

THE SACRED AND THE SECULAR IN MEDIEVAL HEALING

This volume challenges and redefines the traditional distinction made between the sacred and the secular in medieval healing, medical practice, and theory as evidenced in the historic, text record, and by material culture (sites and objects).

The studies here are interdisciplinary and are grouped into two parts. Part I focuses on secular and religious texts, demonstrating how the language of sacred and secular healing blurs and merges in both Latin and vernacular textual traditions. Chapters critically examine how medieval English literature draws directly from medical discourse when representing the physical and moral consequences of wrath; the reasons why empirical experience in medical education is central to the writings of Valesco de Tarenta; the narrative significance of Bede's representation of plague in his eighth-century prose *Life of Cuthbert*; and the implications of distinctions between late medieval religious sermons and secular discourse on plague. Authors also discuss how secular medicine and religious faith intersect in two, recorded, late medieval English miracles and present the largely unexplored impact of access to food on people's everyday health.

Part II investigates how the concepts of the sacred and the secular are seen in material culture. Chapters explore how the practice of lapidary medicine by early practitioners and midwives used the protective and healing properties ascribed to gemstone amulets, eagle-stones, and lodestones. At pilgrimage sites, the dynamic nature of cure and spiritual interaction is evidenced in art and artifact. One type of object, pilgrim badges from English sites, is used to explore statistically the wider social context of faith and healing.

Barbara S. Bowers, AVISTA, USA, and **Linda Migl Keyser**, Medica: The Society for the Study of Healing in the Middle Ages, USA.

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AVISTA Studies in the History of Medieval Technology, Science and Art
Volume 10

The Sacred and the Secular in Medieval Healing

Sites, Objects, and Texts

Edited by

BARBARA S. BOWERS

*AVISTA: Association Villard de Honnecourt for the Interdisciplinary
Study of Medieval Technology, Science and Art*

LINDA MIGL KEYSER

Medica: The Society for the Study of Healing in the Middle Ages

First published 2016
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
711 Third Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

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British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

Names: Bowers, Barbara S., editor. | Keyser, Linda Migl, editor.

Title: The sacred and the secular in medieval healing : sites, objects, and texts / edited by Barbara S. Bowers and Linda Migl Keyser.

Description: Series: AVISTA studies in the history of medieval technology, science and art ; v. 10 | Includes bibliographical references and index.

Identifiers: LCCN 2015026600 | ISBN 9781472449627
(hardcover : alk. paper)

Subjects: LCSH: Medicine, Medieval. | Medicine -Religious aspects. | Medicine and the world.

Classification: LCC R141 .S33 2016 | DDC 610 -dc23

LC record available at <http://lccn.loc.gov/2015026600>

ISBN: 9781472449627 (hbk)

Typeset in Times New Roman
by Apex CoVantage, LLC

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Preface

Barbara S. Bowers and Linda Migl Keyser

The genesis of this volume lies in papers presented at the 46th International Congress on Medieval Studies at Western Michigan University in sessions titled: “The Sacred and the Secular in Medieval Healing.” These sessions were co-sponsored by AVISTA, The Association Villard de Honnecourt for the Interdisciplinary Study of Medieval Technology, Science and Art, and Medica, The Society for the Study of Healing in the Middle Ages. They kindled the interdisciplinary dialogue about medieval health and illness that culminated in the following collection of chapters.

Admittedly the distinction between sacred and secular was put forward in this book only as an organizing principle to look at what is a very complex and interconnected relationship. The division between sacred and secular served as a way of seeing that in medieval health and healing, these categories are, in fact, inexorably intertwined rather than forming mutually exclusive categories. In the Middle Ages, the sufferer would seek any and all means to be healed. While death and salvation was the ultimate healing, there was fluidity in “avenue of access” to health for the body.

Many individuals helped to make this volume a reality, contributing their expertise, advice, and critique. First, special thanks goes to our contributors, whose insightful analyses have deepened and expanded our understanding of the complex intersections between the sacred and the secular for one living in the Middle Ages. We would also like to thank Melitta Adamson, Nicole Archambeau, Louise Bishop, Sarah Blick, Erika Bourguignon, George Brown, Martha Carlin, Sharron Coplin, Richard Firth Green, Mark Hall, Karen Jolly, Genevra Kornbluth, Jos Koldeweij, Iona McCleery, Michael McVaugh, James Robinson, Phillipp Schofield, Sharon Schweitzer, M. Teresa Tavormina, Linda Ehsram Voigts, Faith Wallis, and Joseph Ziegler. A particular note of thanks goes to Lindsay Jones, who wrote the introduction to this volume. As a scholar of religion and a generalist, his insight into how the individual chapters relate to one another makes the point that all religious rhetoric is, to some considerable extent, self-serving and therefore deceptive, medieval discourses on healing being no exception. We would also like to thank John Smedley, our editor at Ashgate, for his advice, support, and, yes, “saintly” patience. Last but not the least, we thank AVISTA for financial support in allowing us to print color plates for the volume and to cover additional expenses involved in photo editing by Kornbluth Photography.

Chapter 6

Getting Enough to Eat: Famine as a
Neglected Medieval Health Issue

Iona McCleery

Dürer's woodcut of the four riders of the Apocalypse (Rev. 6:1–8), produced for an edition of the *Revelation of St John* in 1498, is a well-known image (Figure 6.1). The medical historians Andrew Cunningham and Ole Grell used it to introduce a series of “crises” that they argue led to widespread social change.¹ From bottom left to top right, the riders are usually identified as Death, a cadaverous figure on a skeletal horse; Famine, large and well-fed with scales; War with a sword; and Conquest with a bow and arrow. Among medievalists these crises are usually left to economic historians mainly working on England, and it is rare to find sustained investigation of them as interrelated phenomena in other fields or for other countries.² Plague is enormously popular as a medical research topic, as are causes of mortality generally; battlefield surgery still attracts attention. Only famine has not aroused much interest.

Medical historians are well qualified to explore crises as the word “crisis” originated as a medical concept in the Hippocratic corpus to mean a “turning point” in an illness; it was only during the seventeenth century that it began to mean an event or series of events that led to long-term social change.³ There are many earlier images that could be used by medievalists interested in social change. The manuscript known as the *Wellcome Apocalypse* (London, Wellcome

Acknowledgments: I would like to thank the Wellcome Trust for funding my research (grants 076812 and 092293) and also the Wellcome Library for permission to use images. I also thank Monica Green for setting up the online list-serv MEDMED-L, which has played a crucial role in disseminating knowledge of bioarchaeology, nutrition, and genetics to historians.

1 Andrew Cunningham and Ole Grell, *The Four Horsemen of the Apocalypse: Religion, War, Famine and Death in Reformation Europe* (Cambridge: Cambridge University Press, 2000). See also Guido Alfani, *Calamities and the Economy in Renaissance Italy: The Grand Tour of the Horsemen of the Apocalypse*, trans. Christine Calvert (Basingstoke: Palgrave Macmillan, 2013).

2 Exceptions are John Aberth, *From the Brink of the Apocalypse: Confronting Famine, War, Plague and Death in the Later Middle Ages*, 2nd edn (London: Routledge, 2010); Caroline Walker Bynum and Paul Freedman, eds, *Last Things: Death and the Apocalypse in the Middle Ages* (Philadelphia: University of Pennsylvania Press, 2000).

3 John Shank, “Crisis: A Useful Category of Post-Social Scientific Historical Analysis?” *American Historical Review* 113 (2008); Randolph Starn, “Historians and ‘Crisis,’” *Past & Present* 52 (1971): 3–22.



Figure 6.1 Albrecht Dürer, *The Riders of the Apocalypse*, from Arthur M. Hind, *Great Engravers: Albrecht Dürer, his Engravings and Woodcuts* (William Heinemann, 1911). Image courtesy of the Wellcome Library, London.

Library, MS 49), datable to ca. 1420, contains over 100 medical and theological texts (see Plate 1).⁴ It probably originated in an unidentified German-speaking monastery and owes its name to the fact that it contains an illuminated text of the *Revelation of St John*. The manuscript therefore includes striking images of the riders of the Apocalypse, although they are depicted separately as was normal before Dürer's version.⁵

The illuminator was able to preserve the traditional colour scheme of each horse; the fourth pale horse of death and the third black horse of famine (Rev. 6:5–8). Famine's scales of distribution are much more prominent than in Dürer's woodcut. The horsemen were usually interpreted symbolically throughout the Middle Ages to signify stages in eschatology, Christology, or early church history.⁶ However, it is worth asking whether the monastic compilers of this manuscript thought the riders relevant for their local lay community, just as they thought it important to include obstetric material and a "wound-man" figure.⁷ This essay will argue that famine certainly was relevant to medieval communities and should matter more for medical historians. It will begin by looking at economic approaches to famine, and will then go on to consider possible medical approaches. In a history of health, food should assume paramount importance; its study allows medical historians to integrate their research more fully into mainstream historical studies.⁸

Interpreting Medieval Famine: Economic Approaches

Medieval famine has mainly been studied by economic historians working on northern Europe, especially rural England. Pioneering work on English manorial court records, royal and seigneurial accounts, grain prices, and labour regulations allows for complex modelling of medieval economies and standards of living. Some economic historians, among whom Christopher Dyer is perhaps the best known as far as medical historians are concerned, have also made innovative use of archaeological research to analyse agricultural production, housing, and animal

4 Almuth Seebom, *Apokalypse Ars Moriendi Medizinische Traktate Tugend- und Lasterlehren: die erbaulich-didaktische Sammelhandschrift London, Wellcome Institute for the History of Medicine, Ms 49 Farbmikrofiche-Edition: Introduction to the Manuscript, Descriptive Catalogue of the Latin and German Texts and Illustrations, Index of Incipits* (Munich: Helga Lengenfelder, 1995).

5 Peter Klein, "Introduction: The Apocalypse in Medieval Art," in *The Apocalypse in the Middle Ages*, ed. Richard Emmerson and Bernard McGinn (Ithaca, NY: Cornell University Press, 1993), 198.

