10521	1.15	240	14.7	89.9	57	60	66	73	73	M4
Brüderstraße	45634	1.11	347	9.8	100.0	49	49	58	54	58	M3
Heerweg, south	26575	1.09	233	7.1	100.0	89	89	87	93	93	M4
Heerweg, north	11373	1.09	150	7.7	71.3	36	48	45	44	48	M2
Heerweg II	20333	1.14	182	10.6	1.0	22	22	29	50	50	M4
Heidenstraße, west	15193	1.17	176	8.4	58.4	6	6	47	50	50	M4
Heidenstraße, Hohkeppel-Gimborner Galgen	19642	1.12	182	10.9	61.8	40	40	71	67	71	M3
Heidenstraße, east	18847	1.14	185	10.5	66.4	59	59	59	71	71	M4
Hileweg	26274	1.13	146	10.6	79.7	39	39	59	53	59	M3
Homburgische Eisenstraße	21766	1.30	200	13.3	11.9	8	8	32	14	32	M3
Köln-Dortmunder Straße, south	17434	1.05	193	6.2	100.0	97	97	90	90	97	M1
Köln-Dortmunder Straße, north	4734	1.07	39	5.9	100.0	62	62	62	62	62	M4
Märkische Eisenstraße	14350	1.20	163	9.7	0.0	47	47	44	52	52	M4
Mauspfad	17896	1.12	49	3.2	26.3	6	8	12	14	14	M4

Table 11.2 (continued)

Road name	Length (m)	Detour factor	Elevation range (m)	Mean slope	Confirmed (%)	M1	M2	M3	M4	Best %	Best M
Nutscheid	36377	1.08	378	6.9	90.2	8	94	85	94	94	M4
Oberbergische Diagonale, southern route	16933	1.11	224	9.2	92.7	39	56	64	68	68	M4
Polizeiweg, south	23859	1.12	195	5.7	51.7	14	68	72	70	72	M3
Polizeiweg, north	20930	1.26	208	10.0	48.1	22	24	36	63	63	M4
Zeitstraße, south	19134	1.06	170	6.6	68.4	71	71	69	71	71	M1
Zeitstraße, Much-Marienheide	26610	1.21	263	12.0	44.3	47	59	26	24	59	M2
Zeitstraße, north	12589	1.17	124	10.1	1.8	60	60	71	24	71	M3
Zeitstraße, alt. route 1	12425	1.21	251	11.9	0.0	22	22	37	28	37	M3
Zeitstraße, alt. route 2	6670	1.12	143	18.8	4.8	98	44	100	91	100	M3
Zeitstraße, access from Gummersbach	5738	1.09	107	11.1	100.0	91	91	91	36	91	M1

The new outcomes – based on the corrected and supplemented Nicke roads – are quite similar to the results of the SDH study. Using the 100-metre buffer criterion, the best performing model M4 has a large range of success: 14 to 94% (Table 11.2). For fourteen out of twenty-eight road sections, less refined cost models outperform the overall best performing model. This shows that the errors and omissions of the Nicke road set used in the SDH study did not substantially impact the replication performance. Consequently, the reasons for the varying performance of the different cost models must be sought elsewhere. Therefore, the characteristics of the Nicke roads listed in Table 11.2 are examined for their impact on the replication performance of the LCPs. The probability of such an impact is investigated below using statistical approaches.[55]

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55 The computations were performed using the PAST software, see *Hammer*, Past 4 (2023).

In Table 11.2, the "Length (m)" column refers to the length of the digitised Nicke road section considered. It seems obvious that by introducing additional waypoints – and thus subdividing the road sections – the LCPs are forced to run closer to the Nicke road. But in the study area, the length of the Nicke road section has little effect on the success of the LCPs in replicating the Nicke roads. The Pearson correlation co-efficient[56] between the length of the Nicke road section and the corresponding M4-LCP performance is 0.11, with a probability of 0.57 (i.e. 57%) that the two variables are uncorrelated. The scatterplot of these variables does not suggest a non-linear relationship.
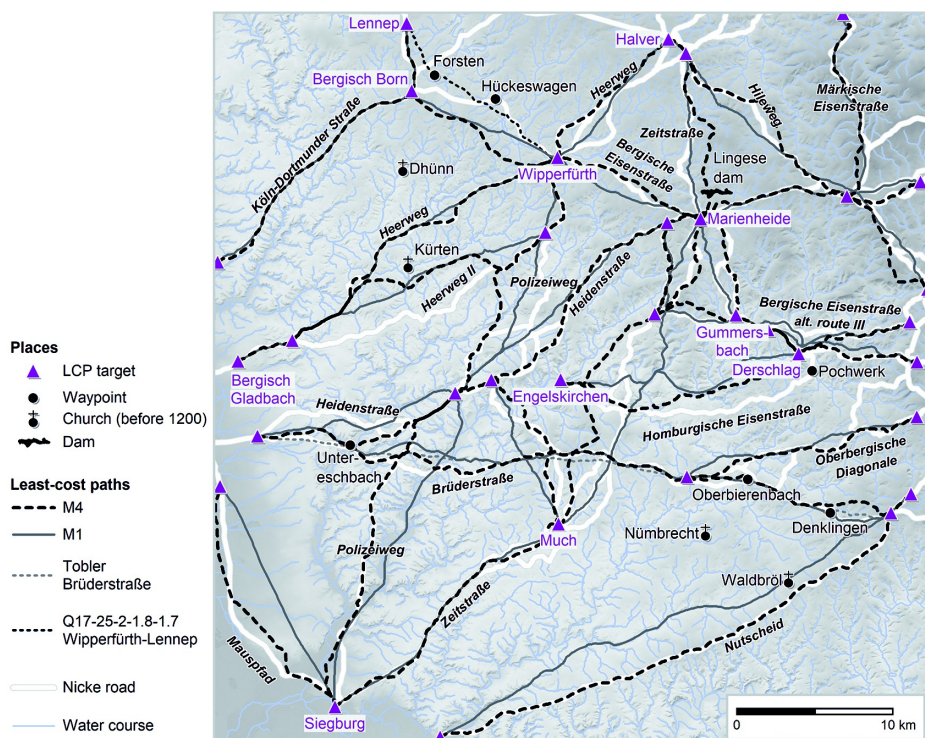
Figure 11.5: Selected LCPs computed aiming to reconstruct Nicke roads.

The "Detour factor" in Table 11.2 represents the length of a road section divided by the straight-line distance connecting the starting and ending points of that section. A higher detour factor indicates that the road section is longer compared to the direct

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distance.[57] The negative correlation coefficient of -0.37 between the detour factor and the performance of M4-LCPs suggests that M4-LCPs tend to better reconstruct fairly direct road sections compared to those that significantly deviate from a straight-line path.

In Table 11.2, the column labelled "Elevation range (m)" displays the difference between the maximum and minimum altitude values encountered when travelling along the Nicke road. This variable exhibits a correlation not only with the performance of M4-LCPs (0.36) but also with the length of the road section (correlation: 0.71). The latter observation is unsurprising, given that most road sections in this study are roughly west-to-east connections within a landscape that generally features increasing altitudes in this direction.[58]

The average slope of the road sections was derived from a slope map, expressed in percentages. While the LCP algorithm considers effective slope, the slope map provides information about the steepness of the terrain at each raster cell. Surprisingly, Table 11.2 reveals higher mean slope values than average for several sections of Eisenstraße roads. The German term "Eisenstraße" indicates that these roads were used for transporting iron or iron ore. Constructing roads traversing steep slopes involved some effort but was probably more efficient when transporting heavy goods. On the other hand, slopes tend to be gentler in the western third of the study area, while most Eisenstraße road sections are located in the eastern part. The correlation between the mean slope of Nicke road sections and M4 performance is not significant (correlation 0.04), with a probability of 82% that the variables are uncorrelated.[59]

In Table 11.2, the "Confirmed %" attribute was computed to analyse whether road sections documented on detailed maps created before 1800 or in Viabundus are more likely to be successfully replicated by the M4 cost model than road sections lacking this additional evidence (Figure 11.6). The reasons for creating the old maps vary, and consequently the reliability and accuracy of the depicted roads vary as well. But in most areas, the estimated error of the routes digitised from these old, detailed maps is less than 200 metres. Therefore, a 200-metre radius buffer was created for these digitised routes and the Viabundus roads. For each Nicke road section considered, the total length of stretches within this joint buffer was computed, and the percentage of this value in relation to the length of the road section was recorded in the "Confirmed %" column of Table 11.2. This variable exhibits a correlation with the M4-LCP performance (0.39). The "Confirmed %" and "Detour factor" variables have a correla-

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57 *Nakoinz*, Parameter (2012), 78, introduced a similar concept for identifying the most plausible routes within a least-cost triangulation network.

58 An alternative feature is the average elevation range per kilometre, but the correlation coefficient for this variable with M4-LCP performance (0.27) is lower than that of the elevation range variable.

59 According to the PAST manual (see *Hammer*, Past 4 [2023]), the probability was computed using a two-tailed t-test, which is discussed for instance by *Shennan*, Quantifying (²1997) on 83–92.

tion of -0.57, suggesting that the Nicke road sections documented in historical sources are likely to follow a fairly direct path.
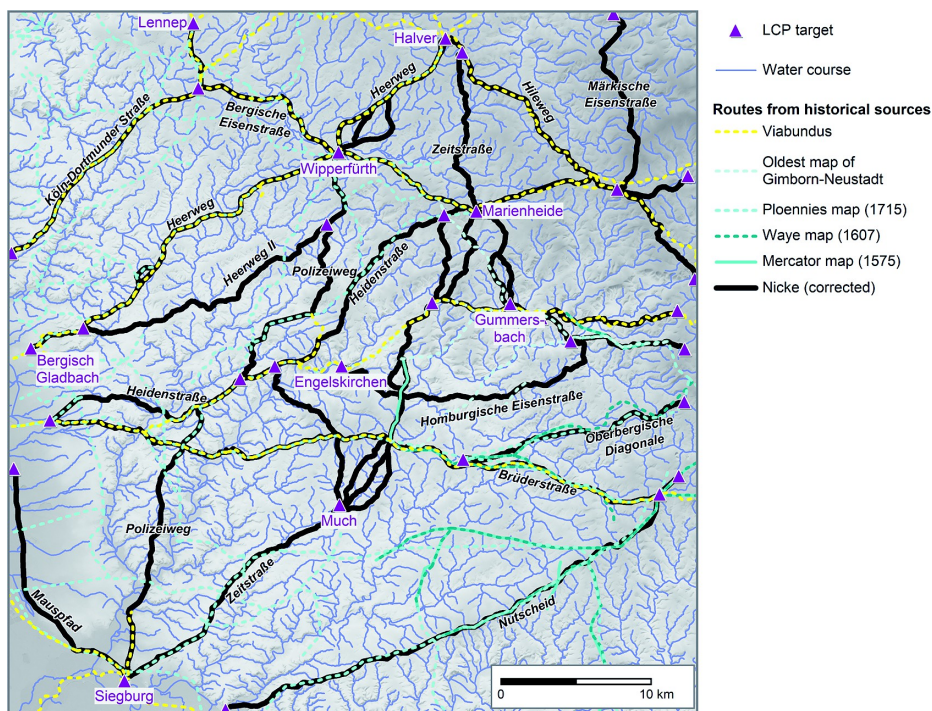
Figure 11.6: Comparing Nicke roads to roads digitised from old maps and provided by Viabundus.

The analysis revealed three variables that are correlated with M4-LCP performance: "Detour factor" (correlation: −0.37, p[uncorrelated]: 5.3%), "Elevation range (m)" (correlation: 0.36, p[uncorrelated]: 6.1%), and "Confirmed (%)" (correlation: 0.39, p[uncorrelated]: 4.2%).[60] The coefficient of determination can be used to estimate the 'percentage level of explanation'.[61] For the three variables weakly correlated with M4-LCP performance, this value falls between 12.8% and 15.0%, indicating a modest level of explanation.

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60 Here, p[uncorrelated] indicates the probability that the considered variable and M4-LCP performance are not correlated. In statistics, the convention is to select a significance level of 5%, i.e. to reject the hypothesis that the two variables considered are correlated if p[uncorrelated] is less than 5% (e.g. *Shennan*, Quantifying [²1997], 56–57). At the 5% level of significance, the hypotheses regarding the correlation of the detour factor and elevation range with the M4-performance are rejected.
61 E.g. *Conolly/Lake*, GIS (2006), 151; *Shennan*, Quantifying (²1997), 143–144. This coefficient is the square of the Pearson correlation coefficient, multiplied by one hundred.
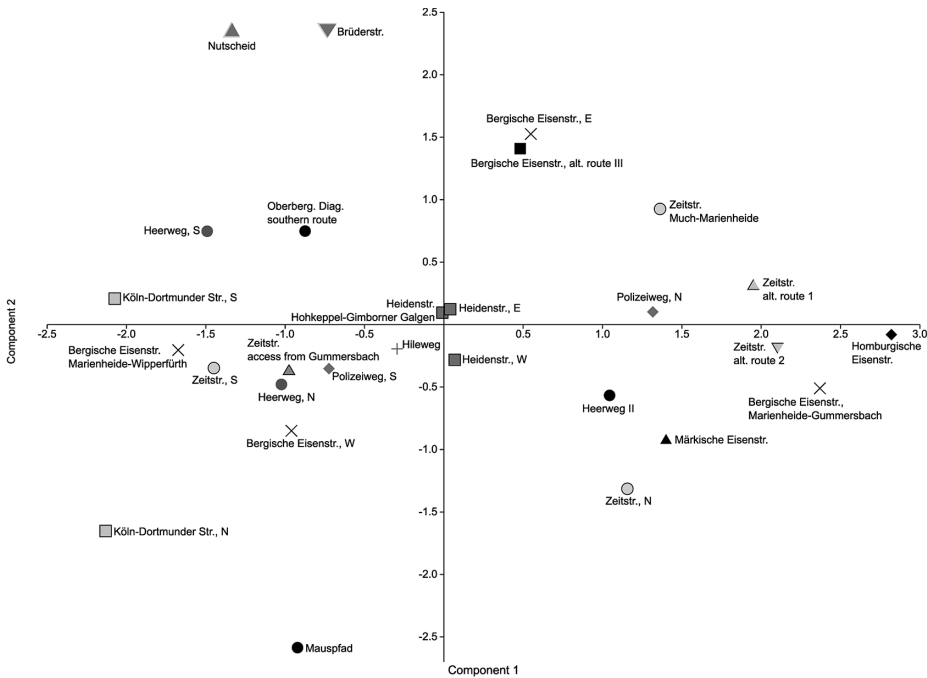
Figure 11.7: The first two components of the PCA result for characteristics of the Nicke road sections.

A principal components analysis (PCA),[62] utilising the standardised columns "Detour factor," "Elevation range," "Mean slope," and "Confirmed (%)" of Table 11.2 was conducted to identify groups of Nicke road sections with similar characteristics. The scatterplot of the first two PCA components accounts for approximately 76% of the variance in the considered characteristics. In Figure 11.7, the symbols representing the Nutscheid and Brüderstraße road sections are displayed side by side (both of which are partially depicted in Mercator's map). The Mauspfad road section stands out as an outlier. It is expected that symbols representing a road subdivided into several sections would be closely grouped together in the scatterplot, as observed in the case of the three sections of the Heidenstraße. However, the sections of the Bergische Eisenstraße and Zeitstraße exhibit a broader range of characteristics. Surprisingly, the characteristics of the road sections known as "iron transport routes" show significant variation.

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62 *Shennan*, Quantifying (²1997), 269–300.

11.5 A close look at some of the results

The analysis of the LCP characteristics does not fully explain the varying LCP performance. This section gives some examples of unsatisfactory LCP performance and discusses the reasons for this. The Mauspfad road in the southwest of the study area has the lowest M4 performance (13.7%) of all the road sections considered. This is likely due to the fact that this road is substantially different from the others, being located on the fluvial terrace of the Rhine and appearing to gravitate towards the edge of this terrace.

The M4 performance for reconstructing the Homburgische Eisenstraße is second lowest (13.8%). Two stretches of this road connecting Engelskirchen in the west with Derschlag in the east run through river valleys. It is evident that the cost model, with its high penalties for movement near rivers, cannot accurately represent this road. Instead, the M1-LCP closely aligns with an alternative road depicted on the oldest map of Gimborn-Neustadt (Figure 11.6). The detour to the Steinagger valley might be explained by the label "Pochwerk" (Figure 11.5), indicating a mill machine used for crushing materials by pounding, depicted on a map created between 1817 and 1828. The Homburgische Eisenstraße likely served to transport raw materials to this site and distribute the products.

Another road section with a very low M4 performance of 15.7% is the western part of the Bergische Eisenstraße between Bergisch Born and Wipperfürth. However, three other sections of this Nicke road are quite successfully replicated by LCPs based on the M4 cost model (Table 11.2). The SDH study demonstrated that inserting a waypoint in the town of Hückeswagen[63] significantly improves performance. Several of the SDH-LCPs (with the destination Lennep instead of Bergisch Born)[64] suggest an alternative route. They roughly coincide with the Nicke and the Viabundus roads west of Wipperfürth. These LCPs cross the Wupper close to the remains of a motte-and-bailey castle clearly visible in ALS data, with a sunken lane about 200 metres northeast of the fortification (Figure 11.8). Some sections of the SDH-LCPs coincide with roads depicted on the "Uraufnahme". The ALS data visualisation in Figure 11.8 also highlights landscape changes, mainly due to modern construction activities, which likely impacted the LCP generation. Berges's description[65] of the Bergische Eisenstraße differs from that of Nicke and the Viabundus road. Berges suggests that the old road coincides with the Ploennies road, which departs from the centre of Hückeswagen in a westerly direction and turns northwest near Waag (Figure 11.8). Bundles of sunken lanes on both slopes of the Dörpe valley between Forsten and Brasshagen provide evidence of a former road

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63 According to *Pampus*, Erstnennungen (1998), 146, the place name Hückeswagen was first mentioned in 1085.
64 Bergisch Born was chosen in the present study to avoid an overlapping road section with the Köln-Dortmunder Straße.
65 *Berges*, Eisenstraße (1993), 30.

approximately 1 kilometre north of the Bergische Eisenstraße route described by Nicke and mapped by Viabundus. Both the sunken lane sites and the style of the depiction of the road between Hückeswagen and Bergisch Born – on a map created between 1817 and 1828 – support the conclusion that Nicke's description of the road is likely inaccurate. The LCP labelled Q17-25-2-1.8-1.7 in Figure 11.8 (also shown in Figure 11.5) effectively replicates the Ploennies road northwest of Waag.
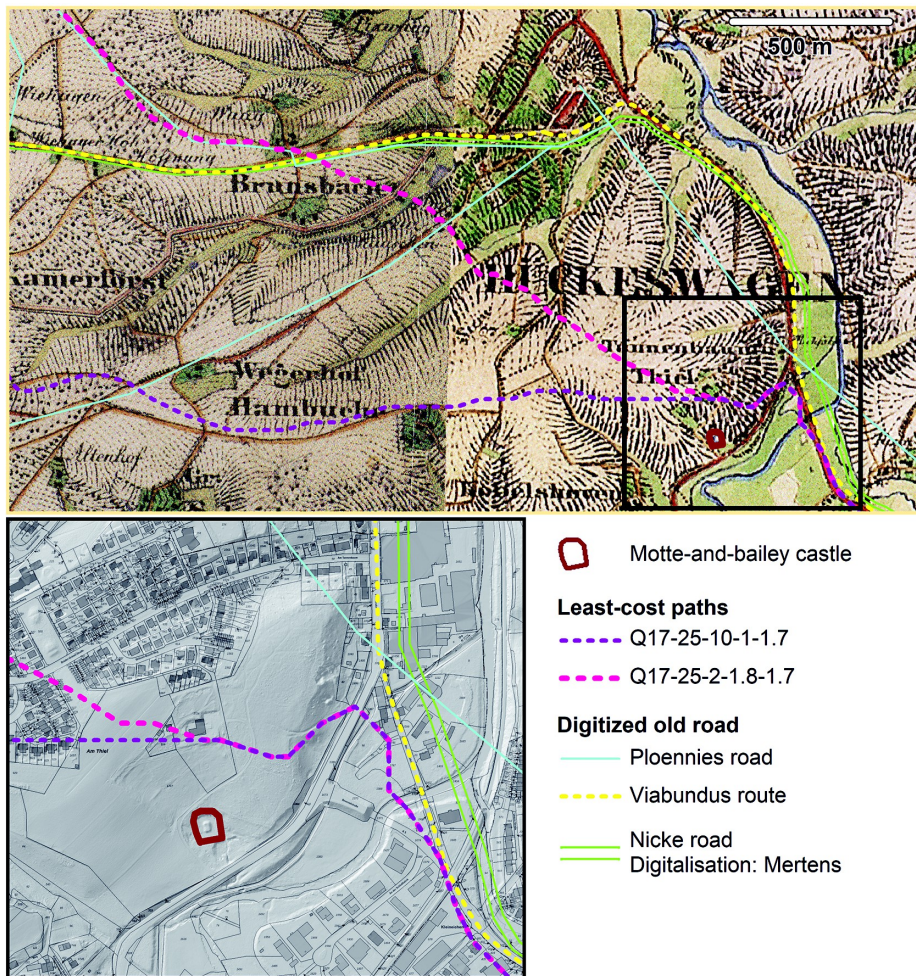
Figure 11.8: Bergische Eisenstraße near Hückeswagen. The Least-Cost Paths (LCPs) suggest a road near a motte-and-bailey castle. Background maps, top: "Uraufnahme" created in the 1840s, bottom: ALS data overlaid with a modern cadastral map.

