

VIEWPOINT

NEW APPROACHES TO THE 'PLAGUE OF JUSTINIAN'*

The village of Barrington, in Cambridgeshire, presents the viewer with a quintessentially English rural scene: with its thatched cottages and village pub, and one of the best preserved and extensive village greens in the country, it could not feel further removed in space or time from the Mediterranean world in the 'Age of Justinian'. Yet this village and its environs have revealed startling evidence for the external crises that convulsed the Mediterranean world at the end of antiquity, and which clearly reverberated as far afield as this picturesque corner of England. For near the village, at a site known as Edix Hill (about half-an-hour's walk from the author's home), archaeologists in the late 1980s and early 1990s excavated an early Anglo-Saxon burial site that would appear to go back to the sixth century AD.¹ In 2018, a study of the DNA preserved in human skeletal remains found there, revealed that a number of those interred (including a woman and child buried in the same grave), had died carrying bubonic plague, a plague that literary sources reveal had arrived in the Mediterranean, probably via the Red Sea, by around the year 541, and which clearly extended its reach well beyond the 'East Roman' (or 'Byzantine') empire of Justinian.²

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¹ See Tim Malim and John Hines, *The Anglo-Saxon Cemetery at Edix Hill (Barrington, A), Cambridgeshire: Excavations, 1989–1991 and a Summary Catalogue of Material from 19th Century Interventions*, Council for British Archaeology Research Report 112 (York, 1998).

² Marcel Keller *et al.*, 'Ancient *Yersinia pestis* Genomes from Across Western Europe Reveal Early Diversification during the First Pandemic (541–750)', *Proceedings of the National Academy of Sciences*, cxvi, no. 25 (2019) — pre-printed in *bioRxiv* 4 Dec. 2018.

In the summer of 2019 *Past and Present* published an article by Lee Mordechai and Merle Eisenberg entitled 'Rejecting Catastrophe: The Case of the Justinianic Plague'.³ This article would prove to be the first of several published on the subject by Mordechai and Eisenberg (either as a pair or in collaboration with others) arguing that the impact and significance of the 'Justinianic Plague' had come to be massively exaggerated in historical scholarship, and that it should, instead, be thought of as an 'inconsequential pandemic'.⁴ The journals in which their work appeared over the course of just a year ranged from the historical and scientific to one concerned with environmental management studies, and a concerted effort was made to bring the authors' conclusions to the attention of the public media, from *Fox News* in the United States to the *Daily Telegraph* in the United Kingdom. 'Roman Empire Did Not Fall Because of Plague, Study Finds', the latter proclaimed on 2 December that year, in an article accompanied by a photograph of actors dressed as first-century centurions marching past the Colosseum.⁵ Of course, nobody had ever claimed that the Roman Empire *had* 'fallen' on account of the sixth-century plague; the Western Roman Empire had faded away over the course of the fifth century CE, whilst the Eastern Roman Empire

³ Lee Mordechai and Merle Eisenberg, 'Rejecting Catastrophe: The Case of the Justinianic Plague', *Past and Present*, no. 244 (Aug. 2019).

⁴ Merle Eisenberg and Lee Mordechai, 'The Justinianic Plague: An Interdisciplinary Review', *Byzantine and Modern Greek Studies*, xliii (2019); Lee Mordechai *et al.*, 'The Justinianic Plague: An Inconsequential Pandemic?', *Proceedings of the National Academy of Sciences*, cxvi, no. 51 (2019); Lee Mordechai, 'The Economic Effects of the Justinianic Plague', *Boletín de la Sociedad Española de Bizantinística*, xxxv (2020); John Haldon *et al.*, 'Lessons from the Past, Policies for the Future: Resilience and Sustainability in Past Crises', *Environment Systems and Decisions*, xl (2020); Lauren A. White and Lee Mordechai, 'Modeling the Justinianic Plague: Comparing Hypothesized Transmission Routes', *PLoS One*, xv, no. 4 (2020); Merle Eisenberg and Lee Mordechai, 'The Justinianic Plague and Global Pandemics: The Making of the Plague Concept', *American Historical Review*, cxv, no. 5 (2020), with more forthcoming. For a truly comprehensive bibliography, see Monica H. Green's Justinianic Plague Bibliography, appendix to Joris Roosen and Monica H. Green, 'The Mother of All Pandemics: The State of Black Death Research in the Era of COVID-19 — Bibliography', at: <https://drive.google.com/file/d/1x0D_dwyAwp9xi9sMCW5UvpGfEVH5J2ZA/view?usp=sharing> (accessed 26 July 2021).