6 *The Seven Seals of the Apocalypse: Medieval Texts in Translation*, trans. Francis Gumerlock (Kalamazoo: Western Michigan University, 2009); André Sauzeau and Pierre Sauzeau, "Les Chevaux Colorés de l'Apocalypse II: Commentaires, Iconographie et Légendes de l'Antiquité au Moyen Âge," *Revue de l'Histoire des Religions* 212 (1995): 379–96.

7 Monica Green, *Making Women's Medicine Masculine: the Rise of Male Authority in Pre-Modern Gynaecology* (Oxford: Oxford University Press, 2008), 157, 160; Boyd Hill, "A Medieval German Wound Man: Wellcome MS 49," *Journal of the History of Medicine and Allied Sciences* 20 (1965): 334–57.

8 Monica Green, "Integrative Medicine: Incorporating Medicine and Health into the Canon of Medieval European History," *History Compass* 7 (2009): 1218–45.

husbandry.⁹ It cannot be overstated how important archaeology has become, especially for understanding peasant communities, showing them to have been more resilient than might have been expected.¹⁰ Decades of work on both urban and rural records by many scholars lay behind William Chester Jordan's influential synthesis of the "Great Northern Famine" of 1315–22, the famine that is, largely as a result of Jordan's book, most familiar to medievalists.¹¹ It is one of the few studies to go beyond England to include northern France, the Low Countries, and German-speaking regions in its analysis.¹² Southern Europe has largely been ignored by everyone in the north: one would be forgiven for thinking that either there was no famine there in the fourteenth century, or that in the grand narrative of the "crisis of the late Middle Ages," southern Europe was not important in the perceived transition to modernity. Southern European historians have taken exception to this attitude, as will be seen, but it is still the case that Anglophone historiography on famine prioritizes English sources, some types of which do not exist for other parts of Europe.

Economic historians divide reasons for famine—and the fourteenth-century "crisis" more broadly—into two groups: exogenous reasons (factors external to society such as disease and bad weather) and endogenous (factors internal to the society such as regulations and institutions). Historians analysing these factors tend to fall into three groups: economic, biological, or ecological.¹³ Traditional

9 Christopher Dyer, *Standards of Living in the Later Middle Ages: Social Change in England, c. 1200–1520* (Cambridge: Cambridge University Press, 1998); Dyer, *Everyday Life in Medieval England* (London: Hambledon Press, 1994).

10 For evidence of this archaeological "turn," see Christopher Woolgar, Dale Serjeantson, and Tony Waldron, eds, *Food in Medieval England: Diet and Nutrition* (Oxford: Oxford University Press, 2009).

11 William Jordan, *The Great Famine: Northern Europe in the Early Fourteenth Century* (Princeton: Princeton University Press, 1996); and Jordan, "The Great Famine: 1315–1322 Revisited," in *Ecologies and Economies in Medieval and Early Modern Europe: Studies in Environmental History for Richard C. Hoffmann*, ed. Scott Bruce (Boston: Brill, 2010), 44–62. See also Phillipp Schofield, "Approaches to Famine in Medieval England," in *Crisis Alimentarias en la Edad Media: Modelos, Explicaciones y Representaciones*, ed. Pere Benito i Monclús (Lleida: Editorial Milenio, 2013), 71–86; Bruce Campbell, ed., *Before the Black Death: Studies in the 'Crisis' of the Early Fourteenth Century* (Manchester: Manchester University Press, 1992); Ian Kershaw, "The Great Famine and Agrarian Crisis in England, 1315–1322," *Past & Present* 59 (1973): 3–50.

12 There is a long tradition of studying famine in German-speaking lands; see Jordan, *Great Famine*, 8–11, for references to the work of Karl Lamprecht (1880s) and Fritz Curschmann (1900). Best known due to its English translation is Wilhelm Abel, *Agricultural Fluctuations in Europe from the Thirteenth to the Twentieth Centuries*, trans. Olive Ordish (Abingdon: Routledge, 2013), which was first published in German in 1935 but revised several times thereafter. A significant recent addition to scholarship is Christian Jörg, *Teure, Hunger, Großes Sterben. Hungersnöte und Versorgungskrisen in den Städten des Reiches während des 15. Jahrhunderts* (Stuttgart: Hiersemann, 2008), which focuses on urban responses to the famine of 1437–39.

13 Bruce Campbell, "Panzootics, Pandemics and Climatic Anomalies in the Fourteenth Century," in *Beiträge zum Göttinger Umwelthistorischen Kolloquium 2010–2011*, ed. Bernd Herrmann (Göttingen: Universitätsverlag, 2011), 177–215; John Hatcher and Mark Bailey, *Modelling the Middle Ages: The History and Theory of England's Economic Development* (Oxford: Oxford University Press, 2001); Nils Hybel, *Crisis or Change: The Concept of Crisis in the Light of Agrarian Structural Reorganization in Late Medieval England* (Aarhus: Aarhus University Press, 1989).

economic explanations are based on the premise that Europe was over-populated by ca. 1300 and unable to meet the rising demand for food, after a period of sustained growth over the previous two centuries. Risk-averse and self-interested methods of government and land management prevented investment in agricultural technology and blocked wide-scale social change that would free up the labour market. Whether the fault lay at the door of grasping lords, as popular interpretations of the Marxist position would have it, or lazy peasants, as a few scholars argue, there was usually somebody to blame for lack of “progress.”¹⁴ These ideas, common in undergraduate textbooks, date back to the ideas of Thomas Malthus (d. 1834) who argued in his essay on population (1798) that famine and plague were natural or “positive checks” on an overstretched community, the ideas of David Ricardo (d. 1823) and Karl Marx (d. 1883) on modes of production, land values, and social relations, and those of Adam Smith (d. 1790) on use of resources.¹⁵ For medievalists, the best-known presentation of these ideas was “The Brenner Debate,” which took place in the pages of the journal *Past & Present* during the late 1970s between followers of Robert Brenner’s neo-Marxist views and those who held alternative views of late medieval society, such as the neo-Malthusian Michael Postan.¹⁶ For most of these scholars, late medieval England was a grim place, and it is only recently that Christopher Dyer, Mark Bailey, Christopher Woolgar, and Phillipp Schofield, among others, have begun to discuss more positive processes such as charity, gift-giving, credit systems, kinship, and a much more socially stratified peasantry (not all people were equally vulnerable and some had much to gain from the deprivation of their neighbours).¹⁷

Those who prefer biological explanations for the medieval crisis argue that even if there were a Malthusian “deadlock” in the years around 1300, and the majority of the population was living on a knife-edge of poverty and therefore

14 Ronald Seavoy, *Famine in Peasant Societies* (New York: Greenwood Press, 1986), argued that subsistence farmers were unwilling to improve their lot due to their characteristic laziness. His ideas were rejected in Jordan, *Great Famine*, 13; David Arnold, *Famine, Social Crisis and Historical Change* (Oxford: Blackwell, 1988), 57–9. Cunningham and Grell, *Four Horsemen of the Apocalypse*, 203–5, use Seavoy to support their Malthusian approach to famine.

15 Examples of undergraduate textbooks that take this line include Barbara Rosenwein, *A Short History of the Middle Ages*, 3rd edn (Toronto: University of Toronto Press, 2009); David Nicholas, *The Evolution of the Medieval World: Society, Government and Thought in Europe, 312–1500* (Harlow: Longmans, 1992).

16 Trevor Aston and Charles Philpin, eds, *The Brenner Debate: Agrarian Class Structure and Economic Development in Pre-Industrial Europe* (Cambridge: Cambridge University Press, 1985).

17 Christopher Dyer, “Did the Peasants Really Starve in Medieval England?” in *Food and Eating in Medieval Europe*, ed. Martha Carlin and Joel Rosenthal (London: Hambledon Press, 1998), 53–71; Dyer, “Poverty and its Relief in Late Medieval England,” *Past & Present* 216 (2012): 41–68; Christopher Woolgar, “Gifts of Food in Late Medieval England,” *Journal of Medieval History* 37 (2011): 6–18; Mark Bailey, “Peasant Welfare in England, 1290–1348,” *Economic History Review* 51 (1998): 223–51; Phillipp Schofield, “The Social Economy of the Medieval Village in the Early Fourteenth Century,” *Economic History Review* 61, supplement 1 (2008): 38–63. This more positive approach was pre-empted by Elaine Clarke, “Social Welfare and Mutual Aid in the Medieval Countryside,” *Journal of British Studies* 33 (1994): 381–406.

chronically undernourished, there was no reason why the status quo could not have been maintained indefinitely. What destroyed the balance was the arrival of exogenous factors, such as worsening climate and disease: for these scholars “it was bad weather and microbes that brought about the crisis of English feudalism.”¹⁸ Although plague has been the focus of most biological approaches to the fourteenth-century crisis,¹⁹ more recently the bovine disease that destroyed a large proportion of English cattle from 1319 has been the subject to close scrutiny by Philip Slavin and Tim Newfield.²⁰ Some scholars like Richard Britnell have taken a fairly sanguine approach to the Great Northern Famine, arguing that the commercialization of north-western Europe during the thirteenth century would have reduced the impact of grain shortages; for these scholars it was the Black Death that broke the Malthusian “deadlock.”²¹ Philip Slavin and Sharon DeWitte suggest instead that malnutrition during the Great Northern Famine, and the long-term effects of the loss of cattle herds (low levels of dairy protein for years) may have made the survivors of famine in 1315–22 more vulnerable to plague in 1348–49.²² Jordan thought this might have been the case, but it took an excellent example of interdisciplinary research on manorial records *and* skeletal populations to take it further.²³ Here, it is possible to see again how archaeology is transforming our understanding of the late Middle Ages.

Another adherent to interdisciplinary research is Bruce Campbell who is the primary scholar advocating an ecological approach to the late medieval crisis; part of a broader “ecological” turn that has been developing in recent years but which he long anticipated.²⁴ Campbell explores the relationship between the environment and human behaviour, and most recently his work has acquired a

18 Harry Kitsikopoulos, “Introduction,” *Agrarian Change and Crisis in Europe, 1200–1500*, ed. Harry Kitsikopoulos (New York: Routledge, 2012), 9.