Berges also describes a branch of the Bergische Eisenstraße that diverges from the route connecting Wipperfürth and Marienheide at Sattlershöhe and proceeds to Gum-

mersbach, bypassing the detour through the town centre of Marienheide.[66] Nicke does not mention this road, although it is corroborated by several SDH-LCPs between Wipperfürth and Gummersbach.

The northern segment of the Zeitstraße also exhibits a low M4-performance (23.6%). In this case, introducing penalties for moving through wet areas resulted in a significant drop in performance (M3: 71.2%). The primary reason for this decline is an issue with the wet area layer at the location of the dam known as Lingesetalsperre (marked in Figure 11.5). Penalties for crossing wet areas are not included in the isotropic cost layer for the reconstructed watercourse section within the dam, even though wet areas surround the Lingese watercourse. As a result, the M4-LCP selects a low-cost route through the dam, approximately 1 kilometre east of the correct crossing point over the Lingese, as replicated by the M3-LCP. Another example of a significant performance drop (M3: 90.9%, M4: 36.2%) is the Nicke road "Zeitstraße, access from Gummersbach". Evidently, the wet area zones avoided by the M4-LCP may have been relatively safe to traverse. The Nicke road section of the Zeitstraße connecting Much with Marienheide remains close to two watercourses for several kilometres. Hence, it is not surprising that the M2-LCP outperforms the M3- and M4-LCPs.

With an M4 performance of 54.2%, the Brüderstraße is relatively well-replicated over certain stretches. As previously mentioned, the western part of the study area differs from the hilly eastern section, possibly accounting for the deviations in LCPs from the Nicke road in the western part. The fact that watercourses are intersected by the Brüderstraße but avoided by the M4-LCP appears to be the primary reason for the deviations of the Nicke road from the M4-LCP.[67]

11.6 Discussion and conclusions

Obtaining reliable data for mapping the medieval road network in any part of Germany is daunting. The earliest relevant pre-industrial maps showing roads are of limited accuracy and do not encompass the entire study area. In this scenario, Nicke's books provide a solid foundation for investigating historical mobility patterns in the study area. Nevertheless, certain sections of the old roads are ambiguously described by Nicke, leading to uncertainty about digitising them. Moreover, Nicke's accounts may not always be accurate. For instance, evidence suggests that the westernmost part of the Bergische Eisenstraße deviates from Nicke's description. Unfortunately, dating the Nicke

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66 *Berges*, Eisenstraße (1993), 32–33.
67 *Nicke,* Brüderstraße (2000), discusses on 48–52 the locations where the Brüderstraße crosses watercourses, but omits four creeks in the study area, i.e., Holzer Bach, Dresbach, Katzbach, and Bierenbacher Bach, all of which are depicted on the "Uraufnahme" map. The M4-LCP avoids crossing the Holzer Bach, the Katzbach, and the Bierenbacher Bach.

roads is challenging due to a lack of archaeological investigations and artefacts. Consequently, the Nicke roads might not have existed concurrently. A multivariate approach was presented investigating whether roads created in a particular era or primarily used for a specific purpose exhibit similar route characteristics. The PCA based on four Nicke road characteristics reveals similarities (e.g. Heidenstraße) as well as significant dissimilarities (e.g. Bergische Eisenstraße, Zeitstraße) between different segments of the same road. Some of the Nicke road sections were part of several roads, which may account for some of the disparities. This is an issue that warrants further investigation.

Various archaeologists have employed LCP approaches to reconstruct the roads connecting two or more roughly contemporary sites.[68] Some of these studies give the impression that a single method for computing LCPs is suitable for general human mobility, irrespective of factors like soil, land use, climate, historical period, load, and means of transportation. This article showed that a wide range of cost models is available and that it is difficult to identify the most appropriate model. Issues with popular LCP algorithms were discussed that can result in significant deviations from the true optimal path. The LCP algorithm presented in this article should be refined in the future to avoid generating routes along the contour lines of steep slopes because such roads require construction work.[69] The discussion of problematic LCP results suggests adjustments to the isotropic cost grid concerning watercourses less than 3 metres wide. Although ALS data indicate that modern creeks are carved into the terrain, traversing some of them may not have been particularly challenging. This is another issue that warrants further investigation.

Many archaeological LCP studies aim to reconstruct the road network of a specific period by connecting important known sites using LCPs.[70] However, many old maps depict important settlements at some distance from the main roads of the time. For instance, only two out of seventeen church settlements on Mercator's map were crossed by the main roads depicted on the map.[71] The castle of the rulers of the Homburg territory was also at some distance from the roads. Therefore, identifying appropriate targets and waypoints for LCP generation poses a non-trivial challenge.

The LCP study presented here does not consider water travel, which may have been possible on some of the rivers in the study area. Yet, none of the publications describing the region's medieval and early modern economy mention water-based transport. Due to various factors, including currents, weather conditions, and different types of vessels, modelling water travel is at least as complex as finding an adequate cost model for land transport.[72]

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68 For references, see *Herzog,* Spatial analysis (2020).

69 *Nicke,* Wege (2001), 13.

70 E.g. *Barbe*, Fernwege (2007).

71 Mercator, Grundtliche Beschreibungh. Ed. *Weirich*.

72 Some references with respect to past water travel are given by *Verhagen/Nuninger/Groenhuijzen*, Pathways (2019), 28.

Several authors discuss socio-cultural costs, such as visibility or safety. In the study area, roads on ridges offer expansive views and enhanced security compared to valley routes, particularly in areas lacking dense forest cover. Potential adversaries would need to scale a slope before reaching a road on the ridge, making any attack more challenging. For these reasons, the attraction of ridges could be modelled as a socio-cultural cost, similar to Barbe's approach.[73] In the study area, the M4-LCPs often align with ridges, thus this modification of the cost model seems unnecessary. Appropriate penalties for crossing creeks appear to be the primary concern.

In the absence of historical or archaeological evidence, reconstructions of early medieval major trade routes are highly hypothetical. The reasons for this are the wide variability of cost models and the fact that not even all settlements with a church were integrated in the early modern main road network. However, where historical evidence of an early modern road is available and may be traced back to earlier times, the LCP approach can be used to identify road sections unlikely to have changed, i.e. those road sections depicted on historical maps aligning with several LCPs based on different cost models. This may be supplemented by an analysis of the uncertainty of the LCPs[74], with the aim of identifying road sections where any significant deviation from the initial LCP incurs a substantial amount of costs. Referring to the present study, the Nutscheid road and large parts of the Brüderstraße were most probably in use already in the early Middle Ages.

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73 *Barbe*, Fernwege (2007), 49.

74 *Lewis*, Uncertainty (2021).

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Anna Swieder

12 Forgotten pathways. The potential of LiDAR data to record old roads and tracks in medieval cultural landscapes

12.1 Introduction

Anyone who followed the newspapers and other media in the last years might have gained the impression that new archaeological discoveries of old roads were being made all the time.[1] This is deceptive, as excavations of medieval tracks and pathways are quite rare. However, even roads remaining unexcavated can be detected using digital data.

Light detection and ranging (LiDAR) data has been increasingly used for archaeological inquiry since the beginning of the 2000s. This is particularly the case for detecting archaeological monuments and cultural landscape elements in forests that are otherwise difficult to record. Often, such monuments are located in heavily overgrown and inaccessible areas, or they extend over very long distances. Despite these difficulties, they can be documented and evaluated precisely and efficiently with the help of digital elevation data. Old tracks, which mostly originated and have been preserved in mountainous and forested regions, can be explored in a new way using these data.

This paper intends to discuss the potential and limitations of this method using the example of various pathways from the Harz Mountains in Saxony-Anhalt (see Figure 12.1) – especially the central Harz around Elbingerode. Here, different settlements interconnected by a dense network of paths still visible today were established in the early Middle Ages. On the one hand, various visualisation techniques and analytical methods can be used to determine the exact course of these routes and to record their morphology and contextualisation within the cultural landscape. On the other hand, the exact dating of the individual path segments represents one of the difficulties that can only be overcome by interdisciplinary discourse.

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1 E.g. lrakn.de/service-und-verwaltung/Pressemitteilungen/befestigter+fruehkeltischer+weg+in+kiesgrube +entdeckt; ksta.de/koeln/koelner-dom-warum-sich-oestlich-des-doms-eine-alte-strasse-verbirgt-299042; nationalgeographic.de/geschichte-und-kultur/2022/04/fortschrittliche-jungsteinzeit-die-bisher-aeltesten-radspuren-der-welt-stammen-aus-deutschland; berliner-zeitung.de/mensch-metropole/aelteste-strasse-berlins-saegemassaker-am-knueppeldamm-li.211713; ndr.de/nachrichten/schleswig-holstein/Danewerk-Wagenspuren-am-historischen-Verkehrskreuz-des-Nordens,danewerk196.html (all accessed: 01.04.2023).

Anna Swieder, Halle (Saale)
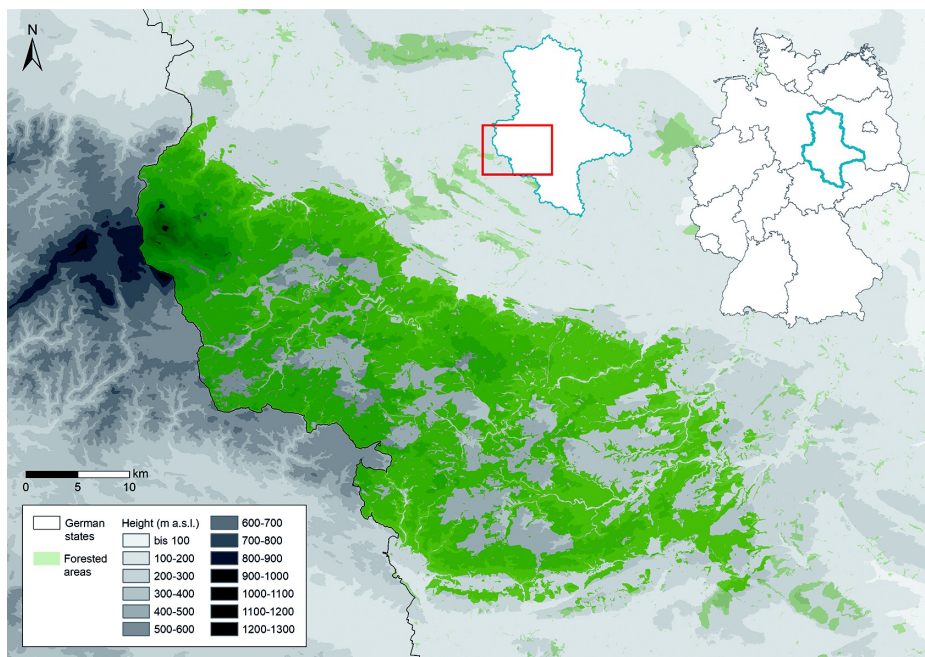
Figure 12.1: The working area of the heavily forested eastern Harz in Saxony-Anhalt in central Germany. Source: graphics: author; base map: SRTM version 3.0 global 1 arc second data, by courtesy of the U.S. Geological Survey (USGS) and the National Aeronautics and Space Administration (NASA), public domain; country/state borders: extracted from Database of Global Administrative Areas (GADM) version 1.0, CC BY-NC-SA 3.0 US; forested areas: LDA.

12.2 LiDAR technology

Medieval hollow ways are mostly preserved as shallow depressions under the vegetation. Thus, they not only often elude the attention of the passing observer, but are also challenging to explore scientifically. The technique of LiDAR – also known as airborne laser scanning (ALS) –, established in archaeology in recent years, offers new, spectacular possibilities for investigating these ephemeral features. LiDAR makes it possible to look through the treetops onto the micro relief of the forest floor. In this way, archaeological monuments preserved aboveground can be recorded and evaluated comparatively cost-effectively, especially if they are covered by vegetation. This method is non-invasive, i.e. it does not interfere with the ground and thus does not damage the ancient monuments.

The required digital elevation data may be generated by scanning the surface of the terrain in parallel flight strips using pulsed laser beams, which are continuously sent out, e.g. from an aircraft or unmanned aerial vehicle (UAV). In so doing, a first

echo (from the uppermost vegetation) and a last echo (from the ground) are reflected, enabling us to determine the exact three-dimensional coordinates of points in space. This is done using the respective travel time of the laser beam and the position of the aircraft – on the basis of global positioning system (GPS) and inertial navigation system (INS). The measurements then allow us to generate digital topographical models of the landscape. In addition to the digital surface model (DSM) emerging from the first echoes, which includes vegetation and buildings, the last echoes allow us to generate a digital terrain model (DTM; see Figure 12.2).[2] The latter reflects the pure terrain surface and, depending on the resolution, shows even the most minor human interventions, for example, in the form of removal or accumulation of soil. This allows creating visualisations of the morphology of archaeological structures, like ancient pathways,[3] thus allowing for further analyses.

Different visualisation techniques impact on what we may see using the DTM. If we use classical hill-shading, for example, which is easy to interpret for the human eye, the outcome depends on the direction from which the (artificial) light comes. Other visualisation methods include, for example, the slope gradient, the local relief model, or the sky-view factor. The visibility of the structures also depends on the nature of the current vegetation. In deciduous forests or grasslands, archaeological monuments are easier to detect than in coniferous forests because, in the latter case, fewer laser beams reach the ground.

The data used in this paper[4] was made available to the State Office for Heritage Management and Archaeology Saxony-Anhalt (LDA) by the State Office for Surveying and Geoinformation Saxony-Anhalt (LVermGeo). The latter agency delivers data as *.xyz files (text files with coordinates in three dimensions), allowing us to calculate a DTM with a grid resolution of 1 m by 1 m, thus representing even the smallest differences in elevation. The accuracy is ± 15 cm in flat and undeveloped terrain and approximately ± 30 cm in terrain with high relief and dense vegetation.[5]

As described above, the LiDAR method is particularly advantageous for detecting features in densely wooded areas – such as the eastern Harz – compared to aerial archaeology, for example, which quickly reaches its limits in forests. LiDAR can also be an important addition to the classic field survey, which is useful only to a limited extent in dense vegetation, in impassable terrain, and in very large survey areas.

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2 The basic principle of discrete echo scanners can be broken down into a few sentences. Notably, full waveform scanners are increasingly being used today, which – in addition to first and last echoes – also record numerous intermediate echoes as a continuous signal and thus offer more additional information for a detailed result. For further information on the technical procedure, cf., e.g. *Bofinger* et al., Hightech (2007); *Doneus*, Landschaft (2013), 213.

3 Various visualisation methods are used, such as hill shading or slope modelling.

4 The article is based in some parts on my dissertation, submitted to the Martin-Luther-University Halle-Wittenberg in 2020 and published as *Swieder*, Archiv Wald (2022).

5 *Wießner*, Aktualisierung (2014), 36.
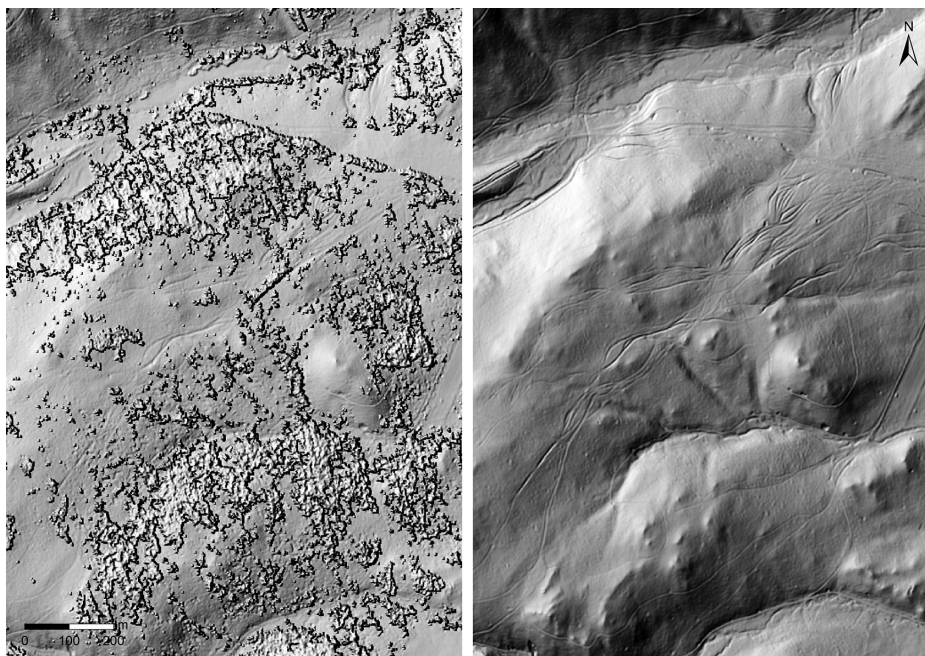
Figure 12.2: Pathway traces at the northern Harz margin near Blankenburg in the DSM (with vegetation; left side) and in the DTM (without vegetation; right side). In the latter, the individual trail lines are clearly visible. Source: visualisation, and graphics: author; DOM2 and DGM2: Datenlizenz Deutschland – Namensnennung – Version 2.0, © GeoBasis-DE / LVermGeo LSA.

When combined, these methods complement each other perfectly. In my project, I analysed the LiDAR data in a manual, non-automatic way, to study a small region by considering, e.g. relevant map sources, excavation results, surface finds, and historical sources. In addition to using new methods, the search for material evidence in the field is of the greatest importance. A walk through the relevant area usually allows for observations no sophisticated method is able to reveal. All this information was then combined in a geographic information system (GIS).

12.3 Old paths in the DTM

Traces of these old pathways have been preserved to a greater or lesser extent, especially under forests, but also occasionally in open areas. In the Harz Mountains and elsewhere, old paths are mostly comprised of hollow ways, usually formed on slopes. Intensive use of steep ascents and descents in the mountains led to the formation of shallow and sometimes several-metres-deep hollow ways – these were accelerated by natural erosion processes.

Fan-shaped groups[6] of sunken paths tend to form particularly on slopes. This can be explained by the fact that although the ascent and descent on steep slopes were difficult, they were also usually the shortest in terms of distance. Therefore, the hollow ways typically originate in areas of high relief and lose themselves in the plain. The old pathways occasionally also survived on the plateaus and, in individual cases, also as embankments. These embankments were built where swampy or boggy terrain made any passing difficult. As a rule, not many raised tracks are found running side by side, as is the case with the hollow ways, because all traffic was carried along a single track. This made it possible to cross the unfavourable areas safely. As in other (middle) mountain ranges, the watersheds and ridges in the Harz were thus often used as transport routes. By contrast, the swampy valleys or lowlands were usually only crossed when inevitable and at favourable places.[7] They tended not to be used over longer distances; indeed, those routes along rivers and streams leading into the Harz Mountains are now recognisable in the DTM as being mostly post-medieval.

The most pronounced old paths do not lead to short-lived deserted medieval settlements but to permanently settled sites still extant today. When a significant number of hollow ways and clearly pronounced paths are preserved in the field, this often seem to correspond to the long-term use of a communication corridor. Central German research carried out by Dietrich Denecke and Bernd W. Bahn in particular[8] was able to establish typical forms of trackway groupings in the terrain. By using DTMs, these forms can now be verified, described, and contextualised more precisely.

"Groupings" of paths developed because the unpaved natural roads had gradually deepened further and further into the subsoil given their long and intensive use and/ or ongoing erosion processes. Once a path was no longer passable, an alternative route was chosen in the immediate vicinity. As a result, the routing of paths changed slightly time and again, and, occasionally, several tracks developed next to each other.[9] In the eastern Harz, typical hollow way groupings in the form of fans exist alongside forms reminiscent of an hourglass or, in contrast, a spindle. The large groups often cover areas of several hundred metres in diameter. In rare cases, we also have paths in the shape of a spiderweb (see Figure 12.3).[10] The DTM reaches its limits in this respect when used as sole method, since other structures exist that re-

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6 The terms "fan" and "bundle" of ways are used synonymously here. It should be noted, however, that some authors reject the term bundle since a bundle is a three-dimensional shape whereas a fan only extends in width. They therefore prefer the term fan; e.g. *Bahn*, Altwegeforschung (2011), 203 note 13.

7 *Prell*, Altwegeforschung (1983), 52; cf. also *Posluschny*, Aspekte (2012), 117.

8 E.g. *Denecke*, Untersuchungen (1969); *Denecke*, Altwegerelikte (2002); *Bahn*, Gedanken (1998); *Bahn*, Altwegeforschung (2011).