19 David Herlihy, *The Black Death and the Transformation of the West* (Cambridge, MA: Harvard University Press, 1997); Samuel Cohn, *The Black Death Transformed: Disease and Culture in Early Renaissance Europe* (London: Edward Arnold Publishers, 2002); Ole Benedictow, *The Black Death, 1346–1353: A Complete History* (Woodbridge: The Boydell Press, 2004); Mark Bailey and Stephen Rigby, eds, *Town and Countryside in the Age of the Black Death: Essays in Honour of John Hatcher* (Turnhout: Brepols, 2012).

20 Philip Slavin, “The Great Bovine Pestilence and its Economic and Environmental Consequences in England and Wales, 1318–50,” *Economic History Review* 65 (2012): 1239–66; Timothy Newfield, “A Cattle Panzootic in Early Fourteenth-Century Europe,” *Agricultural History Review* 57 (2009): 155–90.

21 Hatcher and Bailey, *Modelling the Middle Ages*, 121–73; Bailey, “Peasant Welfare,” 224; Richard Britnell, *The Commercialisation of English Society, 1000–1500*, 2nd ed. (Manchester: Manchester University Press, 1996).

22 Sharon DeWitte and Philip Slavin, “Between Famine and Death: England on the Eve of the Black Death: Evidence from Paleoepidemiology and Manorial Accounts,” *Journal of Interdisciplinary History* 44 (2013): 37–60.

23 Jordan, *Great Famine*, 186–7, and more cautiously in Jordan, “The Great Famine Revisited,” 58–9.

24 Roberta Magnusson, “Medieval Urban Environmental History,” *History Compass* 11 (2013): 189–200; Ellen Arnold, “An Introduction to Medieval Environmental History,” *History Compass* 6 (2008): 898–916.

global dimension, studying weather patterns around the world and their effects on medieval Europe.²⁵ Climatologists analysing Arctic ice core samples have been aware for some time that a tropical volcanic eruption in the mid-thirteenth century (possibly now identified as that of Samalas on the Indonesian island of Lombok) reduced temperatures in Europe enough to cause harvests to fail. Chroniclers such as Matthew Paris (d. 1259) had observed a period of dearth in 1257–59 but nobody took them seriously, partly because it was widely accepted that the thirteenth century was a period of prosperity. This attitude changed with the identification of a mass famine grave in London datable to ca. 1258, and the realization among scholars that dearth-related mortality can occur in the midst of plenty.²⁶

There are probably several reasons for the gradual shift among economic historians from a focus on the modes of production of food to considering the agency of the poor in response to bad weather and dearth. Not only has there been widespread research into cultural concepts of medieval poverty and a growing interest in consumption, but modern famines have also had an impact on medieval research, especially since the mid-1980s when the Ethiopian famine caught the attention of the world media.²⁷ Louise Tilly and John Walter were among the first historians to discuss how understanding of modern famine was changing from a Malthusian focus on Food Availability Decline (FAD)—that is, the idea that famine is mainly caused by exogenous factors, such as drought leading to an overall shortage of food for an over-large population—to the idea that famines resulted from a lack of *access* to available food, regardless of how much there might be or how large the population.²⁸ Both authors were aware of how Nobel Prize-winning economist Amartya Sen had caused a paradigm shift in global famine policy. Sen

25 Campbell, “Panzootics,” 177–215; Bruce Campbell, “Nature as Historical Protagonist: Environment and Society in Pre-Industrial England,” *Economic History Review* 63 (2010): 281–314.

26 Alastair Davison, Kieren Hickey, Paul Mayewski, and Atle Nesje, “Greenland (GISP2) Ice Core and Historical Indicators of Complex North Atlantic Climate Changes During the Fourteenth Century,” *Holocene* 17 (2007): 427–34; Derek Keene, “Crisis Management in London’s Food Supply, 1250–1550,” in *Commercial Activity, Markets and Entrepreneurs in the Middle Ages*, ed. Ben Dodds and Christian Liddy (Woodbridge: Boydell Press, 2011), 54–7; Brian Connell, Amy Gray Jones, Rebecca Redfern, and Don Walker, *A Bioarchaeological Study of Medieval Burials on the Site of St Mary Spital: Excavations at Spitalfields Market, London E1, 1991–2007* (London: Museum of London Archaeology, 2012), 217–31; Franck Lavigne et al., “Source of the Great A.D. 1257 Mystery Eruption Unveiled, Samalas Volcano, Rinjani Volcanic Complex, Indonesia,” *Proceedings of the National Academy of Sciences* 110 (2013): 16742–7.

27 Michel Mollat, *The Poor in the Middle Ages: An Essay in Social History*, trans. Arthur Goldhammer (New Haven: Yale University Press, 1986); Evelyn Welch, *Shopping in the Renaissance: Consumer Cultures in Italy, 1400–1600* (New Haven: Yale University Press, 2005); Christopher Woolgar, “Food and the Middle Ages,” *Journal of Medieval History* 36 (2010): 1–19.

28 Louise Tilly, “Food Entitlement, Famine and Conflict,” in *Hunger and History: The Impact of Changing Food Production and Consumption Patterns on Society*, ed. Robert I. Rotberg and Theodore K. Rabb (Cambridge: Cambridge University Press, 1985), 135–51; John Walter, “The Social Economy of Dearth in Early Modern England,” in *Famine, Disease and the Social Order of Early Modern Society*, ed. John Walter and Roger Schofield (Cambridge: Cambridge University Press, 1989), 75–128. See also Eric Vanhaute, “From Famine to Food Crisis: What History Can Teach Us About Local and Global Subsistence Crises,” *Journal of Peasant Studies* 38 (2011): 47–65.

argued that people can starve not so much because of a failed harvest but because of a breakdown in their legal “entitlements.” He rejected the Malthusian premise that food production had to match population size, by arguing that each individual or household has a set of “exchange entitlements” (which are not the same as “rights”) based on labour, inheritance, payment, or trade. An individual whose labour, product, or service no longer provides legal ownership over or ability to purchase/receive food will starve even if there is enough food on the market. So for example, in Bengal in 1943, 1.5–3 million famine victims were mainly landless agricultural labourers who had no ownership over the rice they grew and could not afford to buy it. However, despite uneven production due to flooding, rice was still relatively plentiful in the markets of Calcutta and was exported overseas by the colonial government for the wartime effort.²⁹

Sen’s theories have not gone uncriticized. Setting aside the debate about the accuracy of his analysis of the Bengal famine, there is doubt over Sen’s focus on *legal* entitlements and his downplaying of bad weather and natural disasters. In Africa, in particular, it has been argued that *illegal* cattle raiding and food theft are important famine strategies, and that warfare is more of an issue than it had been in Indian famines. It is difficult *not* to see calamities like locusts, droughts, floods, and earthquakes as the primary cause of FAD even if the unfolding *process* of famine is more likely to be explained by endogenous factors, such as limited government response, corruption, warfare, poor healthcare, weak infrastructure, and failing markets. Such complex causes have been argued for the Irish Potato famine of the 1840s and the massive mortality of the Stalinist and Maoist famines of the mid-twentieth century.³⁰ Yet it does seem to be the case that Sen’s approach triggered a more nuanced understanding of famine as a cultural phenomenon with multiple interlinked causes. The modern concept of “food (in)security” now distinguishes between famines with high mortality, long periods where there is chronic malnutrition, and incidents of dearth (temporary food scarcity), phenomena that have sometimes been merged in historical discussions, although critics of Sen have argued that if famine is a process then dearth must be seen as an early stage of that process.³¹ Nevertheless, becoming “food secure” has moved from the simple idea in the 1970s that it just means getting enough daily calories, through to more complex analyses that emphasize individual agency as well

29 Amartya Sen, *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford: Clarendon Press, 1981), 1–4, 52–83.

30 Peter Bowbrick, “The Causes of Famine: A Refutation of Professor Sen’s Theory,” *Food Policy* 11 (1986): 105–204; Megan Vaughan, *The Story of an African Famine: Gender and Famines in Twentieth-Century Malawi* (Cambridge: Cambridge University Press, 1987); Martin Ravallion, “Famines and Economics,” *Journal of Economic Literature* 35 (1997): 1205–42; Stephen Devereux, “Sen’s Entitlement Approach: Critiques and Counter-Critiques,” in *The New Famines: Why Famines Persist in an Era of Globalization*, ed. Stephen Devereux (Abingdon: Routledge, 2007), 66–89; Cormac Ó Gráda, “Making Famine History,” *Journal of Economic Literature* 45 (2007): 5–38.

31 Amrita Rangasami, “Failure of Exchange Entitlements’ Theory of Famine: A Response,” *Economic and Political Weekly* 20 (1985): 1747–52 and 1797–1801; Alex de Waal, *Famine That Kills: Darfur, Sudan*, rev. edn (Oxford: Oxford University Press, 2005).

as the maintenance of viable households, livelihoods, and communities.³² It has been recognized that there is probably little use in applying objective standards of undernutrition or malnutrition to a subjective state of deprivation or lack of well-being, without an appreciation of human adaptation strategies in different environmental contexts and without exploring *feelings* of insecurity or deprivation. Food security now includes cultural perceptions, identities, attitudes, and tastes: it means getting the food one both wants *and* needs.³³

Overall, the binary of exogenous/endogenous causes of famine is being eroded. Rather than starting with biophysical and environmental conditions and then studying human responses to them, as if these were separate from their contexts, geographer Edward Carr argues that we should instead see environments and economies as social constructions shaped by each other.³⁴ Applying this model to the Middle Ages would mean acknowledging that much of our knowledge about medieval natural disasters comes from manorial court rolls, chronicles, financial accounts, and tax registers that are firmly embedded in *both* medieval power structures *and* the natural environment that they record. Even if ice core samples, dendrochronology, and bioarchaeology can be used to observe objectively the effects of climate change, famine, and disease, these techniques are still embedded in modern social constructions of learning and technology.³⁵

The application of any of these ideas to the late medieval “crisis” is not straightforward. As stated earlier, there has already been a greater focus on differentiated peasant vulnerabilities and a move away from an FAD approach to an interest in strategies of survival such as credit and charity. In line with Sen’s critics, it is possible to argue that food theft was an important strategy during medieval famines and was in fact upheld as un-sinful in medieval theology if done out of need.³⁶ Peasants of the Wakefield area of West Yorkshire seem to have tolerated a certain

32 Each volume of the *Cultural History of Food* series published by Bloomsbury includes a chapter on food security, indicating that it has become a familiar term for historians: Giuliano Pinto, “Food Security,” trans. Charles Hindley, in *A Cultural History of Food in the Medieval Age*, ed. Massimo Montanari (London: Bloomsbury, 2013), 57–71; Philip Slavin, “Food Security, Safety and Crises,” in *A Cultural History of Food in the Renaissance*, ed. Ken Albala (London: Bloomsbury, 2013), 63–82.