9 For the Harz Mountains, for example, described by Martin Prell; cf. *Prell*, Altwegeforschung (1983), 52.

10 Cf. *Swieder*, Wege (2019).

semble hollow ways even despite having a completely different origin. Such similar structures include, for example, naturally formed gullies, artificial ditches, or mining trenches – features that can therefore only be verified using interdisciplinary approaches.[11]
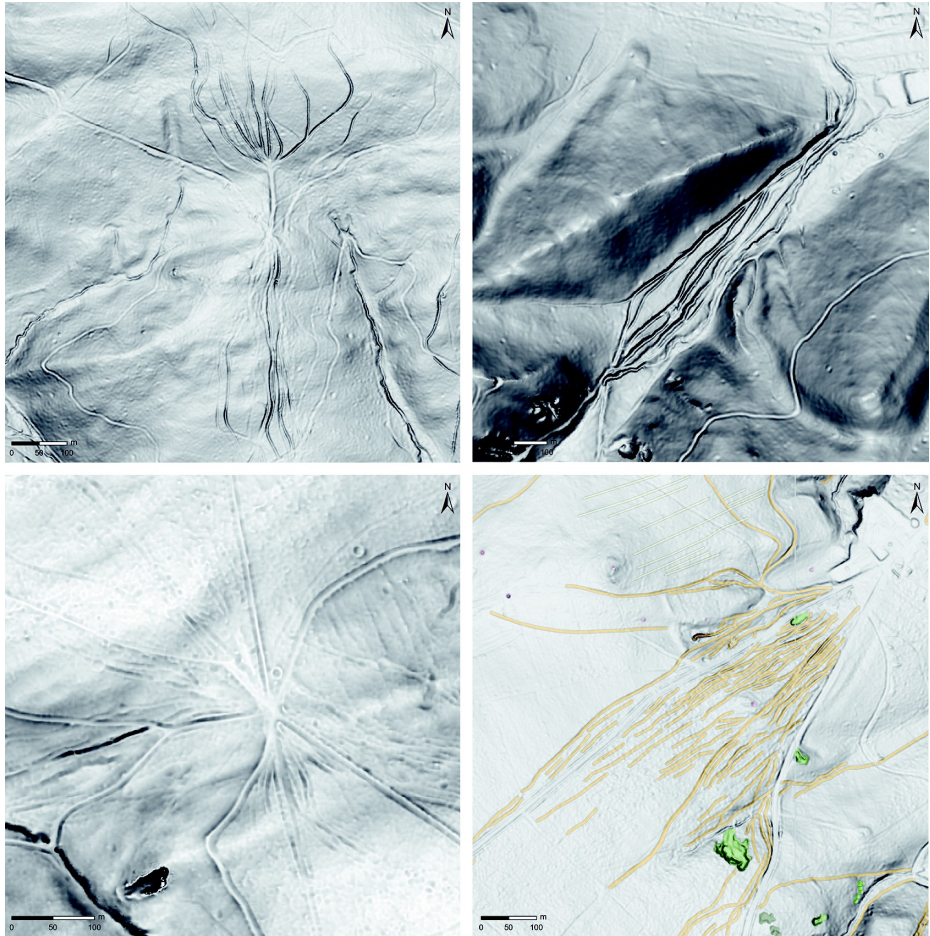
Figure 12.3: Different methods of grouping old pathways in the DTM. Source: redrawing, visualisation, and graphics: author; DGM1: Datenlizenz Deutschland – Namensnennung – Version 2.0, © GeoBasis-DE / LVermGeo LSA.

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11 On the distinction of "real" hollow ways from similar surface forms, see also *Bahn*, Gedanken (1998), 6; *Fischer*, Beurteilung (1987).

The DTM provides insight into the complex network of hollow ways covering the eastern Harz. In addition to showing the courses of different trails that connect point A with point B and vice versa, the digital terrain data also allows us to make specific statements about the deepening of the hollow ways into the terrain. With the help of "profile graphs" digital cross-sections can be created at different points of a path which allow for the examination of its shape and the degree of preservation. In addition, longitudinal profiles along the path can be used to show the extent of the route's rise or fall along its course. Other analytical methods, like generating a viewshed or visual axes, allow us, for example, to examine the relationship of specific paths to other structures such as castles or deserted villages.[12] Parallel to the recording and evaluation of the real path relics in the DTM, optimal connections between different points can also be reconstructed with the help of digital elevation data using least-cost path (LCP) analyses.[13]

Determining the age of old pathways is rather challenging. Some individual paths can be dated more precisely due to their function as an access route to a specific castle or deserted site, or as a transport route with a connection to a securely dated quarry or mining area. For many questions, however, it is important that the chronology of the documented features is as precise as possible, especially since not all parts of the old path that can be found in the field were in use at the same time.[14] Only few paths have been excavated so far, and surface finds within such paths – for instance horseshoes or horseshoe nails – may only serve as *terminus ante quem*, meaning that the track must have existed at that time already. Many paths had different phases of use, however. Problems arise when older horizons have been overprinted or degraded by more recent uses,[15] which often renders it impossible to make any reliable and specific deductions related to the dating. The superimposition of several paths in their respective stratigraphic sequence – as far as can be discerned – at least allows a relative dating: the "higher" paths in this case are older and are intersected by younger, "lower" hollow ways. The morphology of a path may also provide hints to its approximate age, at least under specific circumstances, although any such estimates should be made with caution. Various authors have already noted that the degree of deepening of a hollow way alone does not allow any specific conclusions about its age.[16]

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12 Concerning viewshed analysis with regard to the connection of castles and old paths, see also *Höfle/Wagener*, Burgen (2012), 137–144. For viewshed analyses and ancient ways, see also *Fütterer*, Wege (2016), 529–535.

13 Cf., e.g., *Posluschny*, Aspekte (2012), 115, and in general, e.g. *Herzog*, Potential (2013); *Anderson*, Pathway Analysis (2012); *Verhagen* et al., Pathways (2019).

14 *Spier*, Wegeforschung (1962), 126.

15 Cf. also *Burmeister*, Waren (2018), 120.

16 Cf., e.g., *Denecke*, Untersuchungen (1969), 85–86. In this context, it has also been repeatedly pointed out that it is just as difficult to make reliable statements about the frequency of traffic (and thus its significance) merely on the basis of the depth of a path (e.g. *Rippel*, Methoden [1958], 71; *De-*

12.4 Case studies from the central Harz Mountains

The analysis of the digital terrain data reveals the Harz Mountains as a complex cultural landscape featuring archaeological monuments from various epochs – including numerous early medieval sites. Under the Ottonians, the Harz became a core landscape of the East Frankish Empire. With its rich ore deposits as well as extensive forests (and thus timber reserves), it was heavily exploited for mining and smelting.[17] During this period, various royal palaces (Pfalzen) or hunting lodges (Jagdhöfe)[18] and numerous settlements were established in this region. Among these, a number of deserted early medieval settlements and a royal palace have been detected on the Elbingerode plateau. They include:[19]

– Egininkisrod, which corresponds to today's Eggeröder Brunnen,
– Erdfelde, with church ruins in the west,
– a deserted settlement, with church ruins in the Peersgrund valley,
– the presumed deserted village of Ripertingisrod,
– Hordeshusen in the east, between Rübeland and Hüttenrode,
– Albrechtsfelde, in the far southeast,
– the site of Volkmarskeller, in the northeast,
– and the Bodfeld royal palace, in the northwest.

These sites are located in areas with large iron ore deposits and with rivers/streams or their springs in the immediate vicinity. Bloomery and/or larger quantities of iron slag are documented throughout the region,[20] as well as many hundreds of old hollow ways that interconnect the deserted settlements (see Figure 12.4). Since the remains of iron smelting were discovered on several sites on the Elbingerode plateau, it is very likely that some sunken paths became particularly deep due to heavily loaded wagons transporting iron ore travelling along them.[21] While it was assumed that old transport routes were located in the valleys before using LiDAR data,[22] we know today that this

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necke, Untersuchungen [1969], 85) – although frequency, duration of use, etc. did of course have an influence on the characteristics and morphology of the paths; cf. *Fütterer*, Wege (2016), 47.

17 *Alper*, Königslandschaft (2014), 78; also *Brachmann*, Harz (1992).

18 In the eastern Harz itself, Bodfeld, Siptenfelde, and Hasselfelde are known; cf. *Alper*, Königslandschaft (2014), 78. See also *Freund*, Jagdpfalzen (2019).

19 *Prell*, Wege (1971); also *Alper*, Königslandschaft (2014), 83–84.

20 *Schneider*, Erforschung (1982), 377.

21 Recent investigations also showed that iron ore from the Elbingerode area was smelted on a large scale in the northern Harz foreland; see *Klatt*, Roteisensteinverhüttung (2016), which required transport routes.

22 Especially in schematic representations, paths were sometimes postulated in the stream valleys; cf., e.g., *Schürger*, Wüstung (2005), 153, Fig. 10. They certainly show the rough direction of ascent into the mountains, but the concrete courses of the paths can rather be traced on the heights – e.g. in the case of the paths from Heimburg to the Harz Mountains, reconstructed by Schürger for the ninth century.
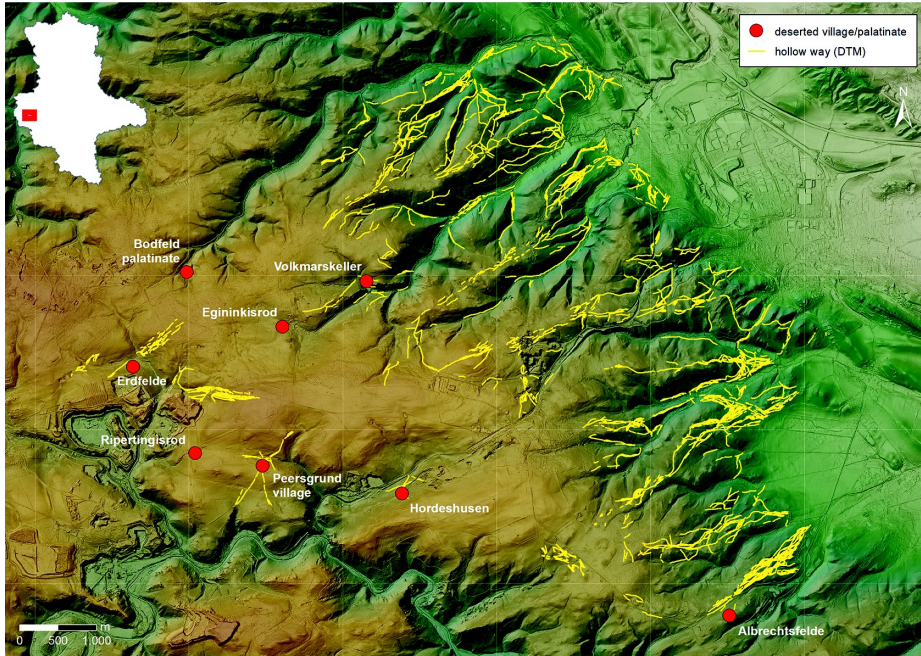
Figure 12.4: The hollow ways and medieval deserted villages on the Elbingerode plateau. Source: redrawing, visualisation, and graphics: author; DGM1: Datenlizenz Deutschland – Namensnennung – Version 2.0, © GeoBasis-DE / LVermGeo LSA.

was probably wrong given that medieval trackways typically used to run along hill-tops. In terms of the Elbingerode plateau – which is covered today with extensive meadows – its hollow ways have in many cases remained undamaged by ploughing and are therefore well-preserved (see Figure 12.5).[23]

12.4.1 Egininkisrod

The deserted village of "Egininkisrod", which lies in the area of today's Eggeröder Brunnen, was first mentioned in a donation of 5 December 956 from King Otto I (936–973). Addressed to the Quedlinburg Monastery, it relates the village as belonging to the church of St. Michael, today's Michaelstein Monastery near Blankenburg.[24] In 1152, "Euincrode" was mentioned by Pope Eugen III (1145–1153) in a letter of protection

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23 Similar situations can be found e.g. in England where this is very often the case; see, e.g. *Hindle*, Roads (1998), 36–37, Figs. 18–21; 48, Fig. 36; 49, Fig. 38.
24 DD O I, No. 186. Ed. *Sickel*, 268–269.

Figure 12.5: On the Elbingerode plateau with its extensive meadow areas, the preserved bundles of sunken pathways are partly also clearly visible in the aerial view. Source: O. Braasch, 16.12.1992, LB-No. 1311, slide No. 1374–33.

as being an independently managed farm (*Grangie*) belonging to the Michaelstein Monastery.[25]

Between 1966 and 1975, and in 1986, the Eggeröder Brunnen area was surveyed and prospected with a field campaign augmented by small trial trenches. A semi-circular rampart was uncovered, together with the remains of walls, several racing furnaces, and a slag heap. The shallow rampart and ditch system can be clearly seen in the DTM and on the aerial photographs. Findings on the site also include several *tuyères* for bellows and dozens of kilograms of slag,[26] which may still be found on the surface of the Eggeröder Brunnen site today.

In addition to the slag, numerous pottery fragments came to the surface. They date both the beginning of the settlement and the smelting activity at the site, around the ninth and tenth century. Grey ware and stoneware were found in the area of the Egininkisrod site, while glazed pottery is conspicuously absent. This points to an end of settlement in the fourteenth century, which probably corresponds to the end of an initial mining phase.[27] It is, however, possible that the decline is also related to the general shift of production to the larger river valleys in the Harz during the fourteenth century, at the latest. Waterpower was needed to drive the bellows in the iron-works, which were increasingly being built at that time,[28] especially as, in the early Middle Ages, iron production was already industry-like in this settlement.[29]

A connection was quickly established between the Egininkisrod ironworks settlement and the mining pits on the neighbouring Mittelberg.[30] Martin Prell describes the ore transport routes leading from there or from the Volkmarskeller to Eggeröder Brunnen,[31] which fan out much more frequently in the DTM than is evident in the field. According to the present state of knowledge, only the local red ironstone was used for smelting, which was first extracted from deposits exposed aboveground using open-cast mining.[32] Numerous mining remains of different periods up to the nineteenth century have survived at the Mittelberg and the neighbouring Volkmars-

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25 CDQ, No. 13. Ed. *von Erath*, 88–89 (chapter "Diplomata Aliaque Documenta"); see also *Laufköter*, Lage (1919), 11.

26 LDA site archive, parish file (OA) Heimburg ID 1063, site 8; *Schneider*, Funde (1976), 254–255; *Schneider*, Erforschung (1982), 377–378; *Behrens*, Eisenverhüttungsplatz (1988), 10–12, Figs. 4 and 5; *Behrens*, Notausgrabungen (1992), 149–150, Figs. 2 and 3; *Behrens*, Spuren (2013), 44–45.

27 LDA site archive, OA Heimburg ID 1063, site 8; *Schneider*, Funde (1976), 254–255; *Schneider*, Erforschung (1982), 377–378; *Behrens*, Eisenverhüttungsplatz (1988), 10–12, Figs. 4 and 5; *Behrens*, Notausgrabungen (1992), 149–150, Figs. 2 and 3; *Behrens*, Spuren (2013), 44–46.

28 *Gringmuth-Dallmer*, Besiedlung (1992), 151; *Kleßen*, Eisenhütten (1985), 10–12; cf. also *Alper*, Königslandschaft (2014), 87; *Alper*, Harz Mountains (2008), 479–481.

29 *Unger*, Rübeland (1994), 89.

30 The area was also investigated a few years ago by Roman Mischker (LDA) and its particularity was highlighted; see *Mischker*, Bergbaureviere (2003); *Mischker*, Montanarchäologie (2006), 367.

31 *Prell*, Wege (1971), 14–15.

32 *Gringmuth-Dallmer*, Besiedlung (1992), 150.

keller. Some quarry-like structures may also testify to former limestone extractions. From 1293, at the latest, Cistercians from the nearby Michaelstein Monastery also played a crucial role in medieval mining. In this year, they received permission from the Counts of Blankenburg and Regenstein to prospect for and to mine ore in the Kaltenthal valley, between Eggeröder Brunnen and Elbingerode.[33]

12.4.2 Erdfelde

The first systematic excavations in the eastern Harz Mountains were undertaken at the end of the nineteenth century. One excavation took place at the church of the deserted village Erdfelde between 1885 and 1886. In 1898, a first and quite detailed survey plan was prepared[34] showing that, with dimensions of around 18 m by 12 m, the Erdfelde church is one of the larger church ruins in the eastern Harz region. Some seemingly apsidal structures are still visible today. Although the church reportedly still existed in the sixteenth century, the village itself was already deserted at the beginning of the fifteenth century.[35]

The village was first mentioned in a document of 26 June 1343,[36] whereas local finds date the beginning of the settlement to the early Middle Ages. Later excavations from 1967 onwards revealed iron slag, pottery sherds (reddish-brown "Kugeltopfware", blue-grey sherds, but also partly-glazed ware) and fragments of flat and hollow glass,[37] while older reports from the 1920s attest to the presumably massive removal of iron slag from the site. Due to its high iron content, the slag was apparently used for further smelting. The cultural layer in the deserted village area is said to have been 2 to 3 m thick.[38] To the west of the church ruins, a rectangular structure can still be seen in the ground, known locally as "the smithy".[39]

The old sunken pathways leading directly past the deserted site attracted the attention of researchers at an early stage.[40] From the northeast to the southwest, several sunken tracks form a tangent to the settlement area, whereas they were cut off by the recent limestone quarry in the southwest. About 500 m to the east of the deserted site, a huge group of sunken paths begins, with some twenty paths running

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33 *Laufköter*, Lage (1919), 12; *Losse*, Braunesumpf (2010), 38–39.

34 LDA site archive, OA Elbingerode ID 1060, 29–30; 53 site 3.

35 See *Delius*, Bruchstücke (1813), 66; adopted, among others, by *Unger*, Rübeland (1994), 94–95; *Marquordt*, Geschichte (1998), 25.

36 *Bode*, Geschichte (1871), 381. See also Niedersächsisches Landesarchiv, Wolfenbüttel, NLA WO 60 Urk Nr. 34; arcinsys.niedersachsen.de/arcinsys/detailAction.action?detailid=b8143 (accessed: 03.05.2023).

37 LDA site archive, OA Elbingerode ID 1060, 31; 40–40; 43; 46; 51, site 3; 170–171, site 30; 172–173, site 31.

38 LDA site archive, OA Elbingerode ID 1060, 117, site 3.

39 LDA site archive, OA Elbingerode ID 1060, 31, site 3. On this structure, see also *Behrens*, Erdfelde (2016), 85–86.

40 LDA site archive, OA Elbingerode ID 1060, 52; 60; 114, site 3.

side by side. This bundle is located in the corridor of the "Alte Elbingeröder Straße". Many among these old routes can be dated to the Middle Ages, as they are directly connected to the deserted village of Erdfelde.

12.4.3 Peersgrund

The deserted village was located after observing the old paths crossing in the Peersgrund valley, when the remains of the church and what appears to be house sites were discovered.[41] Its particularly favourable position for traffic is still evident today. Since the paths lead more or less directly to the medieval church (see Figure 12.6), they must date to the same period, even though this does not exclude later uses. The paths cross the plateau in different directions, as may be recognised in the DTM and in aerial photographs, given that they are not covered by wood. The favourable position of the settlement area is enhanced by the headwaters of a small stream (flowing into the near Bode River), which was reportedly dammed at two points of the deserted site.[42]

Among the village remains still visible today are the relics of an aisleless church (Saalkirche), whose walls of quarry stones were preserved to a height of approximately 0.9 m. The church consisted of a simple aisle with an apse in the east. In front of the apse – in which a stone foundation of the altar is recognisable – wall stumps were attached from both sides. The entrance is visible on the north side of the aisle, its floor was filled with clay screed (apparently from a younger phase). The walls, whose foundations were uncovered between 1965 and 1967 (with further excavation completed in 1987), measured 1 m in thickness.[43] It is possible that the church was only built in the twelfth or thirteenth century, on top of an older cultural layer. According to surface finds, however, the village itself existed at least as early as in the tenth or eleventh century.[44] Since 1964, archaeological finds have included iron slag, iron fragments, so-called monk's and nun's roof tiles, roof slate, and numerous grey ceramics from the twelfth to fourteenth centuries, but also partly brown ceramics. In addition, glass flux (such as fragments of a glassmaker's pipe) may indicate on-site

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41 LDA site archive, OA Rübeland ID 1072, 134; 136, site 9. This site could be identical with the remains of a chapel in the "Nebelholz" near Rübeland already described at the end of the eighteenth century; cf. *Stübner*, Denkwürdigkeiten 2 (1790), 416–417.

42 LDA site archive, OA Rübeland ID 1072, 71–72, site 9.

43 LDA site archive, OA Hüttenrode ID 1065, 19–20, site 5; LDA site archive, OA Rübeland ID 1072, 94–95; 137–139; 144–147, site 9; LDA site archive, OA Elbingerode ID 1060, 116 (incorrectly assigned to site 1).