33 Vanhaute, “From Famine to Food Crisis”; Ravallion, “Famines and Economics”; Simon Maxwell, “The Evolution of Thinking About Food Security,” in *Food Security in Sub-Saharan Africa*, ed. Stephen Devereux and Simon Maxwell (London: ITDG Publishing, 2001), 13–31; Stephen Devereux, “Famine in Africa,” in Devereux and Maxwell, *Food Security in Sub-Saharan Africa*, 117–48; Simon Maxwell, “Food Security: a Post-Modern Perspective,” *Food Policy* 21 (1996): 155–70; Edward Carr, “Postmodern Conceptualizations, Modernist Applications: Rethinking the Role of Society in Food Security,” *Food Policy* 31 (2006): 14–29.

34 Carr, “Postmodern Conceptualizations,” 19–22.

35 Bruno Latour, *Science in Action: How to Follow Scientists and Engineers Through Society* (Cambridge, MA: Harvard University Press, 1987).

36 See the H-Net Albion discussion on entitlements, July 19–31, 2009, archived at <http://h-net.msu.edu/cgi-bin/logbrowse.pl?trx=lx&list=H-Albion&user=&pw=&month=0907>, and also Maria Moisés, “Est Panis Famelicis? Fourteenth-Century Hungry Theft in the West Riding,” *Medieval Yorkshire* 24 (1995): offprint, eight pages.

amount of thievery based on need. For example, at Easter 1316 the arrest was ordered of widow Agnes Pymme as “a common thief of geese, fowls and sheaves and things of that kind,” implying that up until then she had been known to have been thieving but no action was taken. At Easter 1317 Thomas Tomelyn was heavily fined for stealing oats from his own brother William’s grange; it is unknown what role he played in bringing in that harvest.³⁷ The fact that these cases took place in April could be linked to the seasonal vulnerability of certain rural groups even in normal years during the spring “hungry gap” when the grain stores began to run out long before the next harvest could be brought in.³⁸ Yet in 1315–17, the entitlement of the poor to a share in the crop based on kinship or through gleaning seems to have broken down completely in this part of England.

One of the first to apply Sen’s ideas to the Middle Ages was Meghnad Desai in 1991 in an article that argued persuasively against Malthusian theories of overpopulation in favour of an entitlement approach where producers of wool, grain, and meat had a differentiated experience of the Great Northern Famine. Desai notes in a footnote on the first page that he was unable to convince Michael Postan of his position and this might well have reflected a general reluctance to embrace this approach in detail even if its general influence can be felt.³⁹ Most of the scholars working in medieval English economic history over the last 20 years cite Sen’s book, even if only very briefly, but so far his approach is not as widely accepted in English history as it is in Iberian scholarship, as will be described below. The recent international lectures delivered by Paul Hyams and new work by Philip Slavin and Phillipp Schofield may change this.⁴⁰ Slavin argues strongly that the crisis of the early fourteenth century was caused by a combination of FAD due to bad weather *and* the failures of the market that underpin Sen’s entitlement approach: “there can be little doubt that the Great Famine would not have been

37 *The Court Rolls of the Manor of Wakefield (1315–1317)*, ed. John Lister (Leeds: Yorkshire Archaeological Society, Record Series 78, 1930), 96, 185, 190; Barbara Hanawalt, “Economic Influences on the Pattern of Crime in England, 1300–1348,” *American Journal of Legal History* 18 (1974): 281–97; Moisé, “Est Panis Famelicis?” 4–5. The Manor Court Rolls of Wakefield featured heavily in the exhibition *Food For All Seasons* at Wakefield Museum, March–September 2013, which formed part of *You Are What You Ate*, the Wellcome Trust-funded project on (un-)healthy eating that I ran in conjunction with Wakefield Council and the University of Bradford in 2010–2014; see www.leeds.ac.uk/youarewhatyouate.

38 Robert Worth Frank, “The ‘Hungry Gap’, Crop-Failure and Famine: The Fourteenth-Century Agricultural Crisis and *Piers Plowman*,” in *Agriculture in the Middle Ages: Technology, Practice and Representation*, ed. Del Sweeney (Philadelphia: University of Pennsylvania Press, 1995), 227–43.

39 Meghnad Desai, “The Agrarian Crisis in Medieval England: A Malthusian Tragedy or a Failure of Entitlements?” *Bulletin of Economic Research* 43 (1991): 223–58.

40 I first heard of Sen in an unpublished lecture that Paul Hyams gave at the University of Leeds on March 18, 2010, also given elsewhere during 2009–12: “Serfdom Without Strings: Amartya Sen in the Middle Ages.” See also Philip Slavin, “Market Failure During the Great Famine in England and Wales, 1315–17,” *Past & Present* 222 (2014): 9–49; Adam Franklin-Lyons, “Modern Famine Theory and the Study of Pre-modern Famines,” in Benito i Monclús, *Crisis Alimentarias*, 33–45; Schofield, “Approaches to Famine.”

great without the man-made complications that turned this event into arguably the single worst subsistence crisis in recorded Western history.”⁴¹

Nevertheless, the initial reluctance to engage much with these ideas in England may relate to very valid doubts about comparing medieval Europe to the “developing” modern world because of the unfortunate connotations of backwardness that this comparison implies.⁴² Moreover, studying modern famines cannot avoid post-colonial issues that are largely absent from medieval discourses. Medieval Europe did not have a “superpower” that could intervene in its crises: the availability of international food aid has completely altered the nature of famine today. The scholars who seem to have embraced the entitlement approach most fully are those working on southern European economies, perhaps because of fewer alternative models. Harry Kitsikopoulos comments that “Spanish historians have abstained from engaging in an open theoretical debate,” but this is unfair as there has certainly been plenty of discussion, much of it led by Pere Benito i Monclús.⁴³ The Spanish have found it difficult to apply Malthusian and Marxist models to their vast unpopulated central and southern regions where the migration of relatively free peasants occurred through much of the Middle Ages.⁴⁴ It is also the case that the well-documented and heavily urbanized Catalan, Italian, and southern French regions present a different picture to what might be seen in medieval English sources.⁴⁵ Not only were there different systems of crop irrigation, storage, and provisioning in place, but the staple foodstuffs differed in some of these regions compared to northern Europe: more focus on fruit, vegetables, oil, wine, seafood, and higher-yielding wheat, and less on oats, barley, and murrain-vulnerable animals.⁴⁶

As a result, food shortages might have had more diffuse effects in southern Europe with few long-term consequences. François Menant argues persuasively

41 Slavin, “Market Failure,” 49.

42 Cormac Ó Gráda, *Famine: A Short History* (Princeton: Princeton University Press, 2009), is very insistent on “backwardness” or “laggardness” as a cause of both past and present famine.

43 Kitsikopoulos, “Introduction,” 12.

44 This is argued in most of the essays in *Crisis de Subsistencia y Crisis Agrarias en la Edad Media*, ed. Hipólito Rafael Oliva Herrero and Pere Benito i Monclús (Seville: Universidad de Sevilla, 2007), and also in *Crisis Alimentarias*, ed. Benito i Monclús. See also Ana Rodríguez, “Spain,” in *Agrarian Change*, ed. Kitsikopoulos, 167–203.

45 This was also pointed out in Stephan Epstein, “Cities, Regions and the Late Medieval Crisis: Sicily and Tuscany Compared,” *Past & Present* 130 (1991): 3–50. Epstein’s work has had a major influence on southern European economic historians, especially his *Freedom and Growth: The Rise of States and Markets in Europe, 1300–1750* (London: Routledge, 2000). Also very influential is Luciano Palermi, *Sviluppo Economico e Società Preindustriali: Cicli, Strutture e Congiunture in Europa dal Medioevo alla Prima Età Moderna* (Roma: Viella, 2001).

46 Melitta Weiss Adamson, ed., *Regional Cuisines of Medieval Europe: A Book of Essays* (New York: Routledge, 2002); Carole Puig, “L’Apport de l’Etude du Stockage à Notre Connaissance de la Conjoncture de 1300 au Maghreb,” in *Les Disettes dans la Conjoncture de 1300 en Méditerranée Occidentale*, ed. Monique Bourin, John Drendel, and François Menant (Rome: École Française de Rome, 2011), 159–77; Louis Stoff, *Ravitaillement et Alimentation en Provence aux XIV^e et XV^e Siècles* (Paris-La Haye: Mouton, 1970).

that successive short-term economic fluctuations before, during and after the fourteenth century cannot constitute a “crisis” in the traditional understanding of the term as a turning point.⁴⁷ The fact that episodes of dearth persisted after the Black Death, which does seem to have had a devastating impact on some southern populations, indicates that the problem was less FAD and more an issue of entitlement failure. Some southern European scholars in fact argue that commercialization and urbanization, rather than reducing need, actually created it: large cities like Valencia and Barcelona quickly outstripped the resources of their fairly narrow hinterlands, some of which were producing more profitable cash crops like saffron and dye plants, leading to temporary periods of dearth and the need to import grain.⁴⁸ This situation could be contrasted with the work that has been done on the huge urban “footprint” of London and other northern cities, and might help to explain why famine seems rarer in England after the fourteenth century than it was elsewhere.⁴⁹

Furthermore, Southern Europe saw a different chronology to northern Europe as far as bad years were concerned; rather than 1315–22 being singled out for comment by chroniclers, except in Atlantic-facing regions such as Navarre, instead the years 1333 and 1375 seem to have been difficult across the Iberian and Italian Peninsulas and in southern France.⁵⁰ This suggests that the long-term consequences of the crises might also have a different pattern. However, southern European scholars are still divided between those who see the Black Death as the real “crisis” that caused profound social and political change in southern Europe; those who argue that warfare, dynastic conflicts, royal centralization, and

47 François Menant, “Crisis de Subsistencia y Crisis Agrarias en la Edad Média: Algunas Reflexiones Previas,” in Oliva Herrero and Benito i Monclús, *Crisis de Subsistencia y Crisis Agrarias*, 17–60.

48 Antoni Furió, “Disettes et Famines en Temps de Croissance: Une Révision de la ‘crise de 1300’: le royaume de Valence dans la Première Moitié du XIV^e Siècle,” in Bourin, Drendel, and Menant, *Disettes*, 343–416; Antoni Riera Melis, “Crisis Frumentarias y Políticas Municipales de Abastecimiento en las Ciudades Catalanas Durante la Baja Edad Media,” in Oliva Herrero and Benito i Monclús, *Crisis de Subsistencia y Crisis Agraria*, 125–59.

49 For the concept of the medieval urban “footprint,” see Magnusson, “Medieval Urban Environmental History,” and Richard Hoffman, “Footprint Metaphor and Metabolic Realities: Environmental Impacts of Medieval European Cities,” in *Natures Past: the Environment and Human History*, ed. Paolo Squatriti (Ann Arbor: University of Michigan Press, 2006), 288–325. For the provisioning of London in particular, see Keene, “Crisis Management”; Bruce M.S. Campbell, James Galloway, Derek Keene, and Margaret Murphy, *A Medieval Capital and its Grain Supply: Agrarian Production and Distribution in the London Region c. 1300*, Historical Geography Research Series 30 (London: Institute of British Geographers, 1993). For the argument that famine declined in England, see John Walter and Roger Schofield, “Famine, Disease and Crisis Mortality in Early Modern Society,” in Walter and Schofield, *Famine, Disease and the Social Order*, 1–74; Andrew Appleby, *Famine in Tudor and Stuart England* (Stanford, CA: Stanford University Press, 1978).

50 Menant, “Crisis de Subsistencia y Crisis Agrarias”; Riera Melis, “Crisis Frumentarias y Políticas Municipales de Abastecimiento”; Carlos Laliena Corbera, “Développement Économique, Marché Céréalière et Disettes en Aragon et en Navarre, 1280–1340,” in Bourin, Drendel, and Menant, *Disettes*, 277–308.

heavy taxation were the main forces for change, not plague or drought;⁵¹ and those who insist on continuing growth and expansion throughout the fourteenth century and later.⁵² It seems likely that research will continue for many years and that a consensus will be hard to find due to the very many different approaches to the subject.

To conclude this section: historians have developed a number of different models to explain perceived crises in medieval society and their long-term consequences. Marxist theories have lost much of their edge since the collapse of communism, and Malthusian theories of overpopulation have given way to more complex approaches to famine, based on the idea of entitlements developed by Amartya Sen. Although there is still much to be done in adapting these approaches to the Middle Ages, medical historians now have a stimulating range of economic, ecological, and biological theories that they could draw on much more. Medical historians have so far felt most comfortable with biological explanations for social change, hence their huge interest in plague; they are increasingly familiar with ecological issues through the topic of sanitation and the concept of miasma; however, they usually avoid economic theories completely. Yet medical historians are able to compare northern and southern Europe in complex ways and could shed light on some of the regional differences that the economists have observed. They could now contribute to wider debates about famine by casting their “health-eye” over medical *and* economic evidence for hunger. This next section will look at work that has already been done in this area and will then suggest a research agenda for the future.

Interpreting Medieval Famine: Medical Approaches

Food and nutrition certainly interest medical historians. Scholars are fully aware of the importance of the Graeco-Arabic system of the six “non-naturals” (air, food and drink, excretion and repletion, exercise and rest, sleeping and waking, and the “accidents” of the soul or emotions) that were used in medical writings to regulate health, with especial focus on diet.⁵³ There is also historiographical debate over

51 This approach is common in Portugal and Castile; see Humberto Baquero Moreno, “La Crisis del Siglo XIV en Portugal,” in *Castilla y el Mundo Feudal: Homenaje al Profesor Julio Valdeón*, ed. Isabel de Val Valdivieso and Pascual Martínez Sopena (Valladolid: Junta de Castilla y León/Universidad de Valladolid, 2009), 3:53–61; Hipólito Rafael Oliva Herrero, “De Nuevo Sobre la Crisis del XIV: Carestías e Interpretaciones de la Crisis en la Corona de Castilla,” in Benito i Monclús, *Crisis Alimentarias*, 87–114.

52 Hilario Casado Alonso, “¿Existió la Crisis del Siglo XIV? Consideraciones a Partir de los Datos de la Contabilidad de la Catedral de Burgos,” in Val Valdivieso and Martínez Sopena, *Castilla y el Mundo Feudal*, 3:9–25; David Igual Luis, “¿Crisis? ¿Qué Crisis? El Comercio Internacional en los Reinos Hispánicos de la Baja Edad Media,” *Edad Media* 8 (2007): 203–23.

53 Janna Coomans and Guy Geltner, “On the Street and in the Bathhouse: Medieval Galenism in Action?” *Anuario de Estudios Medievales* 43 (2013): 53–82; Peregrine Horden, “A Non-Natural Environment: Medicine Without Doctors and the Medieval European Hospital,” in *The Medieval Hospital*

the relationship between foodstuffs and pharmacy, and the role of medical theory in cookery.⁵⁴ Famine, on the other hand, has not received much attention at all. This may be due to the sources traditionally used in this area: academic medical texts, *regimina sanitatis*, financial records, and cookery books produced by or for elite, educated audiences who rarely went hungry, but this seems to be too easy an answer. There is also the difficulty of exploring the undocumented lives of the poor, the majority of the population, who were most vulnerable in time of food scarcity. It is difficult enough to access the “normal” diet of the poor, so how can one study their starvation?⁵⁵

Although bioarchaeologists can now study the nutritional health of medieval people through their skeletal remains, such as in the previously mentioned mass grave in London from ca.1258, almost certainly for the poor, or with the body of King Richard III of England (d. 1485), who had excellent teeth, suffered from intestinal parasites, and enjoyed lots of sea fish, the possibilities should not be exaggerated.⁵⁶ It is actually very rare to be able to date or identify skeletons with any certainty; most cemeteries were used over a very long period of time with reuse and damage to graves and a lack of inscriptions. Furthermore, a cemetery consists of a cross-section of the population (usually limited by scientific sampling) that succumbed to disease and frailty and therefore might not represent the full range of health problems of the living community at a particular time.⁵⁷

This next section of the essay will instead try to refocus attention on some of the evidence used by medical historians, arguing that there are more searching questions that could be asked about why medieval medical authors were not more interested in this topic. The few scholars who have considered this problem argue that it is not until the mid-sixteenth century that any interest in famine emerges in

and Medical Practice, ed. Barbara Bowers (Aldershot: Ashgate, 2007), 133–45; Melitta Weiss Adamson, *Medieval Dietetics: Food and Drink in Regimen Sanitatis Literature from 800 to 1400* (Frankfurt-am-Main: Peter Lang, 1995); Marilyn Nicoud, *Les Régimes de Santé au Moyen Âge: Naissance et Diffusion d'une Écriture Médicale (XIIIe–XVe Siècle)* (Rome: Ecole Française de Rome, 2007).

54 Juan Vicente Garcia Marsilla, “Alimentación y Salud en la Valencia Medieval: Teorías y Prácticas,” *Anuario de Estudios Medievales* 43 (2013): 115–58; James Shaw and Evelyn Welch, *Making and Marketing Medicine in Renaissance Florence* (Amsterdam: Rodopi, 2011); Bruno Laurioux, “Cuisine et Médecine au Moyen Âge: Alliées ou Ennemies?” *Cahiers de Recherches Médiévales* 13 (2006): 223–38; Terence Scully, *The Art of Cookery in the Middle Ages* (Woodbridge: Boydell Press, 1995), 126–31, 185–95; Melitta Weiss Adamson, *Food in Medieval Times* (Westport, CT: Greenwood Press, 2004), 205–31; Ken Albala, *Eating Right in the Renaissance* (Berkeley: University of California Press, 2002), 241–83.

55 Woolgar, “Food and the Middle Ages”; Maryanne Kowaleski, “Medieval People in Town and Country: New Perspectives from Demography and Bioarchaeology,” *Speculum* 89 (2014): 573–600.

56 Piers Mitchell, Hui-Yan Yeh, Jo Appleby, and Richard Buckley, “The Intestinal Parasites of Richard III,” *The Lancet* 382 (2013): 800; Richard Buckley et al., “The King in the Car Park: New Light on the Death and Burial of Richard III in the Grey Friars Church, Leicester in 1485,” *Antiquity* 87 (2013): 519–38.