44 *Schneider*, Bergbauforschung (1980), 21; *Schneider*, Wüstungsforschung (1988), 239.
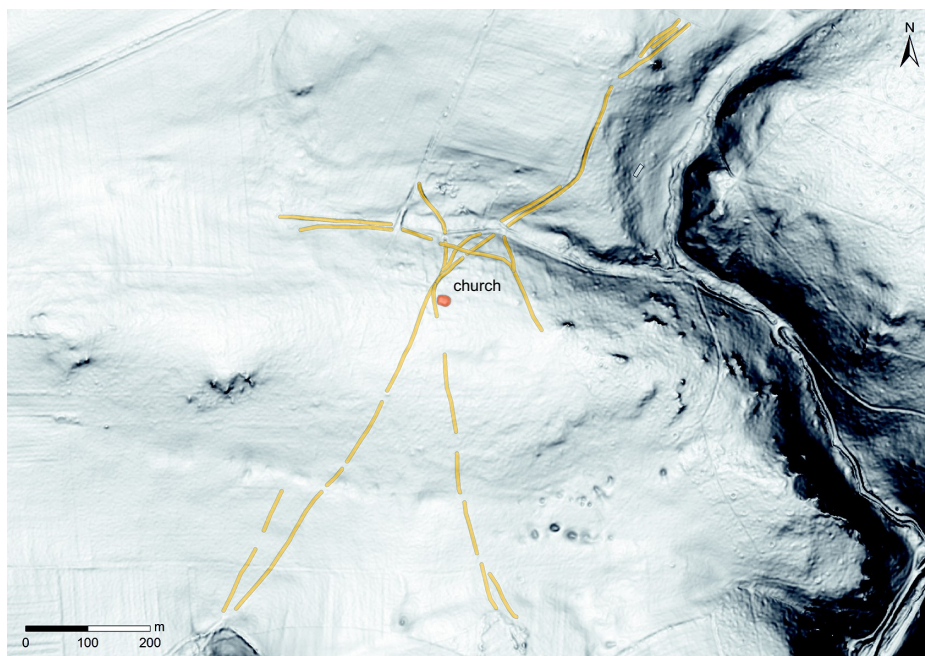
Figure 12.6: Several sunken tracks run directly to the small church ruins of the deserted village in the Peersgrund valley. Source: redrawing, visualisation, and graphics: author; DGM1: Datenlizenz Deutschland – Namensnennung – Version 2.0, © GeoBasis-DE / LVermGeo LSA.

glass production.[45] A child's skeleton and other human bones were also excavated during archaeological follow-up investigations in 1987,[46] finds that roughly date the settlement somewhere between the tenth and thirteenth/fourteenth centuries.[47]

12.4.4 Ripertinigisrod

This former village site is also called Ripzingerode and was probably located at the "Rippenröder Brunnen" site.[48] The outworks at Hüttenrode were on the site of an old sheep farm, which formerly belonged to the "Volkmarsche Anstalten" and to the Michaelstein Monastery. It is said that, at a trackway (Trift) near the Rippenrode parish

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45 LDA site archive, OA Hüttenrode ID 1065, 7; 19–20, site 5; 8, site 6; LDA site archive, OA Rübeland ID 1072, 71; 94; 110–111; 113–117; 133–134; 140; 143, site 9; LDA site archive, OA Elbingerode ID 1060, 50.

46 LDA site archive, OA Rübeland ID 1072, 143–147, site 9.

47 LDA site archive, OA Rübeland ID 1072, 143, site 9. See also, e.g. *Schneider*, Wüstungsforschung (1988), 239.

48 *Stübner*, Denkwürdigkeiten 1 (1788), 366; *Stübner*, Denkwürdigkeiten 2 (1790), 416.

forest, traces of the sheep farm's buildings – which were only demolished in 1712 – and an associated garden could still be seen at the end of the eighteenth century.[49] On the basis of this description and given the finds of medieval pottery, Prell assumes that Rippenrode was located at the site of the outworks at Kaltenthal.[50] Another possible location is at the Rippenbach stream, a few hundred meters to the northeast. Since it belonged to St. Michael's parish, it probably did not have its own church,[51] implying that it cannot be identical to the deserted village in Peersgrund. Ripertingisrod was first mentioned together with Egininkisrod in the year 956;[52] later mentions are dated to the years 1046, 1258, 1344/65, 1432 and 1583.[53]

12.4.5 Hordeshusen

The abandoned village of Hordeshusen was described by Johann Christian Stübner as lying between Hüttenrode and the Kreuztal. At the end of the eighteenth century, the place was reportedly referred to as "the village site and chapel"[54] – its first mention goes back to 1199.[55] Finds of early medieval red-brown pottery (eleventh/twelfth century) – and, more recently, grey ware – allow for fairly accurate dating of the site. Other finds include masses of iron slag and the remains of a smelting furnace, suggesting – again, like the other abandoned villages on the Elbingerode plateau – a context of medieval iron smelting,[56] especially given the numerous small and large iron ore mining pits in the area. However, since the larger ones are probably more recent and thus were not created in the Middle Ages, the area of the deserted site must have been strongly altered or disturbed by later mining as well as modern road and railway constructions.[57]

Hollow ways most probably lead from the plateau in the north through the valley towards the deserted site and the presumed location of the church (see Figure 12.7). Today, it is difficult to make out any remains of the church in the terrain, but the schematic ground plan of its earthen embankments was documented by Johannes Schneider in 1982.[58] The obvious spatial relationship of the paths to the deserted settlement area again points towards a date in the Middle Ages.

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49 *Stübner*, Denkwürdigkeiten 1 (1788), 366–367.
50 LDA site archive, OA Hüttenrode ID 1065, 25–28 Fl. 1001; [4] A15092.
51 LDA site archive, OA Hüttenrode ID 1065, [4] A15092.
52 DD O I, No. 186. Ed. *Sickel*, 268–269.
53 *Steinacker*, Bau- und Kunstdenkmäler (1922), 185.
54 *Stübner*, Denkwürdigkeiten 1 (1788), 366; *Stübner*, Denkwürdigkeiten 2 (1790), 416.
55 *Steinacker*, Bau- und Kunstdenkmäler (1922), 150.
56 LDA site archive, OA Hüttenrode ID 1065, 9; 12; 16, site 7; [8] A15094.
57 LDA site archive, OA Hüttenrode ID 1065, 12, site 7.
58 *Schneider*, Erforschung (1982), 375, Fig. 6; described in *Schneider*, Wüstungsforschung (1988), 240.

Figure 12.7: Hollow ways in the open land also run towards the deserted village of Hordeshusen. Source: R. Kunze, Halle (Saale).

12.4.6 Albrechtsfelde

Albrechtsfelde was also known under the name "Armes Feld" and is very likely identical with today's Almsfeld.[59] Several traces of hollow ways passing directly southeast of a heavily overgrown church are known as the "Wasserwege" (water paths). Numerous other tracks lie a little further north of the deserted village, which were all together coming from the direction of the "Wienröder Steige" (see Figure 12.8). The hollow ways were already observed, described and sketched by Prell in 1970/71.[60]

In the middle of the adjacent meadow area lies a spring which, along with others, feeds the Silberbach stream. Surface finds made during surveys in 1970/71 include fragments of grey and older pottery from the site. A brick, roof tiles, and mortar came directly from the ruined church.[61] The church[62] is mentioned in a deed of sale from the sixteenth century, but it had already been abandoned at that time ("dar die Kirche

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59 Regarding the discussion about the exact location of this place see also *Steinacker*, Bau- und Kunstdenkmäler (1922), 213.

60 LDA site archive, OA Wienrode ID 1087, 5–8, site 1.

61 Ibid.

62 A sketch of the remains of the church was first published by *Schneider*, Erforschung (1982), 375, Fig. 6.
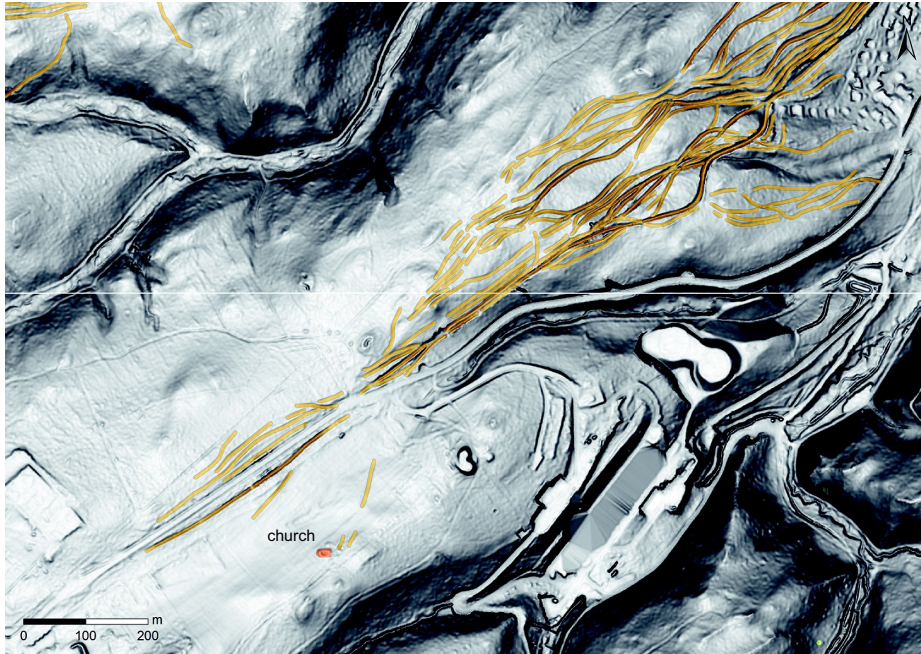
Figure 12.8: Numerous trackways coming up from the northern edge of the Harz Mountains lead directly to the church ruins of Albrechtsfelde. Source: redrawing, visualisation, and graphics: author; DGM1: Datenlizenz Deutschland – Namensnennung – Version 2.0, © GeoBasis-DE / LVermGeo LSA.

gestanden").[63] Albrechtsfelde itself is mentioned for the first time on 8 September 1225 (*locus molendini et duc silve, Albrechtesvelde silva, Wigenrot duo mansi et dimidius, silva cum prato*).[64] According to Otto Schönermark, 1209 was the year of its first mention,[65] and he refers to the property register of Count Siegfried II of Blankenburg (c. 1156–1246) dated between 1209 and 1227.[66]

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63 The exact date of the contract cannot be determined with certainty, as only copies are available in the site archive (LDA site archive, OA Wienrode ID 1087, 6; 14–16; 22–23, site 1). On this, see also *Stadelmann*, Wendefurth (1961), 5 (however, the year 1557 is presumably an incorrect date). It has not yet been possible to verify whether the text is contained in the "Erbzinsregister des Amtes Blankenburg" (Niedersächsisches Landesarchiv, Wolfenbüttel, NLA WO 111 Alt Nr. 340; arcinsys.niedersachsen.de/arcinsys/detailAction.action?detailid=v5603193 [accessed: 03.05.2023]).

64 UB Hochstift Halberstadt I, No. 574. Ed. *Schmidt*, 510–510.

65 *Schönermark*, Wüstungen (1897), 7.

66 *Bode/Leibrock*, Güterverzeichnis (1869), 78–79; see also *Bode*, Nachrichten (1869), 93.

12.4.7 Bodfeld

At the end of the nineteenth century, particular efforts were made to locate preserved historical palaces. As early as 1870, Johannes Heinrich Müller (1828–1886) had excavations undertaken on the Papenberg hill between Elbingerode and Königshütte – which he considered the location of the Bodfeld royal palace – where he uncovered the remains of St. Andrew's Church.[67] The church was first mentioned in 1258 in a letter of indulgence of bishop Volrad of Halberstadt (1254–1295).[68] This site today is known as the village of Bodfeld or Lütgen-Bodfeld. Traces of early medieval iron mining and smelting were also detected in its vicinity.[69]

In 1885/86, Heinrich August Brinckmann (1845–1910) came across foundation remains in the forest site known as "Schlosskopf" or "Jagdhaus" (hunting lodge) south of Heimburg, which he excavated alongside the old wall courses.[70] Most scholars agree that this is the site of the Bodfeld royal palace,[71] where the tenth-century kings Otto I to III signed several diplomas[72] and where the emperor Henry III (1046–1056) died in 1056.[73] Particularly noticeable at this site are a hollow way which comes up from the east out of the Trecktal valley onto the plateau, as well as a very impressive and heavily deepened hollow way to the west, coming up from the same valley.

12.4.8 Volkmarskeller

The area around the deserted settlement of Egininkisrod also offers a multi-layered terrain with various types of features in direct spatial connection.[74] In the immediate vicinity of the settlement of the ninth/tenth to fourteenth centuries, which is now known as Eggeröder Brunnen, traces of red ironstone mining were found on the Mit-

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67 *Müller*, Bericht (1872), 357–359.

68 See *Leuckfeld*, Antiquitates (1709), 221; *Delius*, Bruchstücke (1813), 13.

69 See, e.g. *Schneider/Wittenberg*, Bodfeld (1974), 35–36 (here the site on the Papenberg is described, but is still misinterpreted as the location of the royal palace).

70 *Brinckmann*, Ausgrabungen (1897), 3. Critical comments on Brinckmann's excavations, e.g., already in *Grosse*, Kloster Wendhausen (1940), 73.

71 For decades of deliberations and discussions on the location of the Bodfeld royal palace, cf., e.g. *Köhler*, Stand (2003); *Wille*, Örtlichkeit (2010). Especially at the beginning of the twentieth century, this site was also called "Jagdhof Erdfelde" and was regarded as belonging together with the village of Erdfelde described above; cf. *Höfer*, Ertfelde (1914), 161. In 2023, our excavation of the Schlosskopf-site was started using the latest scientific methods to close the research gaps, see *Alper* et al., Pfalzen (forthcoming).

72 DD O I, Nos. 60; 63; 156. Ed. *Sickel*, 141–145; 237–238; DD O II, Nos. 60; 117; 201; 202; 225; 226. Ed. *Sickel*, 70; 131; 227–230; 253–255; DD O III, Nos. 75; 103; 104; 106: 107; 168. Ed. *Sickel*, 482–483; 514–519; 579–580.

73 Ann. Lamperti, a. 1056. Ed. *Oswald*, 69.

74 *Swieder*, Burgen (2020), 189–193.

telberg. An old dam on a small tributary of the Goldbach stream was seemingly connected either with the settlement itself or the extensive smelting activities documented at the site. Several old pathways run from the large iron ore pits on the Mittelberg towards the deserted village of Egininkisrod in the southwest – either towards the former Cistercian monastery of Michaelstein or its predecessor at Volkmarskeller in the northeast.[75]

At the Volkmarskeller-site is a cave that shows numerous traces of artificial extensions. Furthermore, remains of human graves, the foundations of different buildings, and several early medieval finds (like a Romanic capital) are documented both on the top of the hill and in the Klostergrund valley at the Goldbach stream below.[76]

12.4.9 Trackways near the sites

A perfectly preserved trackway with wheel ruts[77] – which in this form very probably dates to a more recent period – is located on the Salzberg hill about 1 km west-southwest of Michaelstein Monastery near Blankenburg. There are several sunken paths on the route leading from the monastery up to the Elbingerode plateau towards the deserted villages of Egininkisrod, Erdfelde, and in the Peersgrund valley.[78] In Bleeksholz, they meet the old Elbingerode road, also preserved as a hollow way. It leads from Heimburg over the Langenberg hill and continues southwest towards the plateau. Wheel ruts with a gauge of 1.38 m have been preserved in the clay-slate subsoil. They have been driven up to 35 cm deep into the bedrock.[79] In the 1970s, when Prell documented and published the hollow way, together with the tracks, he apparently did not record the exact position of the site. He only described it in general terms as being located on the Salzberg. Fortunately, its precise location was recently rediscovered and assigned (see Figure 12.9).[80]

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75 On Volkmarskeller see, e.g., *Behrens/Behrens*, Alt Michaelstein (2021).

76 *Steinacker*, Bau- und Kunstdenkmäler (1922), 196; 198–206.

77 Ruts can only be documented during field inspections and cannot be recognised in the DTM. Wagon tracks can usually only form and be preserved if the routes have been used for such a long time that the wheels have left their traces in the rock, and if the corresponding geological subsoil is present. Such traces of use may, of course, also be found in the western Harz Mountains, where they have only recently been documented in detail; cf. *Malek/Linke*, Ansätze (2021), 242–244, Figs. 13–15.

78 See also *Prell*, Wege (1971).

79 *Prell*, Befund (1978), 268, Pl. 42b.

80 Neither Prell's publication (*Prell*, Befund [1978]) nor his notes and reports, which have found their way into the LDA's archives, noted where exactly the tracks were located on the Salzberg, gave their coordinates, or included a sketch of the location. Since there are more than twenty hollow ways or sections on the Salzberg, it was initially unclear where to locate the tracks. I owe the "rediscovery" of the path I was looking for to Ulrich Swieder, Blankenburg, who, after walking along several sunken paths, was able to identify it on the basis of the prominent rocks on the side and locate the tracks already found by Prell.

While it is not possible to determine the period from which these hollow ways originate without further investigation, it is worth mentioning that the "Salzberg" or "Solberch" (Salt Hill) was mentioned as early as 1237, together with an adjacent forest, as being the property of the nearby Cistercian monastery of Michaelstein.[81]

Figure 12.9: At the Salzberg, a particularly well defined and stepped hollow way could be documented in the field. Source: U. Swieder, Blankenburg.

Apparently, tracks very similar to the Salzberg have also been found about 1 km further northwest, at the Langenberg. Here, at the end of the 1990s, several pathways were investigated in the field and profile sections were made for three of them in order to draw conclusions about the track gauges and axle heights of the transport wagons used. A track width of 1.5 m and a stepped profile – as documented at the Salzberg – were found.[82] One of the box-shaped hollow ways, in particular, had an obvious horizontal step on each side, which had presumably been created intentionally to widen the track.

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81 Origines Guelficae IV, No. 69. Ed. *Scheidt*, 168–169: *montem quendam, cum silua adiacente, Solberch dictum, monasterio lapidis sancti Michaëlis vicinum.*
82 *Projektgruppe*, Hohlwegesystem (2000), 98–99, Fig. 60. These larger track gauges point to an early modern or post use and overprinting of the paths.

In the Harz Mountains, very few sites of medieval mobility have been excavated so far. Paved trackways were very rarely found there before modern times, since unpaved natural paths were used from prehistory well into the early current period. However, some paved entrances to settlements have already been recorded for the Middle Ages.[83] Examples of medieval road paving were mainly discovered at the northern edge of the Harz Mountains (see Figure 12.10) in the course of archaeological investigations during the construction of the motorway A36 (formerly known as the B6n). Gravelled paths, for example, were documented in the deserted settlement of Hinzingerode and in the likewise deserted settlement at the Hellbach stream near Heimburg. The latter was an important iron smelting site in use from the ninth century onwards.[84] Within the deserted settlement of Marsleben near Quedlinburg, the remains of a gravel path were uncovered. Furthermore, traces of the "Langenstein Way" were excavated at one of the former gates. The documented segment of this road had a pavement made of sand quarry stones and gravel.[85] Slags were also used for medieval road paving: for instance, about 390 kg of slag were recovered from the gravel of the road at the deserted site at the Hellbach, dating from around the ninth/ tenth to thirteenth centuries.[86]

12.5 Summary

Research on (early) medieval hollow ways on the Elbingerode plateau in the Middle Harz region was – especially in its beginnings – mainly the work of Prell.[87] He systematically followed the traces of pathways discernible in the terrain and initially discovered crossroads which, in conjunction with stream and river crossings, often indicate deserted village sites. Closer investigations of these former settlements (such as Erdfelde, Egininkisrod, Hordeshusen, or Albrechtsfelde) subsequently unearthed ceramic finds or slag remains confirming their dating to the (early) Middle Ages. These finds may be used indirectly to date the trackways leading directly to the deserted villages or church ruins. Today, the exact documentation of these old ways, if they have been

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83 *Schürger*, Straßennetz (2006), 191.

84 The path documented at the smelter settlement on the Hellbach runs roughly in a north-south direction; cf. *Schürger*, Wüstung (2005), 153, Fig. 10. To the south it leads into the Harz Mountains, to the iron ore deposits on the Elbingerode plateau. To the north it seems to run towards the medieval Derenburg royal palace; see, e.g. *Alper*, Königslandschaft (2014); *Schwarz*, Methoden (2014), 57.

85 *Schürger*, Straßennetz (2006), 190–191, Fig. 3; *Schürger*, Wüstung (2005).

86 *Schürger*, Eisenverhüttung (2005), 161.

87 For the description of Prell's work, see *Schneider*, Bergbauforschung (1980), 20. While Prell focused on concrete remains in the field, earlier research concentrated primarily on the embedding of the Elbingerode plateau in a network of royal and/or long-distance routes and their general course; e.g. *Grosse*, Straßen (1942), 4–10.

Figure 12.10.a: A paved way in the northern Harz foreland near Benzingerode is one of the exceptional archaeological features. Source: A. Hörentrup (LDA).