57 Charlotte Roberts and Margaret Cox, *Health and Disease in Britain: from Prehistory to the Present Day* (Stroud: Sutton, 2003), 16–17; Connell, Jones, Redfern, and Walker, *Bioarchaeological Study of Medieval Burials*, 19–20; Kowaleski, “Medieval People.”

medical texts. Jacques Dubois (Jacobus Sylvius, d. 1555) studied at the University of Montpellier and taught at Paris. He wrote short treatises on food for poor students (1542), a regimen for the poor (1545), and advice against famine (1546). Some of the advice seems to have been based on observation during a period of wartime dearth with references to famine foods such as dogs, cats, worms, snails, frogs, and oysters (usually eaten by the poor). However, Jean Dupèbe argues that Dubois's advice seems impractical, suggesting that these may have been mere rhetorical exercises: the starving poor would not have been reading these books.⁵⁸ Ken Albala agrees that these were not "working manuals,"⁵⁹ and has only been able to identify one other text of this kind: a famine dietary written by the gentleman-chemist and horticulturalist Sir Hugh Plat (d. 1608) in 1596.⁶⁰ Although the 1590s was a period of dearth, one would expect more examples like Plat's if there were a new approach around this time. Plat is also rather impractical in his advice: one suspects that if a reader could "take of the whitest Gumme Arabique that you can buy at the grocers" for the purpose of starching ruffs, he or she was not likely to be starving.⁶¹ Plat's short *Remedies for Famine* reads like an advertisement for his longer works on husbandry, aimed at thrifty householders rather than the destitute.⁶²

There are few historians of food or medicine who discuss famine much and most who do argue that there was little medieval and early-modern interest in this topic because of contemporary beliefs about social hierarchy. For Ken Albala, "it is clear that the dietary authors chose to wilfully distort the problem of poverty."⁶³ It is also possible to argue that according to medieval and early-modern nutritional theories, the poor were thought to have been able to thrive on dark bread, strongly flavoured vegetables like onions and leeks, and coarse meats because of their humoral complexion and hard labour. The rich on the other hand could not cope with such foods because of their refined complexion and behaviour. Hence, there was little need for medical authors to comment on the natural diets of the poor, since they did not believe that they could make them ill, and even if they did,

58 Jean Dupèbe, "La Diététique et l'Alimentation des Pauvres Selon Sylvius," in *Pratiques et Discours Alimentaires à la Renaissance*, ed. Jean-Claude Margolin and Robert Sauzet (Paris: G.-P. Maisonneuve et Larose, 1982), 41–56; Charles O'Malley, "Jacobus Sylvius's Advice for Poor Medical Students," *Journal of the History of Medicine and Allied Sciences* 17 (1962): 141–51. I can only find the Latin edition of Dubois' writings, also cited in Albala, *Eating Right in the Renaissance*, 192–3, but if he did originally write them in French as Dupèbe says, it would suggest that they had been intended for a wider readership.

59 Albala, *Eating Right in the Renaissance*, 200.

60 Sir Hugh Plat, *Sundrie New and Artificiall Remedies Against Famine*. (London: Printed by P[eter] S[hort] dwelling on Breadstreet hill, at the signe of the Starre, 1596).

61 Plat, *Remedies Against Famine*, sig. B4.

62 Plat refers to his book *The Jewel House* (1594) in *Remedies Against Famine*, sig. C, stating that it can be bought "at the Greyhound in Paules churchyard."

63 Albala, *Eating Right in the Renaissance*, 200.

the poor could not afford the medical services of academic physicians so were not worth featuring in their writings.⁶⁴

Although there is some evidence that medieval and early-modern learned physicians were less interested than we might expect in issues that concerned their communities, archaeologists and historians could work together to go beyond the fairly limited view that medical texts were not interested in hunger.⁶⁵ For example, it should be possible to explore how conditions that leave traces on the skeleton might have been perceived on the living body. It may be the case that the effects of chronic malnutrition as they are understood today (skin and eye problems, festering sores) were not seen as illnesses to be treated medically but as part of the allotted fate of the extremely poor;⁶⁶ it is worth noting that in the Bible the poverty of both Job (Job 1–2) and Lazarus (Luke 16:19–21) was demonstrated by the sores on their body. On the other hand, similar symptoms appear in large numbers in miracle collections, often in relation to poor pilgrims, some of whom had also sought medical treatment of some kind.⁶⁷ Eleanora Gordon's study of over 200 children at 5 English shrines lists 20 cases (9 percent) of non-congenital or chronic eye and skin problems.⁶⁸ Analysis of 250 sick Portuguese from a variety of sources reveals impaired vision to be the single most common ailment among women and children.⁶⁹ Moreover, eye problems, skin conditions, and sores appear in medical and surgical treatises and were treated partly through diet in line with the theories of the humors and the six non-naturals. The famous surgeon Theodoric Borgognoni (d. 1298) advised in his *Chirurgia* (1240s–60s) that in the treatment of chronic ulcers, the patient should be fed “laudable food . . . so that nature may become capable of the generation of flesh.”⁷⁰ Also striking is Vasco

64 Dupêbe, “Diététique et Alimentation,” 50; Albala, *Eating Right in the Renaissance*, 192–7; Adamson, *Food in Medieval Times*, 170–76, 227–9; Allen Grieco, “Food and Social Classes in Late Medieval and Renaissance Italy,” in *Food: A Culinary History*, ed. Jean-Louis Flandrin and Massimo Montanari, trans. by Albert Sonnenfeld (New York: Columbia University Press, 2013), 311–12; Bruno Laurioux, *Manger au Moyen Âge* (Paris: Hachette Littératures, 2002), 159–61; Massimo Montanari, *The Culture of Food*, trans. Carl Ipsen (Oxford: Blackwell, 1996), 86–91.

65 I have found similar patterns in fifteenth-century Portugal to those suggested in Margaret Pelling, “Politics, Medicine, and Masculinity: Physicians and Office-bearing in Early-Modern England,” in *The Practice of Reform in Health, Medicine and Science, 1500–2000: Essays for Charles Webster*, ed. Margaret Pelling and Scott Mandelbrote (Aldershot: Ashgate, 2005), 81–105, where it is argued that physicians rarely showed much civic duty.

66 Tony Waldron, “Nutrition and the Skeleton,” in Woolgar, Serjeantson, and Waldron, *Food in Medieval England*, 254–66; DeWitte and Slavin, “Between Famine and Death,” 41–3.

67 Ronald Finucane, *Miracles and Pilgrims: Popular Beliefs in Medieval England*, rev. edn (New York: St Martin's Press, 1995), 144–8; Rachel Koopmans, *Wonderful to Relate: Miracle Stories and Miracle Collecting in High Medieval England* (Philadelphia: University of Pennsylvania Press, 2011).

68 Eleanora Gordon, “Child Health in the Middle Ages as Seen in the Miracles of Five English Saints, A.D. 1150–1220,” *Bulletin of the History of Medicine* 60 (1986): 509.

69 See my future monograph, *Medicine and Community in Late Medieval Portugal* (forthcoming).

70 *The Surgery of Theodoric*, trans. Eldridge Campbell and James Colton (New York: Appleton-Century-Crofts, 1955), 1:49.

de Taranta's (d. 1426) assertion in his *Philonium* (ca. 1418) that he had frequently seen boys and girls with weak and weeping eyes grow out of their condition, as the superfluous moisture dried up, who could be treated solely with a good diet.⁷¹

The examples of Theodoric, who was a Dominican friar and bishop originally from Lucca in Italy, and Vasco, who was a Montpellier-trained Portuguese physician working at the court of the Count of Foix in the Pyrenees, show that elite physicians believed that improved diet could be beneficial to health. In neither case do their writings always identify the rich as the subject of their observations. The analysis of medieval chronic conditions in relationship to modern theories of nutrition, of course, necessitates retrospective diagnosis and could be seen as reductionist. This was an accusation made against Ronald Finucane when he tried to explain conditions cured in miracles as the result of vitamin deficiency, without due regard for medieval perceptions of health or the spiritual implications of some conditions.⁷² Today the main cause of blindness among children worldwide is believed to be vitamin A deficiency (lack of meat, fish, legumes, and dairy foods); women of reproductive age are also at risk.⁷³ Applying this modern understanding to medieval miracle collections without showing awareness of the spiritual significance of blindness is unwise.⁷⁴ Yet if done with care and reflection, an interdisciplinary approach should allow us to gain a much more nuanced understanding of medieval nutritional health. We ought to include current understanding of nutrition when doing historical research on food because our own habits and beliefs affect the way we approach the subject. Moreover, it is not possible to use the significant findings of bioarchaeological research unless we accept the modern scientific premises of that research, as well as understand the history of its construction and transmission.⁷⁵ The problem with this approach, however, is not so much that it is based on retrospective diagnosis, but that the impact famine has on the human body is still a matter of debate. It seems to be widely

71 Vasco de Taranta, *Philonium* (Lyons, 1535), f. 66. For more on Vasco, also known as Valesco, see York, chapter 2 in this volume.

72 Finucane, *Miracles and Pilgrims*, 79; Iona McCleery, "Christ More Powerful Than Galen? The Relationship Between Medicine and Miracles," in *Contextualizing Miracles in the Christian West, 1100–1500: New Historical Approaches*, ed. Matthew Mesley and Louise Wilson (Oxford: Medium Aevum, 2014), 127–54; Andrew Cunningham, "Identifying Disease in the Past: Cutting the Gordian Knot," *Asclepio* 54 (2002): 13–34; Jon Arrizabalaga, "Problematising Retrospective Diagnosis in the History of Disease," *Asclepio* 54 (2002): 51–70; Piers Mitchell, "Retrospective Diagnosis and the Use of Historical Texts for Investigating Disease in the Past," *Journal of International Palaeopathology* 1 (2011): 81–8.

73 Richard Semba, *Handbook of Nutrition and Ophthalmology* (Totowa, NJ: Humana Press, 2001), 1.

74 Joy Hawkins, "Seeing the Light: Blindness and Sanctity in Later Medieval England," in *Saints and Sanctity*, ed. Peter Clarke and Tony Clayden, *Studies in Church History* 47 (Woodbridge: Boydell Press, 2011), 148–58.

75 James Vernon, *Hunger: A Modern History* (Cambridge, MA: Belknap Press, 2007); Jane Buikstra and Lane Beck, eds, *Bioarchaeology: the Contextual Analysis of Human Remains* (Burlington, MA: Academic Press, 2006).

accepted that malnutrition reduces immunity to infection and that famine usually leads to the outbreak of disease, but the relationship is unclear; sometimes it is argued that disease leads to famine. Poisoning from eating inappropriate foods and the familial breakdown and poor hygiene associated with migration in search of food may play a larger role. This is especially the case for children and the elderly who are most vulnerable to famine-related diseases, which tend to be those that already affect them, such as dysentery, measles, and malaria. Medical historians could do much more to analyse in detail the evidence for diseases other than plague in medieval medical texts, chronicles, and charters.⁷⁶

The belief that medieval physicians and surgeons were not interested in the starvation of the poor may be related to the fact that many of the authors producing such medical treatises in the late Middle Ages worked primarily in southern France, Catalonia, or northern Italy where, as was argued earlier, famine may have been less significant. It is therefore perhaps not surprising that famine does not feature in medical writings as much as one might expect. On the other hand, it does not make sense that late medieval and early-modern authors who were aware of plague would not also have been aware of the transmittable diseases related to famine. Medical historians could start by revisiting all the many medieval treatises that explicitly discuss digestion and illnesses of the stomach and gut. These illnesses feature in most medieval medical compendia, but are studied much less often than gynecological conditions or diseases of the head. The perspective of the famous Catalan physician Arnau de Vilanova (d. 1311) on the healthiness of abstaining from meat for religious reasons and the provisioning of armies might seem a unique medical insight into nutritional needs,⁷⁷ but most authors included a litany of problems that we would describe as gastric conditions and eating disorders featuring hunger. For example, Vasco de Taranta's chapters on digestion in his *Philonium* include loss of appetite in melancholy, "canine" appetite where hunger cannot be appeased, bizarre food cravings for ash, earth, and unripe fruit, and excessive thirst in diabetics.⁷⁸ Emaciation has long been listed as a sign of serious illness; hunger and wasting both feature in the Hippocratic *Aphorisms*. In the *Isagoge* of Hunain ibn Ishaq (d. 887), used as a key university text from

76 Sen, *Poverty and Famines*, 203–6; Appleby, *Famine*, 95–108; Ó Gráda, *Famine*, 108–28; Waal, *Famine That Kills*, 186–94; Joel Moky and Cormac Ó Gráda, "What do People Die of During Famines: the Great Irish Famine in Comparative Perspective," *European Review of Economic History* 6 (2002): 339–63; Massimo Livi-Bacci, *Population and Nutrition: An Essay on European Demographic History*, trans. Tania Croft-Murray with Carl Ipsen (Cambridge: Cambridge University Press, 1991), 35–9. For a disease survey for England, see now Carole Rawcliffe, *Urban Bodies: Communal Health in Late Medieval English Towns and Cities* (Woodbridge: Boydell Press, 2013), 360–74.

77 Dianne Bazell, "De Esu Carnium: Arnau de Vilanova's Defence of Carthusian Abstinence," in *Actes de la I Trobada Internacional d'Estudis Sobre Arnau de Vilanova*, ed. Josep Perarnau (Barcelona: Institut d'Estudis Catalans, 1995), 2:227–48; Michael McVaugh, "Arnau de Vilanova's *Regimen Almarie* (*Regimen Castra Sequentium*) and Medieval Military Medicine," *Viator* 23 (1992): 201–13.

78 *Philonium*, ff. 181–252; Luke Demaitre, *Medieval Medicine: The Art of Healing, from Head to Toe* (Santa Barbara, CA: Praeger, 2013), 244–6.

the twelfth century, lack of food and drink were linked to cold and dry diseases.⁷⁹ Although being unable to put on weight due to wasting disease is patently not the same as starvation due to the inability to buy food, some of the symptoms are similar to those of starvation and invite further comparison. Similarly, but with the same proviso that the reasons for it were quite different, the descriptions of emaciation caused by deliberate fasting, especially by members of female religious orders, could be compared to those caused by involuntary hunger.⁸⁰

The other disease that could be investigated more thoroughly is flux or dysentery. For Vasco de Taranta there were three types of flux: lientery (the passing of undigested food), diarrhea, and dysentery (bloody flux). He also discusses the extent to which dysentery and related digestive conditions such as tenasmus (acute constipation) could be pestilential; that is, contagious. According to Vasco, it can be a sign of pestilence if many in that region have the same condition and die from it. He adds that conditions like this are more dangerous to those under the age of 12. Later, he says that children under 15 can transfer it to people aged 60 or more. In relation to these passages and others like them, Luke Demaitre comments that dysentery seems to have become more common and more pestilential during the late Middle Ages, relating this phenomenon briefly to “the stricken 14th century.”⁸¹ His observation alone suggests that much more research needs to be done on this topic; food-related diseases certainly interested some medieval authors because of the wider threat they posed to the community.

It may even be the case that it was close observation of pestilence on the part of writers like Vasco de Taranta that led eventually to a greater awareness of its relationship to involuntary hunger. Gilbert Skeyne (d. 1599), a royal physician who trained at the University of Aberdeen in Scotland, argued in his plague treatise (1568), the first medical book to be printed in the Scots vernacular, that the disease was partly spread through the “ewill and corrupte meittis” that the poor were “constrynit be pouertie to eit.”⁸² Although plague came to be seen as a disease of the poor, it did not cease to be feared because of the risk for the rich that came in contact with it.⁸³ Famines surely had risks too for the better-off, not because they were ever likely to starve, but because of the epidemics often perceived to

79 G.E.R. Lloyd, ed., *Hippocratic Writings* (Harmondsworth: Penguin, 1978), 206–36; Faith Wallis, ed., *Medieval Medicine: A Reader* (Toronto: University of Toronto Press, 2010), 151.

80 Walter Vandereycken and Ron van Deth, *From Fasting Saints to Anorexic Girls: The History of Self-Starvation* (New York: New York University Press, 1994); Caroline Walker Bynum, *Holy Feast and Holy Fast: The Religious Significance of Food to Holy Women* (Berkeley: University of California Press, 1987).

81 Vasco de Taranto, *Philonium*, ff. 221v and 228; Demaitre, *Medieval Medicine*, 261–4.

82 *Tracts by Dr Gilbert Skeyne, Medicinar to his Majesty*, ed. William Forbes Skene (Edinburgh: The Bannantyne Club, 1860), 7. For earlier examples, see Rawcliffe, *Urban Bodies*, 237–8.

83 Brian Pullan, “Plague and Perceptions of the Poor in Early-Modern Italy,” in *Epidemics and Ideas: Essays on the Historical Perception of Pestilence*, ed. Terence Ranger and Paul Slack (Cambridge: Cambridge University Press, 1992), 101–123; Samuel Cohn, *Cultures of Plague: Medical Thinking at the End of the Renaissance* (Oxford: Oxford University Press, 2010), 208–37.

accompany them. Even the briefest of scans of medieval chronicle evidence finds incidents where human disease was explicitly linked to famines. For example, William Chester Jordan observes that three successive abbesses of Rijnsburg in Friesland in the Low Countries died during 1316, and a total of 24 senior clergy died during 1315–19 in what is now Belgium.⁸⁴ These were not low status people by any means, and although Jordan admits that the deaths might have been coincidental, the sheer number during this period does raise questions. Phillipp Schofield also suggests that it was not always the most impoverished that died during the Great Northern Famine. Pere Benito, on the other hand, argues for caution as epidemic disease can sometimes precede or even cause famine.⁸⁵ Historians could pay more attention to the hardship in some regions during the mid-1340s before the Black Death, and the food shortages in its immediate aftermath, according to some chroniclers.⁸⁶ It may in the long term be possible to demonstrate a tighter relationship between malnutrition and the Black Death. Yet we should not overemphasize the relationship between famine and disease without taking into account the effects of war, civil unrest, and other reasons for demographic change. All this suggests that there is still much research to be done on disease incidence before, during, and after periods of dearth.

Conclusion: A Research Agenda for the Future

And when he had opened the third seal, I heard the third beast say, Come and see. And I beheld, and lo a black horse; and he that sat on him had a pair of balances in his hand. And I heard a voice in the midst of the four beasts say, A measure of wheat for a penny, and three measures of barley for a penny; and see thou hurt not the oil and the wine. (Rev. 6:5–6, King James Version)

During the Middle Ages, the wine and the oil in this passage could refer to the blood of Christ and holy oil or to Christians protected from persecution; the wheat and barley could mean the Church; the scales could represent the judgment of the impious.⁸⁷ Some modern interpretations are more literal, suggesting that oil and wine were only for the rich.⁸⁸ Yet if we shift our focus to the second-century

84 Jordan, *Great Famine*, 120–22.

85 Schofield, “Social Economy,” 45, 47; Pere Benito i Monclús, “Famine Sans Frontières en Occident Avant la ‘Conjoncture de 1300,’” in Bourin, Drendel, and Menant, *Disettes*, 85–6. For a similar view to Schofield’s, see Pamela Nightingale, “Some New Evidence of Crises and Trends of Mortality in Late Medieval England,” *Past & Present* 187 (2005): 33–68.

86 For examples in Castile and Florence, see Oliva Herrer, “De Nuevo Sobre la Crisis,” 100–101; Charles de la Roncière, “Les Famine à Florence de 1280 à 1350,” in Bourin, Drendel, and Menant, *Disettes*, 225–46.

87 *Seven Seals of the Apocalypse*, esp. 44, 50, 66.

88 Leon Morris, *The Book of Revelation: An Introduction and Commentary*, 2nd edn (Grand Rapids, MI: Eerdmans, 2002), 103–4; Brian Blount, *Revelation: A Commentary* (Louisville, KY: Westminster John Knox Press, 2009), 129–30.

Mediterranean context in which this passage was first written, both oil and wine can be understood as staples, even in the diets of the poor.⁸⁹ Although symbolic approaches obviously remain important, it seems appropriate to think about the scales of Famine as representative of the uneven distribution of foodstuffs that really can occur during periods of scarcity—as explored through the ideas of Amartya Sen in the first half of this essay. Famines cause some people to starve but others to do well out of the “crisis.” Arguably, it is this unevenness that gives social turning points their dynamism.

What medical historians could do now is to explore why some groups were more vulnerable to famine than others. The *Wellcome Apocalypse* with which this essay began, a manuscript that in itself deserves much more attention, contains in addition to the Revelation of St John, a poem entitled “Behold the World is Dying” (*Ecce Mundus Moritur*), attributed to the English cleric Walter Map (d. ca. 1210).⁹⁰ The poem is illustrated with an image of an agricultural labourer; embedded in his neck is an arrow shot by a prancing skeletal Death aiming another arrow at the poor man (Figure 6.2). Although this figure is normally described as “Death and the Ploughman,” the labourer has much more in common with men digging gardens depicted in the calendars of Books of Hours for February or March.⁹¹ The widespread figure of death with his bow and arrow perhaps explains why the first rider of the Apocalypse later became identified as Pestilence.⁹² It is unlikely to be an accident that the arrow was aimed at the neck, one of the places where the characteristic buboes of plague could develop. For the artist, this labourer was the epitome of the *homo miser* mentioned in the poem; impoverished and therefore most vulnerable to death by plague.