Figure 12.10.b: A few kilometres away, near Börnecke, an unpaved way, but with wheel tracks and footprints, could be documented. Source: K. Ulrich (LDA).

preserved as sunken roads or road embankments, is possible by using digital terrain data. In this way, attributes like their exact course, their cross-sectional profiles, or their ascent in the terrain can be determined and examined non-destructively and they may be located precisely in spatial terms. Thus, the evaluation of the data obtained by means of LiDAR or ALS contributes significantly to the understanding of (early) medieval mobility in the Harz Mountains.[88]

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13 Using Citizen Science to map hollow roads in LiDAR data from the Netherlands. Results from the Heritage Quest project

13.1 Introduction

Hollow roads are linear, sunken tracks resulting from the intensive, continuous passage of carts and other traffic along specific routes through the landscape.[1] Wherever the soil was soft and could be turned aside, parallel lanes would develop over time as travellers preferred to keep to the beaten track to make for greater speed and reduce the risk of getting lost. When a track became impassable due to seasonal conditions or general wear over time, travellers were forced to shift to an adjacent lane, resulting in the pattern of parallel cart-ruts, also called route zones.[2] Such hollow roads can be found all over Europe and may date back as far as the Bronze Age (2000–800 BC),[3] although the earliest confirmed routes in the Netherlands only date back to the late Middle Ages (1250–1500 AD).[4] Generally, these tracks are hard to discern in the present-day terrain due to their superficial nature. Nevertheless, the systematic mapping of hollow roads can provide valuable information on historical route networks – the result of the deliberate movement of people within the landscape – on both an inter-site and inter-regional level.[5] These routes reflect and influence (large-scale) cultural and landscape processes,[6] and play a crucial role in the exchange of resources, knowledge, and ideas.[7] Especially, the mapping of roads on a local and regional scale can enhance and expand the knowledge gained from historical written sources and cartographic data.[8]

Fortunately, hollow roads appear as distinct longitudinal objects in airborne Light Detection And Ranging (LiDAR) data,[9] even when these are located under forest

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1 *Kirchener* et al., Spatial analysis hollow ways (2020).
2 *Vletter/van Lanen*, Finding vanished routes (2018).
3 *Brongers*, Air photography (1976).
4 *Vletter/van Lanen*, Finding vanished routes (2018).
5 *Mlekuž*, Roads to nowhere? (2013); *Nuninger* et al., Developing FAIR Ontological Pathways (2020).
6 *Vletter/van Lanen*, Finding vanished routes (2018).
7 *Løvschal*, Ways of wandering (2013).
8 *Slamova* et al., Dependence medieval settlements historical roads (2014).
9 *Historic England*, Using Airborne Lidar (2018).

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Eva Kaptijn, Zwolle

or vegetation cover. This has opened up fast tracks of land – hitherto difficult to investigate – for analysis, which is generally done manually by one or a small group of experts. However, the sheer amount of available high-quality data necessitates the use of alternative strategies to effectively and efficiently map the overwhelming amount of hollow roads, i.e. computational approaches or citizen science. The former generally use more traditional spatial and predictive modelling,[10] or specialised (hand-crafted) feature extraction and analysis techniques to map roads.[11] Recently, computational approaches based on a combination of Deep Learning and geospatial processing have also shown their effectiveness.[12]

Citizen science, on the other hand, uses the active involvement of large groups of volunteer (i.e. non-professional) scientists, generally called citizen researchers,[13] in the scientific process. The participation of many individuals allows for generating and/or analysing large amounts of data and the same research action can be repeated. This replication is essential to increase the quality of the results of citizen science.[14] Although community engagement and participation in archaeology has long been a recurrent practice,[15] involving citizen researchers in the collection and/or interpretation of data is yet uncommon (but see[16]). In the following, a novel project called Heritage Quest – in which thousands of citizen researchers analysed LiDAR images for potential hollow roads – will be presented and discussed among others with reference to the potentials of this approach in studying early medieval mobility.

13.2 The Heritage Quest project

The Heritage Quest project, run by Leiden University and regional heritage organisations *Erfgoed Gelderland* and *Landschap Erfgoed Utrecht*, is the first large-scale citizen science project involving the archaeological interpretation of remotely sensed data in the Netherlands.[17] The aims of the project are twofold: on the one hand, the project intends to discover and map as yet unknown archaeology. On the other hand, it tries to

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10 *Verhagen/Nuninger/Groenhuijzen*, Modelling Pathways Movement Networks (2019).

11 *Sevara* et al., Pixel versus Object (2016); *Vletter*, (Semi) Automatic extraction roads (2014); *Vletter/ van Lanen*, Finding vanished routes (2018); *Kirchener* et al., Spatial analysis hollow ways (2020).

12 *Verschoof-van der Vaart/Landauer*, CarcassonNet (2021); *Verschoof-van der Vaart/Landauer*, Transferability of CarcassonNet (2022).

13 *Eitzel* et al., Citizen Science Terminology Matters (2017).

14 *Bourgeois/Kaptijn/Verschoof-van der Vaart/Lambers*, Assessing Quality Citizen Science (2024); *Kosmala/Wiggins/Swanson/Simmons*, Assessing Data Quality Citizen Science (2016).

15 *Dries*, Community Archaeology Netherlands (2014).

16 *Duckers*, Bridging geospatial divide archaeology (2013); *Lin/Huynh/Lanckriet/Barrington*, Crowdsourcing the unknown (2014).

17 *Lambers/Verschoof-van der Vaart/Bourgeois*, Integrating Dutch Archaeological Prospection (2019).

raise awareness of the rich and diverse archaeological heritage of the Netherlands, leading to better protection of this, often fragile, legacy. Two iterations of the Heritage Quest project were conducted in 2019 and 2020, respectively. The first iteration, in 2019, focused on the *Veluwe* region in the central part of the Netherlands.[18] In 2019, more than 2000 citizen researchers mapped thousands of potential prehistoric barrows (small, round or oval-shaped earthen mounds that demarcate the burial place of a select group of people), Celtic fields (parcelling systems composed of adjoining, roughly rectangular, embanked plots, which form a characteristic checker-board pattern), and medieval charcoal kilns (circular platforms or mounds surrounded by a shallow ditch or circle of pits, used for the production of charcoal) in an area of approx. 2000 square kilometres (universiteitleiden.nl/en/erfgoed-gezocht/veluwe). The second iteration of the Heritage Quest project, conducted in 2020, focused on another forested region in the central part of the Netherlands, namely the *Utrechtse Heuvelrug* (Figure 13.1). Here the citizen researchers mapped – alongside barrows and Celtic fields – hollow roads. The following will focus on this iteration of the Heritage Quest project.

13.3 Research Area and Datasets

13.3.1 Research area

The *Utrechtse Heuvelrug* (approx. 350 square kilometres) is characterised by ice-pushed ridges or push moraines formed during the Saale glacial period (roughly 350,000 to 130,000 years ago), which were partly covered by cover-sand deposits during the Weichselian glacial period (approx. 115,000 to 10,000 years ago). The process resulted in a rolling landscape with significant elevation differences.[19] Initially, the higher parts of the area were covered by forests and heath, surrounded by marshes and river valleys.[20] However, from prehistoric times onwards, the area was gradually deforested, culminating in significant deforestation in the second half of the Middle Ages (approx. 1000 to 1500 AD), which led to the formation of large drift-sand areas.[21] Large parts of the *Utrechtse Heuvelrug* were reforested in the late nineteenth and early twentieth centuries, resulting in today's extensive forests interspersed with heathlands.

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18 *Lambers/Verschoof-van der Vaart/Bourgeois*, Integrating Dutch Archaeological Prospection (2019).

19 *Berendsen*, Vorming van het land (2000).

20 *Doorenbosch*, Ancestral Heaths. Reconstructing Barrow Landscape (2013).

21 *Koster*, European Aeolian Sand Belt (2009).
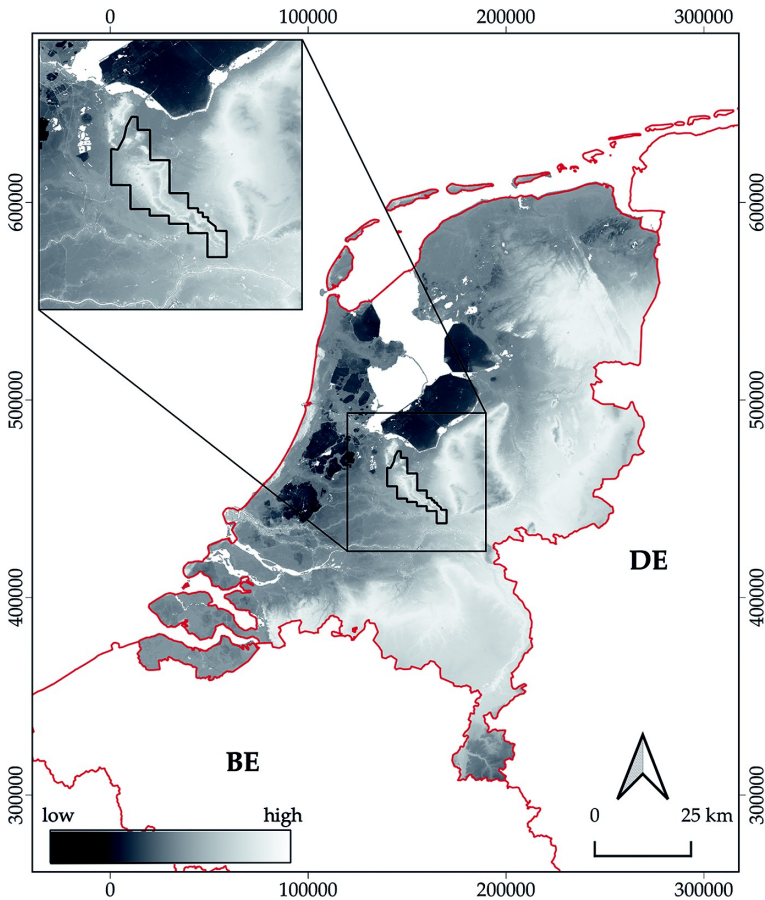
Figure 13.1: The research area (black outline) on an elevation model of the Netherlands (source of the elevation model: Nationaal Georegister 2023; coordinates in Amersfoort/RD New, EPSG: 28992; amended from Lambers/Verschoof-van der Vaart/Bourgeois [2019]).

13.3.2 LiDAR data

Airborne LiDAR is a remote sensing technique comparable to radar that can be used to create high-resolution elevation maps of the earth surface.[22] One of the big advantages of this technique, compared to other remote sensing methods, is the possibility of measuring through forest and other vegetation cover. LiDAR data for the entire Netherlands are commissioned on a regular basis by the Dutch Directorate-General for Public Works and Water Management and are freely available from the online

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22 *Historic England*, Using Airborne Lidar (2018).

repository PDOK.[23] The second version of this nationwide dataset (called *Actueel Hoogtebestand Nederland* 2 or AHN2) was used in this research and has an average ground point density of 6 to 10 per square meter, a spatial resolution of 50 centimetres and a vertical and planimetric accuracy of 5 centimetres.[24]

13.4 Methodology

13.4.1 Online system

To analyse the LiDAR data from the research area, an online system was hosted on *The Zooniverse*, a web-based platform that allows people from all over the world to participate in citizen science projects without having any specialised background, expertise, or training.[25] In the Heritage Quest project, participants were asked to mark every potential barrow, Celtic field, and hollow road they could see within a small LiDAR image.[26]

These images were obtained by dividing the LiDAR data of the entire research area into images of 300 by 300 metres (600 by 600 pixels) with a small overlap to all sides. The participants were presented with two different LiDAR visualisations, i.e. shaded relief or hill shade and Simple Local Relief Model[27] to assist them in their classification (Figure 13.2). The first visualisation is more commonly used and was more intuitively interpreted by volunteers. Meanwhile, the second visualisation allowed for better detection of faint traces since it enhances the local detail, while suppressing the large-scale terrain relief.[28]

Throughout the project, a dedicated staff member assisted by a team of volunteers monitored user engagement, providing feedback and online support through an accompanying forum. When starting, participants were provided with a short tutorial on how to operate the website and how to identify the archaeological objects. A *Field Guide* – featuring more in-depth background information on the project, the archaeological objects and region under investigation of interest, as well as archaeological prospection and remote sensing in general – could be consulted at any time. The interface on *Zooniverse* was bilingual Dutch/English, ensuring both international citizen researchers – as well as Dutch-speaking volunteers – could participate.[29]

Since the citizen researchers were neither trained in archaeology nor in remote sensing, showing every image to only one individual would result in noisy, possibly

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23 *Nationaal Georegister*, Publieke Dienstverlening Op Kaart (PDOK) (2013).

24 *Zon*, Kwaliteitsdocument AHN-2 (2013).

25 *Simpson/Page/De Roure*, Zooniverse (2014).

26 *Lambers/Verschoof-van der Vaart/Bourgeois*, Integrating Dutch Archaeological Prospection (2019).

27 *Kokalj/Hesse*, Airborne laser scanning data visualization (2017).

28 Ibid.

29 *Bourgeois/Kaptijn/Verschoof-van der Vaart/Lambers*, Assessing Quality Citizen Science (2024).

Figure 13.2: The Heritage Quest mapping interface on *Zooniverse*, showing the two LiDAR images with different visualisations and the current task (after Lambers/Verschoof-van der Vaart/Bourgeois [2019]).

unusable data.[30] Therefore, in the Heritage Quest project, every individual LiDAR image was shown not to one but to sixty different volunteers before it was retired (i.e. taken out of the set of available images). The concept behind this iterative process is that when multiple participants investigate every image, a consensus is reached between users at a certain point. Archaeological objects that perfectly fit the examples shown beforehand in the tutorial will be identified by all (or the majority of) the participants, while less likely candidates are only selected by a few people. Moreover, accidental errors can be easily filtered out through this method, as two people will never accidentally mark the (exact) same location.[31] Therefore, locations marked by only one citizen researcher are very often mistakes or misclassifications.

13.4.2 Post-processing

To aggregate and analyse the results of the online project, the data from *Zooniverse* (i.e. all individual detections of hollow roads) were converted into geospatial entities (i.e. polygons) with real-world coordinates in a Geographic Information System (QGIS 3.16 Hanover[32]). Secondly, a division was made between the detections of hollow roads, based on their location within the landscape. Research has shown that certain landscape characteristics, such as current land-use, have an influence on the preservation

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30 *Kosmala/Wiggings/Swanson/Simmons*, Assessing Data Quality Citizen Science (2016); *Swanson/Kosmala/Lintott/Parker*, generalized approach citizen science data (2016).

31 *Bourgeois/Kaptijn/Verschoof-van der Vaart/Lambers*, Assessing Quality Citizen Science (2024).

32 *QGIS Development Team*, QGIS (2017)

and/or visibility of hollow roads and on the number of incorrect detections caused by 'objects of confusion', i.e. those morphologically comparable to hollow roads.[33] Consequently, hollow roads generally have the best chance of survival in areas covered with forest or vegetation, such as heathland. The likelihood of discovering hollow roads outside of those areas is generally very low (circa 1.5%).[34] Therefore, all polygons outside of areas covered with forest, heather, or grasslands, were removed. These areas were determined based on the map *present day land-use*, created by CBS Statistics Netherlands (pdok.nl/introductie/-/article/cbs-bestand-bodemgebruik). The remaining "stacks" of overlapping polygons were made partially transparent in the GIS. The latter clearly showed areas marked by multiple participants in darker shades, versus areas that were marked by a single individual or a few people in lighter shades. However, the resulting dataset is inherently messy and noisy and must be critically assessed before these can be used for further research.[35] Therefore, all polygons were manually analysed by the first author to remove False Positives (i.e. errors or misidentifications) from potential hollow roads.

13.5 Results

13.5.1 General results

The Heritage Quest project on the *Utrechtse Heuvelrug* was launched in April 2020 and succeeded in mapping the entire area (circa 350 square kilometres) in approximately one month. Over 4572 citizen researchers participated, resulting in a total of 300,971 individual images being classified. In the course of the project, 35,558 individual detections of hollow roads were made (Table 13.1). After converting the results into geospatial data and ensuring the removal of polygons outside of forest, heathland, and grassland, 33,341 polygons remained. The manual analysis, which took roughly seven hours, could eliminate another 10,000 False Positives, resulting in 23,664 polygons. In turn, these could be combined into 584 demarcated areas with a total coverage of approx. 31,756,000 square meters.

To evaluate the performance of the Heritage Quest project, the areas (in square metres) of True Positives (TP) and False Positives (FP) were determined, following the approach taken in Verschoof-van der Vaart and Landauer (2021). Subsequently, Precision (Equation 1) – a metric that measures how many of the selected areas are relevant – was calculated. Precision is restricted between 0 and 1, with a higher value

33 *Verschoof-van der Vaart/Lambers/Kowalczyk/Bourgeois*, Deep Learning Location-Based Ranking (2020).

34 *Verschoof-van der Vaart/Landauer*, CarcassonNet (2021).

35 *Kosmala/Wiggings/Swanson/Simmons*, Assessing Data Quality Citizen Science (2016).

indicating better performance, i.e. fewer False Positives. The citizen researchers in the Heritage Quest project reach a Precision of 0.44 (based on square meters). When calculated using the number of polygons, the Precision is much higher, reaching 0.71. In the former scenario, the actual area marked by the volunteers is the main influence on performance, while in the latter what exactly is marked is ignored. Instead, the number of markings made by the citizen researchers is of primary importance.

The sizable difference between these two values could indicate that on average the citizen researchers tend to mark the right areas (i.e. areas with hollow roads), while wrong areas are only marked by one or a few individuals. However, as shown by the lower Precision value – based on area (square meters) – the delineations of these areas are not always very accurate. This inaccuracy is owing in part to confusion among the volunteers about the level of detail with which the hollow roads needed to be marked on the online platform. For instance, when many hollow roads were present in a single image, citizen researchers often outlined the entire image instead of only the hollow roads. This shows that clear instructions on the level of detail are essential to the success of citizen science. Additionally, the task must not be too time consuming/laborious.

Equation 1.
Precision = TP/(TP + FP)

Table 13.1: Results of the post-processing of the Heritage Quest detections.

Process	Detections/Polygons	Square metre
Heritage Quest results	35,558	86,949,381
Only roads in forest, heathland, or grassland	33,341	72,352,231
Manual analysis	23,664	31,765,000

A cursory analysis of the results shows that both larger bundles of multiple hollow roads, as well as smaller bundles and individual tracks are recognised by the citizen researchers (Figure 13.3, A and B). False Positives include a wide range of anthropogenic and natural landscape elements that generally have a comparable shape to hollow roads. These include (planting) ditches (Figure 13.3, C), plough marks, (forest) paths (Figure 13.3, E), and modern tracks made by agricultural vehicles (Figure 13.3, D). Interestingly, False Positives seem to be concentrated near the edges of the research area, i.e. farther away from the high-lying push moraine in the centre of the research area. This might be related to the increased presence of agricultural activity in these low-lying zones.
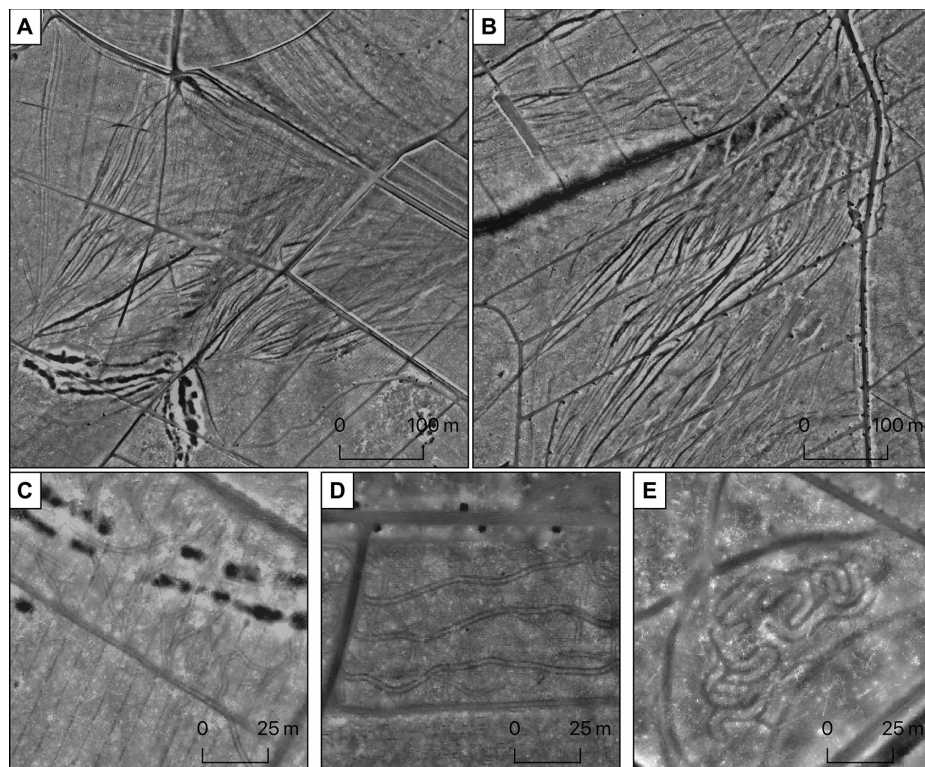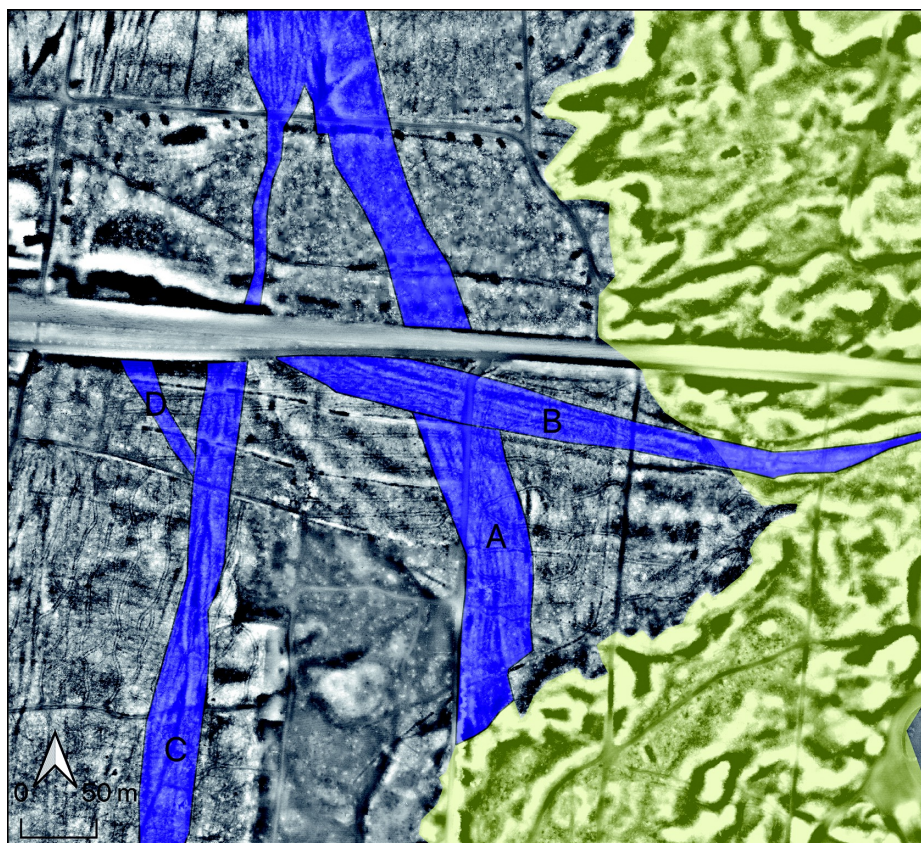
Figure 13.3: Excerpts of LiDAR data (source: Nationaal Georegister 2023), visualised with Simple Local Relief Model, from the research area, showing: Examples of bundles of hollow roads (A and B); planting ditches (C); vehicle tracks (D); modern (forest) paths including a maze (E).