To answer why this was the case requires medical historians, economists, and archaeologists to work much closer together in the future. The work of DeWitte and Slavin suggests that the malnourished might have been more vulnerable to plague, but questions remain. Is it possible that the malnourished poor were simply more likely to be assigned to mass graves? Why did mortality rates remain high in England at least until the mid-fifteenth century, despite the improvements in diet/health perceived by Christopher Dyer and others?⁹³ Recently Guy Geltner and Carole Rawcliffe have developed important new

89 Melitta Weiss Adamson, “The Greco-Roman World,” in Adamson, *Regional Cuisines of Medieval Europe*, 1–18.

90 Wellcome Library, MS 49, f. 50v; *The Latin Poems Commonly Attributed to Walter Mapes*, ed. Thomas Wright (London: Camden Society, 1841), 149–51.

91 Colum Hourihane, ed., *Time in the Medieval World: Occupations of the Months and Signs of the Zodiac in the Index of Christian Art* (Princeton: Princeton University Press, 2007), 67–96.

92 It is not clear when this happened as for much of the Middle Ages the first rider was identified as Christ, but the arrow is an ancient symbol of disease. See Christine Boeckl, *Images of Plague and Pestilence: Iconography and Iconology* (Kirksville, MO: Truman State University Press, 2000), 46–7, 76; *Seven Seals of the Apocalypse*, 6.

93 Nightingale, “New Evidence of Crises”; Dyer, “Did the Peasants Really Starve?”; Sharon DeWitte, “Mortality Risk and Survival in the Aftermath of the Medieval Black Death,” *PLoS ONE* 9.5 (2014): e96513, doi:10.1371/journal.pone.0096513.

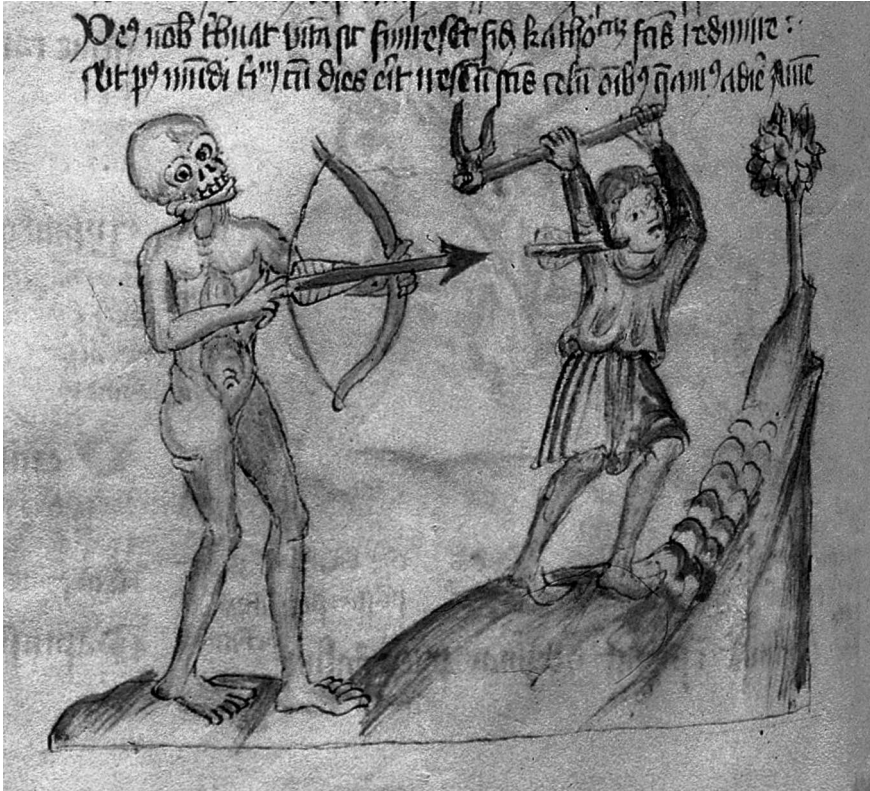


Figure 6.2 *Death and the Ploughman*. Wellcome Library MS 49, f. 50v, *Apocalypsis S. Johannis cum glossis et Vita S. Johannis*. Image courtesy of the Wellcome Library, London.

approaches to urban public health, but the problem remains of how to bridge the gap between the largely urban contexts of most late medieval medical history and some of the most extensive skeletal populations, and the largely rural context of most economic history; furthermore, much of Europe was still rural in 1500.⁹⁴ There is also the problem of how to compare and contrast northern and southern Europe in much more detail with much more attention to regional specificity. Rawcliffe suggests that the apparent northern–southern divide is to some extent an optical illusion caused by different traditions in record-keeping and historiography. She also suggests that dearth remained a problem in England like it did in Spain.⁹⁵

A future research agenda should therefore include the following three inter-related pathways. Firstly, medical historians need to turn the commonly used “medical marketplace” metaphor into a reality, focusing on food provisioning, distribution networks, relationships between town and country, different types of suppliers and consumers, and market regulations (food quality, price fixing, inspecting weights and measures).⁹⁶ Rawcliffe does some of this very well for medieval England, demonstrating that these issues were understood in the Middle Ages to be important for maintaining communal health.⁹⁷ Recent work on hospitals has demonstrated very well the role they played within the wider marketplace, both as major distributors of royal and municipal charity and as aggressive producers and purchasers of foodstuffs in times of crisis.⁹⁸ Understanding food distribution as part of a wider urban “footprint” complements our understanding of diet as part of the six non-naturals, just as research into sanitation and hygiene links to miasma and purging within the same theoretical system. Moreover, there were indeed medical professionals involved in maintaining civic regulations in some parts of Europe. The sociability of apothecaries and barbers and their role in food retail and “body work” more broadly is fairly well studied for the early-modern

94 Rawcliffe, *Urban Bodies* (which acknowledges on the first page that four-fifths of England remained rural); Guy Geltner, “Public Health and the Pre-Modern City: A Research Agenda,” *History Compass* 10 (2012): 231–45. See also the integrative approach of Ann Carmichael, “Health, Disease and the Medieval Body,” in *A Cultural History of the Human Body in the Medieval Age*, ed. Linda Kalof (Oxford: Berg, 2010), 37–59.

95 Rawcliffe, *Urban Bodies*, 25–35, 230.

96 Since the 1980s, some historians have argued that there was a medical “marketplace” in medieval Europe where the sick made consumer choices. This idea has been critiqued for several reasons and usually has not involved much understanding of the economic underpinnings of medical practice. See Mark Jenner and Patrick Wallis, “The Medical Marketplace,” in *Medicine and the Market in England and its Colonies, c.1450–c.1850*, ed. Mark Jenner and Patrick Wallis (Basingstoke: Palgrave Macmillan, 2007), 1–23.

97 Rawcliffe, *Urban Bodies*, 229–90.

98 Adam Franklin-Lyons, “Famine: Preparation and Response in Catalonia after the Black Death” (PhD diss., Yale University, 2009); Isabel dos Guimarães Sá and Lisbeth Rodrigues, “Sugar and Spices in Portuguese Renaissance Medicine,” *Journal of Medieval Iberian Studies* 7 (2015): 176–96.

period; it is much less well known for the Middle Ages.⁹⁹ In Portugal, barbers can be found in civic roles. For example, Diogo Fernandes of Funchal on the island of Madeira was a salaried keeper of weights and measures during the 1480s–90s.¹⁰⁰ He needs to be brought into the study of healthcare.

A second pathway should pay more attention to the language and imagery of dearth, disease, and famine in chronicles, literature, archival records, and medical texts. It seems strange how few studies there are of famine in literary contexts. Apart from Gerhard Jaritz's groundbreaking collection of essays on poverty, several of which refer to food in literature, only William Langland's *Vision of Piers Plowman* (ca. 1380s) and the theme of survival cannibalism in chronicles have attracted much attention.¹⁰¹ Julia Marvin argues that the cannibalism motif reported in fourteenth-century English chronicles had biblical roots and should be treated with caution.¹⁰² Yet studying attitudes such as these more widely, and comparing medical descriptions of emaciation or dysentery to those in chronicles, manorial records, poetry, and letters, might help us to uncover a broader more embedded understanding of hunger in a wider variety of contexts.

Finally, medical historians need to continue to engage with the work of bioarchaeologists who are redefining modern understanding of medieval disease and malnutrition on a regular basis. There is so much more that can be learned from a large skeletal population such as that curated by the Museum of London. On the other hand, other regions of Europe lack such evidence, and we should not be too quick to extrapolate from English findings. In addition, much more work needs to be done on other reasons for migration, disruption, and dearth; for example, natural disasters like fires, floods, and earthquakes, some of which can be studied archaeologically. Perhaps most importantly we need to gain further insight into disease and warfare before we can fully understand famine and establish it properly as a subject for medical historians. Dürer's woodcut of the four riders of the Apocalypse, with which this essay began, has a tremendous power. One of the reasons for this is that all the horsemen ride together.

99 Patrick Wallis, "Consumption, Retailing and Medicine in Early-Modern London," *Economic History Review* 61 (2008): 26–53; Filippo de Vivo, "Pharmacies as Centres of Communication in Early-Modern Venice," *Renaissance Studies* 21 (2007): 505–21; Sandra Cavallo, *Artisans of the Body in Early Modern Italy: Identities, Families and Masculinities* (Manchester: Manchester University Press, 2007); Margaret Pelling, *The Common Lot: Sickness, Medical Occupations and the Urban Poor in Early-Modern England* (London: Longman, 1998).

100 *Vereações da Câmara Municipal do Funchal*, ed. José Pereira da Costa (Funchal: Secretaria Regional de Turismo e Cultura; Centro de Estudos de História do Atlântico, 1995), 1:206, 211, 213, 221, 287, 361, 388, 389, 408, 598, 615.

101 Gerhard Jaritz, ed., *The Sign Languages of Poverty* (Vienna: Österreichische Akademie der Wissenschaften, 2007); Rawcliffe, *Urban Bodies*, 255, 279; Frank, "The 'Hungry Gap', Crop-Failure and Famine."

102 Julia Marvin, "Cannibalism as an Aspect of Famine in Two English Chronicles," in *Food and Eating in Medieval Europe*, ed. Martha Carlin and Joel Rosenthal (London: Hambledon, 1998), 73–86.