13.5.2 Comparing citizen science to automated detection

The performance of our citizen science approach can be compared to a recent computational approach, named CarcassonNet, that has been used to map hollow roads in LiDAR data from the Netherlands.[36] Interestingly, both methods reach a comparable level of Precision (based on square meters), with CarcassonNet having a Precision of 0.41 versus a Precision of 0.44 for the Heritage Quest project. This is surprising, given that other research outcomes – when comparing the performance of automated detection to citizen science for the mapping of archaeology in LiDAR data – revealed a significant discrepancy between the Precision of both methods, with citizen research-

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36 *Verschoof-van der Vaart/Landauer*, CarcassonNet (2021); *Verschoof-van der Vaart/Landauer*, Transferability of CarcassonNet (2022).

ers reaching much higher Precision.[37] The comparable Precision between Carcasson-Net and Heritage Quest shows that this particular task, i.e. mapping hollow roads in LiDAR data, is not as easy as mapping other archaeology, e.g. barrows. Even though the citizen researchers have the additional advantages of being able to consult two different LiDAR visualisations (while the automated detection is done on one visualisation) and can observe the direct vicinity of the potential hollow roads.[38]

13.5.3 Reconstructing route networks

Based on the results of the Heritage Quest project, the route networks in the research area can be analysed (Figure 4). This shows many, north–south orientated routes in the southern part of the research area. The central part of the research area shows a clear triangular pattern in the roads, while in the northern part no clear pattern is visible. Part of this pattern is the result of the geo(morpho)logical situation of the local landscape. For instance, a concentration of hollow roads can be observed north of the town of Leersum (Figure 13.4). These can be related to the largest ice meltwater valley (*ijssmeltwaterdal*), called the *Darthhuizerpoort*, which dissects the push moraine[39] and effectively offers a passage through the *Utrechtse Heuvelrug*. Based on the number of hollow roads in this area, this passage has been extensively utilised.

The observed route networks can, in large part, also be related to areas of habitation in and around the direct vicinity of the research area. This distribution of settlements originates in the early medieval Carolingian period (roughly 750–900 AD), with the emergence of so-called *flankesdorpen* or *engdorpen* (esdorp or angerdorf) on the lower flanks of the push moraine (Figure 13.4).[40] These villages are characterised by houses and farmsteads laid out around a central open area, called the *brink* or the village green, while the village itself flanks one side of a communal agricultural complex (the *es*). Communal pastures (often heathland) were situated on the higher parts of the *Utrechtse Heuvelrug*. Especially in the southern half of the research area, we can observe concentrations of hollow roads in the vicinity of these villages, for instance the village of Maarn.

Many of the major routes connect different cities and settlements, such as the triangular shaped routes in the centre of the research area that connect the village of Maarn in the south, the village of Oud Leusden and the city of Amersfoort in the north, and the village of Zeist and the city of Utrecht in the west. In some cases, mapped hollow roads can even be linked to (modern) roads. For example, hollow

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37 *Verschoof-van der Vaart/Lambers/Kowalczyk/Bourgeois*, Deep Learning Location-Based Ranking (2020).

38 *Verschoof-van der Vaart*, Learning to look at LiDAR (2022).

39 *Berendsen*, Vorming van het land (2004).

40 *Berendsen*, Landschappelijk Nederland (2000).
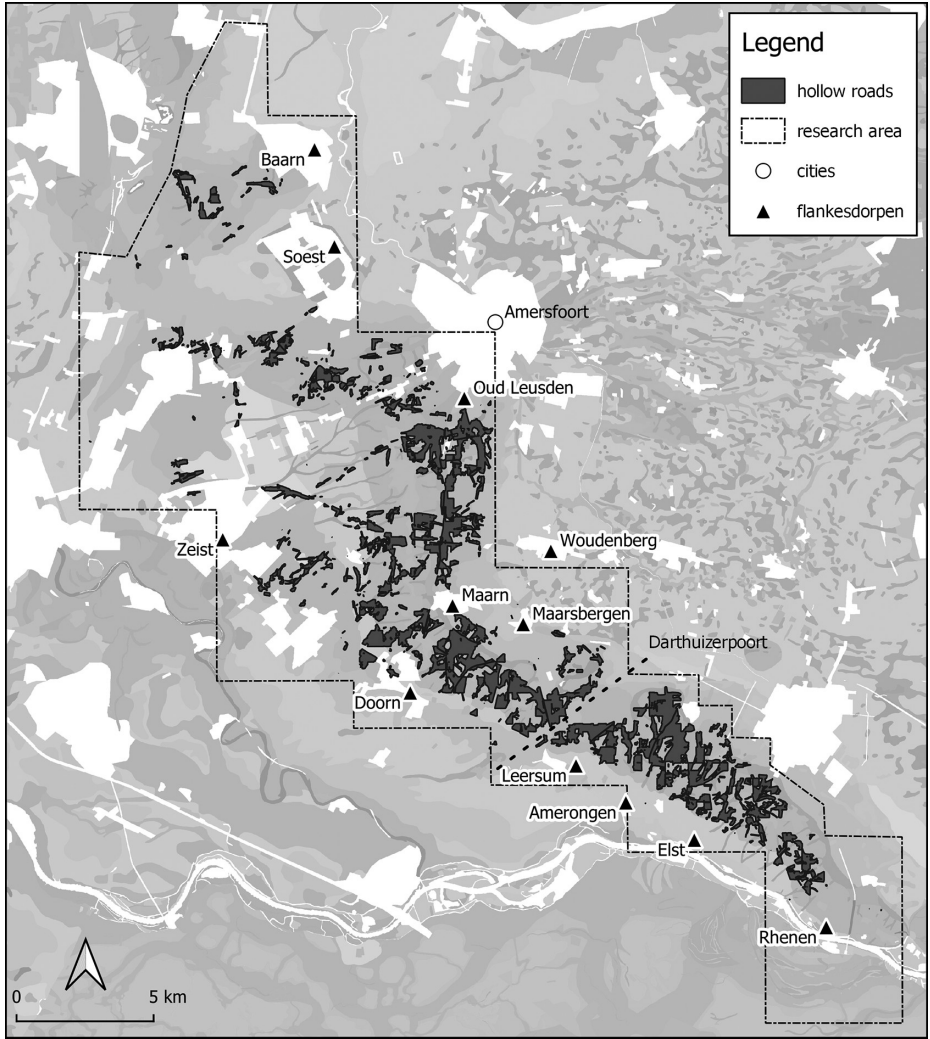
Figure 13.4: So-called *flankesdorpen* or *engdorpen* (esdorp or angerdorf) on the lower flanks of the push moraine.

roads – forming a major extension of the *Oude Woudenbergse Zandweg* – can be observed northeast of the town of Zeist, leading eastward. The *Oude Woudenbergse Zandweg* (which loosely translates as "Old Sandroad to Woudenberg") appears on maps from the seventeenth century; if extended with the mapped hollow roads, it connects the city of Utrecht to the village of Woudenberg, as the name of the road implies.

13.6 Discussion

The results of the Heritage Quest can be used to better understand medieval routes on the *Utrechtse Heuvelrug*. However, an important question remains concerning the date of these hollow roads. While it has been suggested that these roads can date back to the Bronze Age (2000–800 BC),[41] a "younger" date seems more likely. Based on the origin of the settlements these routes appear to relate to, a medieval (or younger) age is more probable for these roads (see Section 13.5.3).

Unfortunately, it has proven difficult to obtain precise dates for hollow roads, due to their superficial nature and general lack of datable finds. Recently, progress has been made in using absolute dating methods – like Optical Stimulated Luminescence (OSL), combined with archaeological excavations and historical archival research – to provide reliable dating and contextualisation of hollow roads in sandy soils on the Veluwe in the Netherlands.[42] However, these methods are costly and not all roads are suited to this approach.[43] Although the results of the Heritage Quest project could be used to determine appropriate locations and obtain samples for dating.

An alternative approach is to establish a relative chronology of hollow roads in a given area by comparing the morphology of the roads with historical information and/or cartographical data,[44] and by checking for intersections among roads, between roads, and other (dateable) landscape elements or archaeological features. For example, Figure 13.5 shows the hollow roads in a small area near the village of Maarn, on the northern flank of the *Utrechtse Heuvelrug*. This area demonstrates the complex intersections present among hollow roads. For instance, road bundle A is dissected by road bundle B, which shows that B is younger than A. Further to the north, road bundle A overlays road bundle C, which in turn overlays road bundle D. Based on this, road bundle D is the oldest, followed by C, then A, with B being the youngest. Furthermore, road bundle B runs over the drift sand deposits in the eastern part of the image, while road bundle A is overlain by drift sand in the southern part. According to Koster (2009), the majority of drift sand accumulation originated during the early part of the Late Middle Ages (after 950/1150 AD), driven by the expansion of agriculture, the grazing and burning practices of communal heathlands (overexploitation), the formation of roads and cattle/sheep drifts, and the use of plaggen fertiliser. Sand drifting also occurred during the sixteenth century and even as late as the eighteenth and nineteenth century.[45] However, based on the results from Pierik et al. (2018), most of the drift sand in the direct vicinity of Maarn can be dated between 1000 and

41 *Brongers*, Air photography (1976).

42 *Vletter/Spek*, Absolute Dating Historical Road Tracks (2021).

43 *Vletter*, Relative Chronology of Road Network (2019).

44 Ibid.

45 *Koster*, European Aeolian Sand Belt (2009).

1500 AD.[46] Therefore, road bundle A could date anywhere from the tenth century up to the sixteenth century. This example shows that, even when historical information is available, the dating of these hollow roads is a complex and elaborate task, making the development of a relative chronology for larger areas very labour-intensive, and therefore – as with absolute dating – costly.

Figure 13.5: Excerpts of LiDAR data (source: Nationaal Georegister 2023), visualised with Simple Local Relief Model, showing the complex relation among hollow roads (in blue) and between hollow roads and other landscape elements, such as drift sand (in yellow).

Nevertheless, the effective mapping of hollow roads as done in the Heritage Quest project offers opportunities to investigate archaeological hypotheses on a regional or landscape scale.[47] For instance, according to Jager (1985), there is a relation between

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46 *Pierik* et al., Late-Holocene Drift-Sand Dynamics (2018).

47 *Verschoof-van der Vaart/Landauer*, CarcassonNet (2021).

the choice of route of hollow roads and the location of forests. He postulates that forested areas were generally avoided due to danger of being robbed by highwaymen in these areas. Combining the results of this research with historical land-use data could offer further insight into this hypothesis. Another prevailing idea that has yet to be investigated is the relation between hollow roads and prehistoric barrows, in which the latter would serve as road markers.[48]

13.7 Conclusion

In this research, we presented a citizen science approach, named Heritage Quest, to map (medieval) hollow roads in LiDAR data from the central part of the Netherlands. The results show that the citizen researchers in the Heritage Quest project are able to effectively map hollow roads in data from the *Utrechtse Heuvelrug*. The results of this approach offer an indication of the mobility and movement of people and goods in the late medieval period. Although the dating of hollow roads remains problematic, careful examination of the succession and intersection of specific roads and routes – especially if supplemented with historical information about locations along these routes – might offer the possibility of discerning movement in even earlier periods, e.g. the early medieval period. However, convincingly assigning roads to these earlier periods is hampered by the repeated use of the same routes over long periods of time. Future research will therefore focus on the development of a relative chronology of the hollow roads in the research area. The implementation of the Heritage Quest approach in other regions is also envisioned.

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Bart Holterman

14 Sources and methods for the reconstruction of medieval and early modern sea routes in northern Europe

We think of paths as existing only on land, but the sea has its paths too, though water refuses to take and hold marks. (. . .) Sea roads are dissolving paths whose passage leaves no trace beyond a wake, a brief turbulence astern. They survive as convention, tradition, as a sequence of coordinates, as a series of waymarks, as dotted lines on charts, and as stories and songs.[1]

14.1 Introduction

Premodern travel has always been hard to grasp in historical research, as the precise routes taken by travellers and the time required for their travels often remains obscure in the sources. Moreover, the absence of any centralised road system, as well as the heightened influence of weather circumstances on travel time compared to the modern age, complicate the estimation of premodern travel times. In the last decade, digital tools and projects have been developed to improve the modelling of premodern travel, first and foremost for the Roman Empire.[2] For late medieval and early modern northern Europe (1350–1650), the Viabundus project provides digital data for land routes and navigable inland waterways for many regions – this is freely available in the form of an online street map and as downloadable GIS data.[3] A similar resource for the Early Middle Ages is currently lacking, and the conception of such a project for early medieval northern Europe is highly problematic due to the limited number of available sources and the absence of a prior Roman infrastructure, which remained in place and use in many parts of southern Europe. For these reasons, this paper will use the Viabundus dataset to discuss the potential of the methods and sources used for the study of early medieval mobility.

Moreover, a third main mode of transport, namely seafaring, is not covered in the Viabundus dataset. This becomes ever more problematic as the dataset grows to encompass regions that were predominantly connected via the sea – for example the

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1 *Macfarlane*, The Old Ways (2012), 88.
2 E.g. ORBIS: The Stanford Geospatial Network Model of the Roman World (2012): orbis.stanford.edu; Digital Atlas of the Roman Empire (DARE) (2019): dg.gu.se./dare; and the current projects Itiner-e: itinere.recerca.iec.cat; Simulation of Transport between the Adriatic Sea and the Danube (STRADA): strada.uni-trier.de.
3 Viabundus.eu. See *Holterman* et al., Viabundus (2022).

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countries along the shores of the Baltic Sea or regions with many islands, such as the Dutch province of Zeeland and eastern Denmark. Of course, it would be possible to draw general lines across the water connecting the ports, such as is often done in overview maps of Hanseatic trade,[4] for instance, but it is questionable whether this is historically very accurate.

The problem with sea routes is that they are even harder to trace than land routes, as the sea theoretically allows one to sail anywhere as long as enough water depth is maintained for the draught of the vessel. Even more than land routes, the actual course taken by a ship in the "Age of Sail" depended heavily on changing factors, such as wind speed and direction, as well as tides. The problem of traceability for sea routes means that it is difficult to present them as a line on a map, as one would do with a land road, which is a prerequisite for creating a network model of routes that can be used as a basis for route calculations. However, although sea routes are not as fixed in the landscape as rivers or land roads, they are far from arbitrary. To express it in Robert Macfarlane's words:

> There are optimal routes to sail across open sea, as there are optimal routes to walk across open land. Sea roads are determined by the shape of the coastline (they bend out to avoid headlands, they dip towards significant ports, archipelagos and skerry guards) as well as by marine phenomena. Surface currents, tidal streams and prevailing winds all offer opportunities for sea travel between certain places.[5]

This means that if these factors are known, it could very well be possible to represent sea routes with lines on a map, or with more sophisticated mapping and modelling techniques, in a way that closely reflects historical nautical practices. This article will explore the historical sources that could provide the data for mapping sea routes in the late Middle Ages and the Early Modern period, as well as the digital methods that could be employed to model them. In doing so, it will discuss the broader potential of these methods and sources for the study of the Early Middle Ages. It will primarily focus on the northern European regions also covered by the Viabundus dataset, i.e. the North and Baltic Sea. For reasons of comparison, it will start with a short introduction of the sources and methods usually employed in researching the historical course of roads.

Compared to sea routes, there is a huge amount of literature that focuses on the reconstruction of premodern roads, all of which use a more or less similar approach.[6] The biggest challenge here is that the visual representation of geographical space on a map as we know it today is a development of the early modern period, meaning that reliable and detailed road maps only appear in the eighteenth century. Before this

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4 E.g. *Dollinger*, Die Hanse (2012), map 3.

5 *Macfarlane*, The Old Ways (2012), 89.

6 For example *Bruns/Weczerka*, Hansische Handelsstraßen (1962); *Denecke*, Methodische Untersuchungen (1969).

period, we have to rely on written sources about (actually) undertaken travels, such as itineraries and town accounts including expenses for messengers, or information about important points along the route, such as toll stations, inns, bridges, ferries, etc. However, these written sources provide the points along a route rather than the actual route itself. The latter is reconstructed by retracing the route with the help of the oldest available large-scale topographic surveys (*Landesaufnahmen*) of the eighteenth and nineteenth century, which represent the situation before the many changes in the landscape due to industrialisation, canalisation, railway and highway construction, urban sprawl and mining activities.

Additional evidence is supplied by archaeological finds and other traces in the landscape, although these are often scattered and hard to date and interpret.[7] In recent years, the process has been greatly helped by digital techniques – particularly the digitisation of historical geographical surveys made available in a georeferenced form – and the availability of aerial imagery and LiDAR laser scan data of the landscape, which can help identify traces of disappeared infrastructure in the form of changes in vegetation and hollow ways.[8] However, the difficulty of dating traces in the landscape as well as interpretational problems and missing information still challenge the reliable reconstruction of routes. In some areas, the reconstruction of old routes simply comes down to making educated guesses, especially where many different tracks run more or less parallel to each other – as is the case in areas where it was possible to drive next to the road when the old track had become unusable. The resulting track bundles remind us that land routes are not as fixed in the landscape as they may appear to be and that routes sometimes resemble corridors of probability rather than lines in the landscape – making them perhaps not so different from sea routes after all.

14.2 Sources for the reconstruction of historical sea routes

Any attempt to adapt the method described above to the reconstruction of sea routes, however, leads to a number of additional problems. In terms of density of information, many of the sources relied upon for the reconstruction of land routes are even scarcer when it comes to sea routes. However, this does not mean that they are absent altogether.

For sea routes, we have to rely on similar sources as for land routes, starting with itineraries. The oldest known reports of sea journeys in northern Europe can be

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7 See also the articles of Pierre Fütterer and Irmela Herzog in this volume.

8 See also the articles of Wouter Verschoof-van der Vaart and Anna Swieder in this volume.

found in the Old English translation of Orosius's *Historiae adversum paganos*, created in the late ninth century for King Alfred the Great of Wessex. Inserted into the translation are two journeys from the same period: one, taken by the Norwegian seafarer Ottar/Ohthere, who travelled along the Norwegian coast to the White Sea; another, taken by the merchant Wulfstan, who travelled from Haithabu in northern Germany to the early medieval trading place Truso, near modern Elbląg in Poland. These descriptions, however, are lacking further details and are hardly usable for a reconstruction of the routes taken.[9] A more detailed itinerary is found only centuries later with the so-called *King Waldemar's Itinerary*, thought to have been compiled between 1215 and 1300. The Latin itinerary consists of a list of isles and other places along the Swedish and Finnish coastline (with some notes about their distance), which together form a route from southern Sweden to Estonia. The route runs mostly in between the many skerries along the Swedish coast, avoiding the open sea as much as possible. In some parts the itinerary even describes an inner and outer route, whereby the inner route would have been suitable only for small vessels that could be rowed owing to the narrow channels between the islands.[10] It is often questioned whether this text would really have served as a general route description, not just because of its being written in Latin, but because the route would have been troublesome for a larger sailing vessel – the close vicinity of the islets requires very accurate manoeuvring.[11]

However, the choice for sheltered routes that avoided open water is not exceptional and is attested in more cases. One is the preferred sailing route for Hanseatic ships to Bergen in Norway, the so-called *Bergens led*, which followed a course between the many islands and skerries along the western Norwegian coast for as long as possible.[12] In the county of Holland, the many inland waterways can be considered an extension of the sea routes which allowed shortcuts of the dangerous route along the North Sea coast. The *gecostumeerde route binnendunen* was the obligatory sailing route through the county, which connected the Zuiderzee via the river IJ at Spaarndam and a system of rivers and canals with the delta of the Rhine, Meuse and Scheldt rivers. Sources show that the route was used by merchant ships from the Hanseatic towns, among others, on their way to Bruges in the late fourteenth century.[13] However, this was only possible for ships that were small enough to pass the bottleneck in the system, the very narrow lock in the city centre of Gouda.[14] Using such sheltered routes was thus only viable for small ships that could be manoeuvred easily. For larger sailing ships that needed more space to manoeuvre, a course at a greater dis-

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9 *Sauer*, Seebuch (1996), 64–65; *Indruszewski/Barton*, Simulating Sea Surfaces (2007), 475–477; Cf. *Urbańczyk*, Reliability (2009); *Englert*, Ohthere's voyages (2007).

10 *Zwick*, Lineare nautische Netzwerke (2012), 99–101, 110.

11 *Sauer*, Seebuch (1996), 65–67.

12 *Burkhardt*, Hansische Bergenhandel, 148–150.

13 *Vogel*, Binnenfahrt durch Holland (1909), 13–15.

14 *Ibelings*, Scuren ende diepen (2001), 3.

tance from the coast was recommended due to the imminent danger of being pressed on the lee shore by the wind.[15]

Although there are some other itineraries from this period for northern Europe, they are limited in number, especially compared to the southern European sources. For example, the *Incanto* system was in place in the Venetian Republic from 1315 onwards, by which galleys were employed by the Venetian senate on fixed sailing routes, which could be chartered by merchants via auction. The structured nature of the system permitted the reconstruction of the main axes of the Venetian maritime network.[16] Similarly, there exist many itineraries for pilgrimages to Jerusalem. These were produced in increasing numbers in the late Middle Ages and usually involved a maritime journey from Venice to Palestine, allowing detailed insights into the sea routes taken through the eastern Mediterranean.[17]

Ship logbooks, as testimonies of actually completed voyages, are of little use for reconstructing the sea routes within northern European waters. These only came into play in the Early Modern period and increase in number towards the Age of Steam. Logbooks have been included in multiple digital projects such as the CLIWOC database (1750–1854)[18] and the Global Sea Routes project.[19] However, they usually record the intercontinental travels of ocean-going merchantmen and explorers and are therefore of limited use for reconstructing sea traffic routes in the local waters of northern Europe. The same goes for letters and accounts of well-recorded voyages, such as the documents surrounding the voyages of the *Peter von Danzig*, a former French caravel deployed as warship by the city council of Gdańsk during the war against England (1471–1473).[20] Although the many documents surrounding the ship's voyage make it possible to reconstruct its whereabouts at various times, the information provided by them is too thin to reliably estimate the precise sailing routes. Moreover, the fact that it was employed as a warship with the aim of disturbing English shipping makes the information of little value for a good understanding of the routes commonly taken by merchant ships. The *Peter von Danzig* is also an extremely well-documented case, which means that there is only little comparable material available, especially for the Middle Ages. Finally, combining various sources such as toll records and port books to trace the movement of single ships, for instance in the *Navigocorpus* project for French shipping in 1787, would hardly be possible for earlier periods due to the scarcity of sources and problems of interpretation.[21]

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15 *Sauer*, Seebuch (1996), 108–115; *Zwick*, Lineare nautische Netzwerke (2012), 110.

16 *Fournier*, Venetian maritime supremacy (2016).

17 *Mai*, Reisebedingungen (2020), 220–222.

18 See *García-Herrera* et al., CLIWOC (2005) and other articles in the same volume.

19 Gsr.nodegoat.net.

20 *Możejko*, Peter von Danzig (2020), especially 122–173.

21 *Marzagalli*, Navigocorpus (2016), 92–96.

Next to textual sources, we might turn to visual sources and maps in order to reconstruct sea routes, which look promising at first glance. Sea charts were created in the context of actual navigation, starting with the Mediterranean *portolan* charts of the thirteenth century, and became ever more numerous and precise throughout the centuries, including information such as depth measurements, currents and the location of buoys towards the end of the Early Modern period.[22] However, they come with one big disadvantage: they hardly ever display sailing routes and tend to present the sea as an open space, where one could sail anywhere, as long as obstacles are avoided. Only in exceptional cases do early modern European maps display sailing routes, and then often only single routes of notable voyages, such as the maps of northern Europe which include sailing routes taken by Willem Barentsz in search of the Northeast Passage (1594–1597); by Gerrit de Veer and Jan Huygen van Linschoten, around 1600;[23] and the world map of Battista Agnese, with the sailing route of Ferdinand Magellan's circumnavigation of the earth (1544).[24]

A very notable exception is a hand-drawn map of Sweden and the Baltic Sea, which was probably created by the Swedish bishop Hans Brask while living in exile in Gdańsk in 1533 (Figure 14.1).[25] It shows various large sailing ships with multiple masts on the sea, moving along narrow black lines that represent a network of sailing routes connecting the most significant ports along the Baltic Sea cost, including Gdańsk, Riga and Tallinn. Stockholm is situated prominently in the centre of the map, like a spider in its web, acting as a hub between the Baltic Sea and the towns of inland Sweden, which can be reached from Stockholm via the Mälaren lake. The map is drawn quite schematically and was obviously not intended for nautical purposes. Nevertheless, it contains some interesting details about seafaring and maritime networks in the early sixteenth century. There are a few mentions of sailing distances ("van Calmarn tho Stockhol 60 milen"), and it shows multiple alternative routes between two points. En route between the Øresund and Stockholm, for example, one has the choice of sailing around the island of Öland, or sailing closer to the coast of the Swedish mainland, between the many (brightly coloured) skerries. The latter course is reminiscent of the route from King Waldemar's Itinerary. At the very least, the map allows us to make the observation that the idea of a maritime network represented by lines drawn across the sea is not necessarily a modern one.

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22 *Baumgärtner*, Portulan-Atlas (2017), 10–15; *Blake*, Sea Chart (2004), 8–20.

23 *Ehrensvärd*, Nordiska kartans historia (2006), 118–126; *Yandle*, Noordpoolgebied in kaarten (2019), 22.

24 *Baumgärtner*, Portulan-Atlas (2017), 118–119; *Blake*, Sea Chart (2004), 71. For other examples see *Shirley*, Mapping (1984), xxxiv–xxxv; *Wildeman*, Doordrijvers en dwarsliggers (2019), 33.

25 Universiteitsbibliotheek Leiden, COLLBN 002–03-021: hdl.handle.net/1887.1/item:3243570 (accessed: 07.07.2023). For the history of the map, see *Ehrensvärd*, Nordiska kartans historia (2006), 58–60; *Storms*, Kaarten (2022), 32–33.

Figure 14.1: Map of Sweden and the Baltic Sea, compiled by Hans Brask in 1533. Universiteitsbibliotheek Leiden, COLLBN 002–03-021. Image: CC BY.

Even in later centuries, when sea charts become increasingly accurate and useful as an aid in navigation, lines representing sea routes remain rare. Interestingly, when they do appear – usually in cases such as those appearing in King Waldemar's Itinerary or *Bergens led* – it is to mark routes between many small islands and skerries with little space for navigation. One example is attested by the map of the Orkney islands made by Murdoch Mackenzie in the mid-eighteenth century, which contains some major sailing routes between the isles ("The Common Way thro Petland Firth"; "The Way thro Petland Firth to Stromness &c. with Ebb Tide") next to information considered useful for fishermen or sailors ("Cod and Ling here"; "The Stream scarce sensible here").[26] Similarly, a 1748 map of the Finnish coast around Pellinge/Pellinki and Degerby/Loviisa by Jonas Hahn shows sailing routes ("leder") between the skerries, but not on the open sea,[27] as does the 1791 map *A New Chart of the Baltic or East*

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26 National Library of Scotland, EMS.X.005, online: maps.nls.uk/coasts/chart/4142 (accessed 07.07.2023).
27 *Ehrensvärd*, Nordiska kartans historia (2006), 280–281.

Figure 14.2: Robert Sayer, A New Chart of the Baltic or East Sea (1791), detail of the waters around Stockholm. Source: gallica.bnf.fr/ark:/12148/Bibliothèque nationale de France.

Sea by Robert Sayer, which displays among others a route almost identical to King Waldemar's Itinerary (Figure 14.2).[28]

14.3 Early modern sailing instructions: a useful source?

Many of the sea charts from the early modern period were not produced as stand-alones, but accompanied so-called rutters or navigational instructions, books with detailed descriptions of sailing routes. Although they share a number of similarities with the itineraries mentioned above, they certainly do not belong to the same genre. Where itineraries usually only focus on a single route, rutters treat a system of sailing routes within a given region, with an explicit nautical function. The routes are defined by landmarks on the coast (mountains, church steeples, islands) as well as water depths measured with the sounding lead, distances and compass directions between the points, and additional information about tides, shallow waters and currents (Fig-

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28 Included as supplement in *Meyer-Friese/Sauer*, Månssons Seebuch (2020).

ure 14.3). As they supply much practical information about sailing routes from a nautical perspective, which is often invisible on sea charts, they are a promising source for the reconstruction of premodern sea routes.

While navigational instructions are already known from the classical period in the Mediterranean (*periplus*), the first rutters in the post-classical sense are the southern European *portolani*, the oldest being the Italian *Compasso de navegare* from 1296, although its contents might be significantly older. It focuses on the Mediterranean, which is treated following the coast in a clockwise direction.[29] Sailing instructions for western and northern European waters, however, only appear much later. The portolan *Trattato di Nautica*, from the Venetian Pietro de Versi (1445), is the first to include a route around the Iberian peninsula through the English Channel to Bruges in Flanders.[30] Genuine northern European sailing instructions appear in the second half of the fifteenth century: the Low German book known as the *Seebuch* was compiled in c. 1470 and covers the Bay of Biscay, the English Channel, as well as the North and Baltic Seas; its contents were probably compiled from various (much) older sources.[31] The English sailing instructions for a circumnavigation of England and the route to the Strait of Gibraltar date from about the same period (1468–1483), although they are much shorter than the *Seebuch*.[32]

While the early rutters were handwritten and contained few details, the genre experienced a rapid development in the sixteenth and seventeenth century. The French *Routier de la mer* from 1502–1510 was the first rutter to be printed and was translated into English as the *Rutter of the See* in 1528. It covered the Bay of Biscay, the waters around England and the southern North Sea.[33] The *Grant Routtier et Pyllotage et encrage de la mer,* published by Pierre Garcie in Poitiers in 1520, was the first to include depictions of the coastline with landmarks as a supplement to the textual information.[34] Later in the period, new and improved sailing manuals were predominantly produced in the Netherlands, starting with the *Kaert vander zee* from 1532, which shows much overlap with the *Seebuch*, but in an extended version.[35] Later, Dutch sailing instructions were printed in many editions, translated into various languages and increasingly complemented by maps. Lucas Janszoon Waghenaer's *Spieghel der Zeevaerdt* from 1584/5 became one of the most famous of these sailing instructions, not least because it included almost fifty sea charts in high detail with indications of water depths and the positions of buoys and beacons, which appeared

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29 *Sauer*, Seebuch (1996), 72–73; *Waters*, Rutters (1967), 9–10.

30 *Sauer*, Seebuch (1996), 73.

31 Ibid.

32 *Rose,* Rutters, Courses and Voyages (2023), 7–9; *Sauer*, Seebuch, 82–83; *Meyer-Friese/Sauer*, Månssons Seebuch (2020), 13.

33 *Waters*, Rutters (1967).

34 Ibid., 11–39.

35 *Meyer–Friese/Sauer*, Månssons Seebuch (2020), 14–15.

in luxurious (coloured) editions.[36] It is highly questionable whether such opulent books were in fact used in nautical practice, or if they were intended mostly for collectors. In any case, in later works by his hand, Waghenaer significantly reduced the number of sea charts and limited the imagery to depictions of the coastlines.[37]

Figure 14.3: The Low German rutter *De Seekarte Ost und West tho segelen* (1588), page with sailing instructions and depictions of church towers as landmarks on the Flemish coast. Staats- und Universitätsbibliothek Bremen.

Even though many of the more luxurious sailing manuals were primarily intended for collectors, they still contain the navigational knowledge of seafarers and pilots. Moreover, we know that at least some of the rutters were actually used on board of ships, as can be seen from a 1578 comment by Francisco de Eraso, ambassador of King Philipp II of Spain, who was surprised that the skipper of a ship sailing between Stralsund and Kalmar neither used a compass nor sea charts, but only a small book to nav-

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36 Ibid., 15–23.

37 Ibid., 23.

igate.[38] This makes these books a useful source for attempting to reconstruct sea routes in the late Middle Ages and the early modern period. Although the earlier examples are particularly hard to interpret, it is nonetheless possible to reconstruct the described routes on a map to a certain extent. For the *Seebuch*, this has already been shown by Jochen Goetze in 1975.[39] More recently, Eduard J. Alvarez-Palau and Oliver Dunn have created a digital network of early modern sailing routes around England and Wales, primarily based on the highly detailed *Great Britain's Coasting Pilot* by Greenville Collins, which first appeared in 1693 and was reprinted many times afterwards (Figure 14.4).[40] For a comprehensive network of premodern sailing routes in the North and Baltic Sea, however, we need to combine the information from multiple sailing instructions, as the oldest rutters like the *Seebuch* "by no means should be seen as a comprehensive picture of the existing route network, as there are too many lacunae", as Albrecht Sauer rightly noted.[41]

At this point it is necessary to take a closer look at the practices of navigation in northern Europe in the late Middle Ages and the Early Modern period. Although de Eraso's remark suggests otherwise, compasses and sea charts were known in northern Europe at the time he was writing, but it seems that they were not much used. Instead, the main instrument was the sounding lead, used for measuring water depths. Not only was this instrument necessary to prevent the ship from running aground in shallow waters, but – combined with the corresponding information about depths and composition of the seabed at crucial points in the rutters – it could also serve as a positioning instrument.[42] One possible reason why skippers in northern waters did not rely on the compass as their main navigational instrument might be the influence of the tides: in the almost closed basin of the Mediterranean, the influence of currents and tides is negligible, making navigation by compass more reliable. In the North Sea and its surroundings, the currents and tides provided a constantly changing environment, making the sounding lead a much more reliable instrument to avoid running aground.[43] Curiously, the same method of navigation seems to have been common in the Baltic Sea as well, which more closely resembles the Mediterranean with its low influence of currents and tides.

Moreover, navigation depended to a large degree on eyesight, by identifying landmarks on the coast, and the experience and knowledge of the helmsman, skipper or

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38 *Rösler*, Seekarte (1998), 103.

39 *Goetze*, Hansische Schiffahrtswege (1975), 71–88.

40 *Alvarez-Palau/Dunn*, Database (2019). See also *Dunn*, Sea of Troubles (2020); *Bogart* et al., Speedier delivery (2020).

41 *Sauer*, Seebuch (1996), 116: "Die Anweisungen des 'Seebuches' dürfen keineswegs als Gesamtbild des vorhandenen Wegenetzes verstanden werden. Dazu sind die Lücken zu groß."

42 *Rösler*, Seekarte (1998), 104–105.

43 *Sauer*, Seebuch (1996), 116–139.
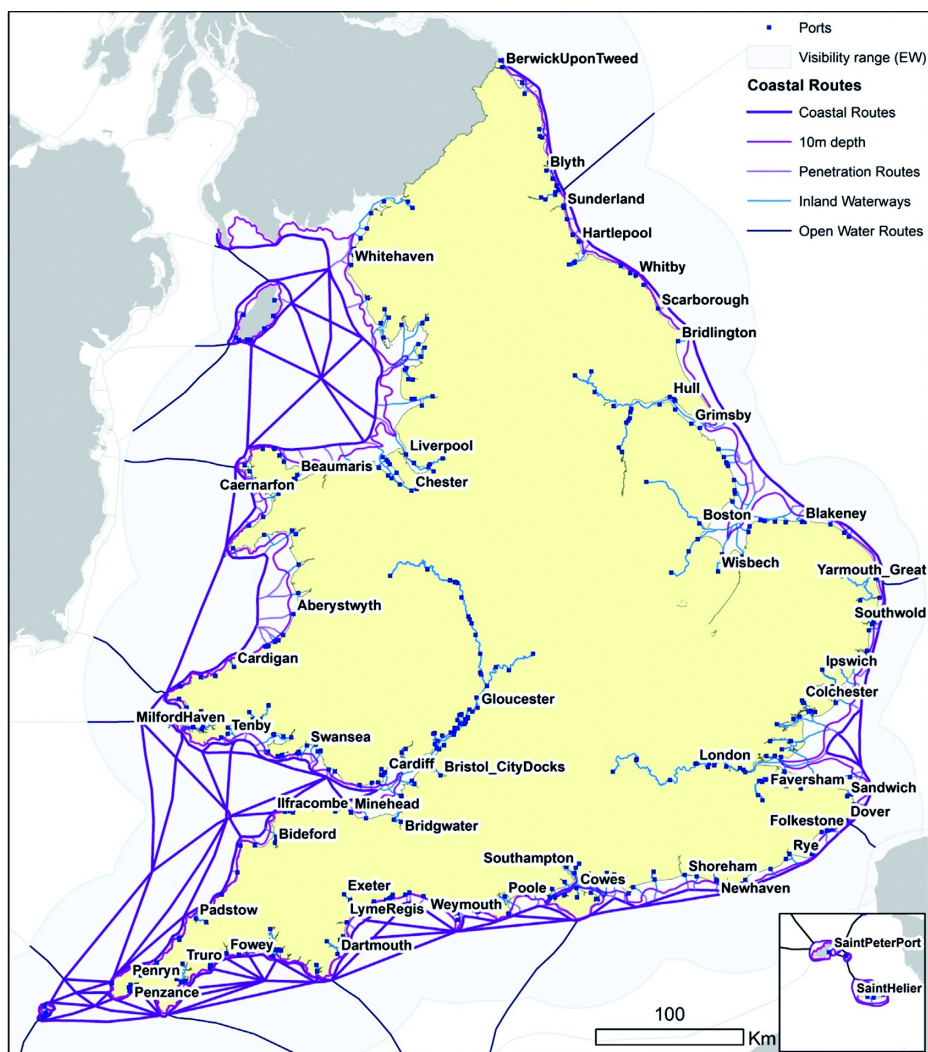
Figure 14.4: Network of early modern coastal sailing routes in England and Wales, from Alvarez-Palau/ Dunn, Database (2019), 10. CC BY.

local pilots in coastal areas.[44] It is this kind of knowledge, originally transferred orally, which was increasingly codified in sailing instructions. Combined with the increasing size and draft of ships in the late Middle Ages and the early modern period, which made ships difficult to manoeuvre and impossible to row, most large sailing ships would have tried to stay as far away from the coast as possible, while at the

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44 *Rose*, Rutters, Courses and Voyages (2023), 15–17.

same time keeping the coast within eyesight. Climbing the mast increased the range from which the coast was still visible in clear weather, reducing the risk of being pressed on the lee shore.[45] Moreover, it would have been acceptable on certain parts of known routes to leave sight of the coast for a while in order to sail a shorter route. In effect, therefore, the sailing instructions do not provide routes which can be drawn as a line, but rather corridors of possibility. These corridors were limited by the distance from the coast where the coast could still be seen and the distance where there was still enough water depth, using coastal landmarks as waypoints.[46] Of course the exact routes taken by ships within these corridors depended heavily on many factors such as the size and sailing characteristics of the ship, the experience and knowledge of the navigator, visibility, weather conditions, currents and tides.

14.4 Digital modelling

The nature of seafaring as a state of constant flux prompts the question whether more reliable results for historical sailing routes can be achieved using a probabilistic approach with the help of digital modelling techniques. At least in theory, these should be able to account for weather conditions and other parameters. The last decades have seen increasingly sophisticated attempts at employing digital modelling to reconstruct historical sailing routes. These models usually take an approach based on least-cost path calculations (LCP). In this calculation, a so-called cost surface is created in the area under consideration, taking the form of a grid of points with a certain cost factor based on various parameters, through which a path of "least cost" can be calculated.[47] An early 2006 attempt to model the possible route taken by Wulfstan in the late ninth century used a wildfire-spreading algorithm, normally used to model the spread of wildfire across terrain populated by a certain kind of vegetation, taking into account the wind speed and direction. The experiment showed that approaching the Baltic Sea as a plain grassland with the use of modern wind data produced a route between Haithabu and Truso that closely resembled the route sailed by experimental archaeologists.[48]

An LCP approach was also used by the ORBIS Geospatial model of the Roman World from 2012, which was designed to provide an all-encompassing model for all modes of transportation within the Roman Empire. For the calculation of sea routes on the Mediterranean and Black Seas, and a small part of the Atlantic, a simple yet

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45 *Sauer*, Seebuch (1996), 108–115.

46 Cf. *Alvarez-Palau/Dunn*, Database (2019), 10–11.

47 E.g. *Blankshein*, (Sea)ways of Perception (2021). See also the chapter of Irmela Herzog in this volume.

48 *Indruszewski/Barton*, Simulating Sea Surfaces (2006).

sophisticated model was designed, which depends on a grid of points 0.1 degree apart. Each of these points is connected with each of its eight (or less, in the case of coastal points) surrounding points. A cost factor is applied for each of these connections that depends on the prevailing winds and wave heights for a certain month of the year. Regions in the Mediterranean where wave heights of more than 3 metres occur with a frequency of more than 10% in any given month were removed from the model for that month, since seafaring would have been too dangerous. This primarily effects a region between the French coast and Sardinia.[49] Thus, this model allows for calculating the most likely least-cost sea routes between two points at a given time of the year. However, as we have seen, sailing conditions in the Mediterranean significantly differ from those in northern Europe, which is why currents and tides can be reasonably omitted from the calculations.

A comparable but more advanced model based on LCP calculations was recently developed by a Litvine et al., who created a cost surface based on weather data for wind speed and directions and their variance, currents, waves, and visibility, for each month of the year. Regrettably, no tidal current data was available to further enhance the cost model, but this is mainly a factor which comes into play when sailing in and out of port, not necessarily for crossing the open sea. The model is designed for the European Atlantic and the western Mediterranean, but this is mostly due to concerns over computing capacity, and it could be expanded to other regions without many problems. A comparison of the calculated routes with logbook data from the CLIWOC database showed that the model delivers results comparable to actually undertaken voyages in the early modern period.[50]

Although LCP models provide good results in theory, they run into two main problems. The first is related to weather data, which are essentially modern observations, the oldest systematic and reliable weather series dating back only a few decades. Given that climate – and, correspondingly, the prevalence of certain weather patterns – tends to change, the models become less reliable the more the historical climate differs from the modern one. It is thus difficult to make assessments related to the influence of climate changes on historical weather patterns with the degree of certainty required for reliable calculations.[51]

A second problem concerns the sailing characteristics of the ships used for the calculations, especially when it comes to the time needed to travel a calculated route. The size, rigging, method of propulsion, material and shape of the hull, draft, and so on, all have their influence on the way a ship behaves under various weather conditions. Even for the Age of Sail in the eighteenth and nineteenth centuries, the sailing characteristics are hard to assess, which is why the Litvine et al.'s model is predomi-

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49 See the ORBIS documentation: orbis.stanford.edu (accessed: 07.07.2023).

50 *Litvine/Lewis/Starzec,* Multi-criteria simulation (2024).

51 *Zwick*, Lineare nautische Netzwerke (2012), 97.

nantly based on the sailing characteristics of the modern Australian tall ship *Young Endeavour*, with some tweaking.[52] For the ORBIS model, two generalised models of Roman sailing ships were taken, a "fast" and a "slow" one, although it remains unclear which parameters are used and how these are derived.

With regards to the sailing characteristics of ships, we might be aided by reconstructions of historical shipwrecks made by maritime archaeologists, both in the real world and in the virtual. Much insight into the sailing capacities of ships from the Viking Age, for example, has been gained from the reconstructions of ships in the Viking Ship Museum in Roskilde dating to the eleventh century.[53] In recent years, ships have also been reconstructed with digital 3D models; a recent 3D model of the so-called Bremen cog from c. 1380, for example, has shown that the flat-bottomed ship was unsuitable for sailing the high seas where high waves could occur.[54] However, it should be kept in mind that the large variety of ship types and sizes, combined with ever-changing weather conditions, make LCP calculations hard to extrapolate for the voyages of individual ships taking specific journeys. Its results are therefore only useful for statistical purposes.

14.5 Conclusions and outlook

In light of the scarcity of sources for maritime voyages in premodern northern Europe, rutters or early modern sailing instructions would be the most promising sources for the reconstruction of a maritime network, at least for visualisation purposes. Although the rutters were not necessarily intended for use on board a ship, they most closely reflect nautical practices and provide a systematic overview of routes instead of reports of single voyages. In this sense, they accurately fit the documentary approach taken in the Viabundus project. However, sailing instructions provide corridors of possibility rather than actual routes. The latter can only be achieved to some extent by using a probabilistic approach of digital modelling, especially when it comes to calculations about travel times. Here, archaeological reconstructions can help provide the sailing characteristics of premodern ship types that are necessary to perform such calculations. It should be kept in mind that such models are useful only for statistical or comparative purposes and not so much for the reconstruction of individual voyages.

The question remains to what extent models and networks based on early modern rutters provide insights about navigation in the Early Middle Ages. Apart from

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52 *Litvine/Lewis/Starzec*, Multi-criteria simulation (2024), 4–5.

53 E.g. *Crumlin-Pedersen/Vinner* (Eds.), Sailing into the Past (1986); *Englert/Ossowski*, Sailing in Wulfstan's wake (2009); *Bill* et al., Welcome on board (2007).

54 *Tanner/Belasus*, Bremen-Cog (2021).

the unsolved problem of modern weather data used in LCP models for historical navigation, there are two main obstacles to a direct use of early modern rutters for the reconstruction of early medieval sea routes. The first is the size of the vessels and their methods of propulsion. The later Middle Ages saw a significant increase in the size and draft of trading ships, which consequently became difficult to manoeuvre and could hardly be rowed anymore.[55] The significantly smaller, lighter ships of the earlier periods – even if they were equipped with a sail – could sail closer to the coast, not least because they could be rowed, and could possibly be drawn upon the shore during the night.[56] Rowing as a means of propulsion is both ignored in the digital seafaring models developed so far and in the rutters, which exclusively reflect the sailing directions for large sailing ships.

Yet, the choice for sheltered routes and the possibility of sailing close to the coast as, for example, reflected in Waldemar's Itinerary, was by no means something that disappeared with the upscaling of sea-going vessels in the late Middle Ages: early modern sea charts still show the sheltered routes in seascapes dotted with islands sometimes, indicating the continuing use of these routes. Moreover, major ports were still frequented by small-scale coastal vessels, the significance of which should not be underestimated. For example, the late sixteenth and early seventeenth century toll registers from Hamburg, known as the *Schifferbücher,* show that a large number of the ships visiting the Hamburg harbour were coastal liners, sailing to or from small ports on the Dutch and German Wadden Sea coast. Many of these lesser ports only had small tidal harbours. Some of the Dutch towns listed as ports of origin and destination could even be considered inland towns, such as Utrecht, Leiden, Sneek and Bolsward.[57] This means that the vessels visiting these ports must have been small enough to manoeuvre in the narrow canals and rivers, staying close to the coast when sailing the open sea. We must therefore consider the inland waterways as an extension of the premodern network of sea lanes rather than as a totally different transport system, especially for the Early Middle Ages, where most seagoing vessels would have been small enough to navigate the inland waterways as well.

With the coastal and inland waterways we come to the second main obstacle for projecting early modern routes onto the Early Middle Ages. In many places, the topography of coastal regions has undergone fundamental changes during the Middle Ages and the early modern period. Significant early medieval trading places – such as Haithabu and Truso, as mentioned in Wulfstan's Itinerary – were abandoned in later centuries. However, this is a problem that is easily resolved, since these trading sites were often superseded by medieval towns in their vicinity: Schleswig for Haithabu, Elbląg for Truso, Wijk bij Duurstede for Dorestad, all of which could serve as substi-

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55 *Sauer*, Seebuch (1996), 108–109.

56 *Sauer*, Navigation im Mittelalter (1998), 371.

57 *Baasch*, Hamburgs Seeschiffahrt (1893), 323–331.

tutes in a routing algorithm.[58] More challenging however are the changes in the coast-line and in the course of coastal rivers, especially on the southern coast of the North Sea. Changes in the Rhine delta and the development of the Zuiderzee and Dollart, to name just a few,[59] seriously affected sailing routes in this coastal region during the Middle Ages. Once the ships reached the open sea, however, the conditions must have been quite similar to later periods.

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58 See e.g. *Jöns,* Ports and *emporia* (2009); *Jagodziński*, Truso (2009).

59 E.g. *Walsmit*, Zuiderzee (2009), 15; *Vos/Knol*, Ontstaansgeschiedenis (2013).

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15 Conclusion. New paths to the study of early medieval mobility

How did individuals in the early Middle Ages navigate the challenges of everyday mobility and long-distance travel, fraught as it was with uncertainties ranging from weather and logistical concerns to safety risks? And what scientific approaches and methods do we have to study these movements in their social, cultural and political context? Research into the transformative period of the early Middle Ages is still limited by the scarcity of written and material evidence. This raises the question of innovative approaches that can help us to extend our knowledge beyond the information that the sources can explicitly provide. Discussing the potentials and limitations of such new tools in addressing early medieval mobility was the intention of the present volume. While modern society genuinely relies on mobility in its entire complexity, its role in early medieval society was perhaps more subtle yet nonetheless of great significance. The itinerant court mentioned in the introduction serves as a case in point here: though courtly mobility may appear to have been restricted, in fact it involved the movement of large parts of society. This encompassed not only the movement of people ranging from minor authorities to unfree servants but also entailed the transportation of a diverse array of goods and individuals designated to supply the royal household while on the move, along with associated logistical considerations. Furthermore, the mobility of merchants and craftsmen played a crucial role in sustaining livelihoods and other exchanges required beyond the context of the itinerant court – movement for which we have particularly scant relevant evidence. Sources allowing us to study how people traversed vast distances without detailed maps – relying instead on itineraries, topographical features and local guidance – are largely limited to the later medieval period. If we want to gain further insight, we need to explore other, less familiar approaches and look beyond the boundaries of our own research discipline. The selection of new approaches and methods presented in the present volume still stand as isolated case studies. It appears promising, though, to combine these different research methods in order to obtain a more complete picture. In what follows, some particularly important and recurring themes will be addressed by considering questions about the limitations of relevant approaches and what methods might help overcome these in the future.

The diversity and complexity of mobility and related concepts become evident when looking at the definitions in the above contributions. While Michel Summer defines mobility as "physical movements of persons across longer distances", Abel de Lorenzo Rodríguez illustrates that even regional displacements were considered sig-

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nificant enough by contemporaries to be applicable as a major punishment. Laury Sarti, in her introduction, stresses the relation between an individual's aptitude and the intensity of any such movement, whereas Tobias Gärtner adds a temporal dimension to the concept by showing that mobility as a "temporary change of location" can be distinguished from other terms such as "migration", a permanent relocation. However, he emphasised that such a distinction is not always applicable in disciplines such as archaeology. The term "mobility" can also refer to more abstract concepts like cultural diplomacy, which involved the exchange of goods and knowledge, as illustrated by Marco Cristini. Russell Ó Ríagáin made it clear that, especially with regard to the movement of objects, it can be useful to think of mobility existing in chains of interaction and not just in long-distance journeys. Thus, the concept of "mobility" can vary considerably depending on the geographical area and scope; the social group being analysed; the academic discipline and approach; and the thematic focus of a specific study.

An important topic that is dealt with in several contributions here is the question of what motives or constraints lead to changes in mobility, be it in relation to people, objects or knowledge. Often, journeys had more than one underlying motive, as demonstrated by Kikuchi in reference to the Carolingian era. This was a means of ensuring that a journey was cost-effective, a criterion that could also be relevant to the choice of a particular road, as Irmela Herzog shows. Royal envoys, endowed with official privileges and support, could also use their status for personal purposes. Furthermore, a distinction can be made not only between primary and secondary goals, but also between short- and long-term goals, as Christini has demonstrated using the example of diplomatic mobility. While the analysis of relevant negotiations usually only reveals short-term goals, the gifts or knowledge and skills transferred by the envoys usually refer to communication strategies that are geared towards long-term goals. Mobility could also be significant for the advancement of individual careers, which is particularly well-attested for clerics. This effect could be achieved in the context of missionary activity, which could ultimately lead to high positions as abbot or bishop, or to the establishment or expansion of church infrastructure, as Summer shows. Gerbert of Rheims's correspondence illustrates the extent to which mobility can also be key in creating or maintaining networks of power relations, as emerges from the study undertaken by Sarti. In Ó Ríagáin's work, the example of the Scandinavian diaspora kings shows the importance of mobility for an elite that was mainly dependent on military power resources. Through invisible chains of interaction, they were able to obtain the latest information on the political situation in a large part of Eurasia, thereby adapting to changing circumstances and retaining their positions. The differentiation of specific mobility motives becomes particularly challenging when the corresponding analysis is based on archaeological material finds, as Gärtner was able to demonstrate. Using the example of Frisian shell pottery, he discusses the possibilities and limitations of such a distinction. Even if this pottery cannot be used to determine who or which ethnic group travelled between certain regions, the finds nevertheless

reveal a trading rather than a migratory context. Meanwhile, de Lorenzo Rodríguez's study illustrates that mobility could also be the result of coercion and was therefore not necessarily associated with desirable consequences, as in the case of exile in the context of punishment. Notably though, exile could also be a voluntary act, for example with the intention of gaining security by escaping a hostile environment.

In principle, any study of early medieval mobility focuses either on what could be termed "historical mobility", consisting of individual journeys documented as having taken place in the sources, or on what could be termed "potential mobility", comprising the sum of travels that once took place within a specific period of time or a particular region. The first is a qualitative approach, which has the advantage of being based on comparatively reliable evidence. It has the disadvantage, however, that any such research only captures a fraction of the wider patterns of past movements, with results that are inevitably selective and coloured by the selection and bias of the available source material. The second is a quantitative approach with the disadvantage that it is inevitably based on conjecture and projection, based on the fragmentary evidence available. Further, all results depend on modern assumptions used to extrapolate information from the sources. By relying on a more systematic analysis, aimed at a comprehensive understanding of what the evidence is able to reveal beyond individual mentions, their findings can provide a better sense of the movements that characterised early medieval societies as a whole. This approach may involve a synthesis of different sources, including archaeological finds, geographical studies and demographic data, which can help us to establish the extent and nature of mobility in the absence of explicit historical records. The combination of both approaches can thus enable a more nuanced understanding of early medieval mobility patterns and issues relating to migration, transport and cultural exchange.

The studies collected in this volume provide examples for both approaches. In the future, these and other approaches could be combined in the framework of genuinely interdisciplinary work. The research on "historical mobility" in the early Middle Ages focuses predominantly on the elites, given that the written sources often overlook the movements of the lower social classes – as the case studies by Summer, Kikuchi, Sarti and Ó Ríagáin show. Sometimes this focus is rooted in the research question itself, as in Cristini's study of cultural diplomacy. However, the selective nature of the evidence concerns not only individuals whose movements can be further analysed, but also topics such as weather and climatic phenomena. Writers of the early Middle Ages focused on the extraordinary rather than the ordinary, which is also evident in the palaeoclimatological work of Michael Kahle and Rüdiger Glaser. Therefore, capturing the everyday events and circumstances usually omitted in the sources poses a significant challenge. Similar difficulties arise when working with archaeological remains, as the elite tended to leave us more material than simple farmers or craftsmen. Using a quantitative approach towards "potential mobility" is also limited by the quality and quantity of the evidence. Sarti demonstrates this using the example of Gerbert of Rheims's letters, in which information about travellers who did not belong to the elite

is largely missing (although it is clear that they existed). As a result, any attempt to quantify mobility in the environment of the respective letter writer is again largely limited to the upper social classes. This is true even if one supplements the information missing from the sources with presumed data in order to gain a more comprehensive picture of contemporary mobilities. The quality and quantity of historical records also has an impact on the study of mobility. This can be seen in the contribution by Bart Holterman, who draws on rutters, which provide a systematic overview of the sea routes used in medieval northern Europe and make it possible to reconstruct related sea routes, even if details of individual voyages are lacking.

Another theme running through the entire volume is the conditions under which mobility took place. While the means of studying the early medieval mobility of people and objects are limited, a combination of digital, geographic, and archaeological methods and approaches has emerged with a promising capacity to explore the infrastructure these travels relied on. Although still in a comparatively early stage – and generally either time- or cost-consuming, or both – they have the potential to significantly enlarge our knowledge beyond the written evidence. They include tools like Geographic Information Systems (GIS), Light Detection and Ranging (LiDAR), Airborne Laser Scanning (ALS), and Least Cost Paths calculations (LCP), which have been treated extensively in the second section of the present volume. They allow the examination and reconstruction of roads and hollow ways, meaning that although individual mobility may not be directly visible, the routes and conditions that shaped their travels more generally become apparent. As these examinations are not limited to major highways, these studies at least allow us to investigate aspects related to everyday travels – including its general conditions and its frameworks – as well as the forms of mobility exercised by a large proportion of society. For example, their results may provide insights into the visibility and safety of travellers on specific routes, as shown in the paper by Herzog. Thus, they offer useful hints that allow us to contextualise and approach questions that might remain due to numerous gaps in information – for example, by allowing us to localise and trace details of specific journeys gleaned from the written sources.

As emerges in particular from Anna Swieder's study on hollow roads, digital landscape analyses using tools like GIS or LiDAR are labour-intensive, meaning that such studies broadly speaking tend to be limited to smaller areas. However, Wouter Verschoof et al. have now elaborated on a possible solution in the form of citizen science. By involving large groups of voluntary non-professionals who collectively analyse LiDAR images, a strategy emerges that allows us to process relevant data significantly faster and on a larger scale. Another challenge is the near-impossibility of dating smaller roads or hollow ways with any certainty. As Swieder demonstrated using the example of the Elbingerode plateau in the German Central Harz region, tangible finds (such as excavated ceramics) are able, occasionally, to offer reliable clues, whereas the dates for the majority of discovered paths remain uncertain. In such cases, it is sometimes possible to establish at least a relative chronology through the examina-

tion of intersections between roads or with the help of other datable landscape elements or archaeological features. Any more specific dating, however, requires further historical information or cartographic data – for example, as exemplified by Verschoof et al. Here, the combination of absolute dating methods, such as Optical Stimulated Luminescence (OSL), with archaeological excavations, historical written sources, and maps, has proven effective for receiving more reliable and contextualised dates. Although citizen science is able to determine locations suitable for such in-depth analysis, this approach cannot be applied universally due to the high costs involved.

In addition to roads and road networks, it is also possible to trace the distribution of settlements, centres of power and royal residences at a specific point in time and thus also chart the possible stages of a journey, as Fütterer demonstrates with the help of GIS. Royal palaces (Königspfalzen), for example, were not only used for royal stays, but were also a place where elites, messengers and merchants could rest, secure their supplies and change horses. Here it becomes clear that seemingly objective travelling conditions – such as roads and stage stops – could be experienced differently depending on the affiliation to a particular population group. This can also be seen in the aforementioned privileges reserved for royal envoys, who travelled under royal protection and were provided with special documents that guaranteed them accommodation and food. Only very few people were able to travel with such security. But being allowed to travel was not a matter of course. As Kikuchi makes clear, lowly clerics and monks were not allowed to travel without the permission of their bishop or abbot according to the canonical and monastic rules of St Benedict, a ruling that lasted well into the Carolingian period. Although not addressed in this volume due to reasons of scope, a traveller's gender also played a role in their mobility alongside their wider affiliation to a class or occupational group. As now, weather and climate change were essential components of external travel conditions. In order to identify certain patterns and impact pathways in the context of climate and mobility, Kahle and Glaser analyse written sources that mentioned relevant climate and weather topics. During the analysis, the criteria of hazards, transport routes, means of transport – as well as the effects and the type of impairment or intensification – could be worked out. These key terms were then used to identify relationships between different elements of travel conditions, which can be visualised using visualisation techniques such as the Parcats diagram type. For example, it became clear that most people were not travelling by wagon or horse, but on foot. Cold and frost are the dominant dangers mentioned in the sources, despite the predominant characterisation of a "medieval warm optimum". In addition, conclusions can also be drawn about cause-effect relationships, for example referring to the intensity of the impact of snowfall on trade and mobility, which impaired people's ability travelling on foot, not to mention transport by wagon and the use of horses.

By researching their mobility, we gain insights into the mentality, way of life and priorities of early medieval societies. Efficient mobility is often an indicator of economic dynamism and development. Mobility is also a crucial prerequisite for cultural

exchange. With current technologies and infrastructures, society today is more mobile than ever before and the pace of travel unimaginably fast compared to the experience of the early medieval traveller – thanks to digital mobility, physical mobility is no longer even a prerequisite for the acquisition of many experiences, images, and impressions. But what did the average person's horizon of experience look like in the early Middle Ages? What perspectives did they have? What value did individual freedom and independence have? Who was granted the right to undertake such journeys? Did mobility promote social integration and cohesion in society, or did it hinder it? This volume has brought together interdisciplinary studies using different approaches, each with distinct advantages and challenges. The combination of scientific, digital and historical methods represents a promising hybrid approach that facilitates a deeper look at the early medieval mobility of people and objects, encouraging scholars to view the associated experiences and challenges from a broader perspective. Ultimately, the study of mobility offers us new ways to better understand the early medieval world and its societies in all their rich and dynamic complexity.

General Index

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