⁵ Christopher Carbone, 'Ancient Bubonic Plague Outbreak Might Have Been Exaggerated, Study Shows', *Fox News.com*, 3 Dec. 2019; Mason Boycott-Owen 'Roman Empire Did Not Fall Because of Plague, Study Claims', *Daily Telegraph*, 2 Dec. 2019.

would survive, in one form or another, down to the fifteenth century.⁶ But what was perhaps most striking was that so much scepticism should have come to be expressed with respect to the impact of the Justinianic Plague at the very same time as new evidence for the reach and extent of the pandemic was seemingly burgeoning. Certainly, Mordechai and Eisenberg subsequently made no effort to row back from their position as news of the Edix Hill identification spread.⁷

Current debate over the Justinianic Plague has served to highlight one of the key methodological problems presently facing historians of the Ancient and Early Medieval worlds: that of how to bring together study of often fragmentary textual and material evidence with the results of increasingly historically focused scientific enquiry (ranging across fields as diverse as dendrochronology, vulcanology and the study of ancient DNA).⁸ For, as the discoveries at Edix Hill serve to remind us, by virtue of major advances in the Natural Sciences (and especially the study of genetics), the historian of the Justinianic Plague and its impact now has access to a range and quality of evidence that would have been almost inconceivable a generation ago, clarifying the nature of the disease, the routes it took, and the environmental context in which it spread. The significance and potential ramifications of that new evidence was first brought to the attention of the broader historical community in an important essay by Lester K. Little published in *Past and Present* in 2011.⁹ Yet, more than ten years after the publication of that article, there are still those who seem to regard the scientific evidence as posing more of a threat than an opportunity (a tendency that has perhaps been intensified by some undeniably potentially controversial attempts to use the

⁶ For the demise of the West, the best study is now Mischa Meier, *Geschichte der Völkerwanderung: Europa, Asien und Afrika vom 3. bis zum 8. Jahrhundert n. Chr.* (Munich, 2020), esp. 387–545.

⁷ See Eisenberg and Mordechai, 'The Justinianic Plague and Global Pandemics'.

⁸ For how our understanding of climate has been transformed, see Michael McCormick, 'Climates of History, Histories of Climate: From History to Archaeoscience', *Journal of Interdisciplinary History*, 1 (2019).

⁹ Lester K. Little, 'Plague Historians in Lab Coats', *Past and Present*, no. 213 (Nov. 2011); see also Monica H. Green, 'Taking "Pandemic" Seriously: Making the Black Death Global', *Medieval Globe*, 1 (2014).

evidence of ancient DNA to investigate the supposed 'origins' of various Early Medieval 'ethnic' groups).¹⁰

The aim of this essay is essentially threefold. First, it will survey where we currently stand with respect to our knowledge of the nature, origin and spread of the Justinianic Plague. Second, it will respond to the analysis of the pandemic recently put forward by Mordechai, Eisenberg and their collaborators. It will be argued, in particular, that their work is fundamentally flawed in a number of crucial respects: in its characterization of the recent historiographical landscape; in its misleading statistical approach to narrative and other written sources (a point particularly explored with reference to the legislative evidence); and in its surprisingly partial engagement with current and ongoing scientific analysis of the plague. Third, the essay will expand out from these criticisms to consider how study of the Justinianic Plague can be taken forward, and what else we can hope to learn from the new types of evidence that are becoming increasingly available. It also concludes by addressing certain key methodological practices, old and new, which, it is argued, historians need to consider much more carefully if the burgeoning dialogue between History and the Natural Sciences is to prosper and succeed.

I

The 'Justinianic Plague', as it has come to be known, was an outbreak of bubonic disease that was first reported in the Egyptian port town of Pelusium (which connected the East Roman Empire to the Red Sea) in the summer of 541 CE. From there it quickly spread east, along the coastal road to Gaza, and west to Alexandria. By the spring of 542, the literary sources record, it had reached Constantinople, spreading through Syria, Anatolia, Greece, Italy and North Africa. By 543 it had struck both Roman and Persian-held sectors of Armenia, as well as Gaul. It is recorded to have reached as far afield as Ireland by the following year.¹¹ The sources record that the plague would continue to recur down to at least the

¹⁰ See the debate set out in Mischa Meier and Steffen Patzold, *Gene und Geschichte: Was die Archäogenetik zur Geschichtsforschung beitragen kann* (Stuttgart, 2021).

¹¹ For the arrival and spread of the disease, see Dionysios Ch. Stathakopoulos, *Famine and Pestilence in the Late Roman and Early Byzantine Empire* (Aldershot, 2004).

middle of the eighth century (and possibly later in the Middle East), and so would have had a cumulative demographic impact on the societies concerned, whilst also spreading further afield. The second recurrence of the plague, which occurred c.558, for example, extended into the core Mesopotamian (Assyrian) territories of the Sasanian Empire of Persia, which would also be struck by the disease in the seventh century.¹²

A number of contemporary accounts suggest that the plague arrived in the Mediterranean via either the Ethiopian kingdom of Axum, or Axumite-held territory (which included much of southern Arabia at this time), so transmission via the Red Sea, from East Africa, or Southern Arabia seems likely.¹³ We know that the lethal and virulent strain of bubonic plague from which the Justinianic Plague and later the Black Death would descend had emerged in Central Asia by the Bronze Age before evolving further there in antiquity, but that does not mean that the Justinianic Plague travelled thence to the Mediterranean in a single leap, as there are significant genetic differences between the sixth-century variants of the disease that have been found in Europe and the earlier Central Asian variants.¹⁴ It probably travelled with traders and armies, with food supplies and the flea-bearing rodents that accompanied them, in a series of steps drawn out over the course of several centuries, evolving as it passed through different climates and hosts.¹⁵

¹² *Ibid.*, 306–9, 348. For an up-to-date survey of the possible extent of the impact of the plague in Persia, see Michael R. Jackson Bonner, *The Last Empire of Iran* (Piscataway, NJ, 2020), esp. 194–9.

¹³ Peter Sarris, 'Climate and Disease', in Erik Hermans (ed.), *A Companion to the Global Early Middle Ages* (Leeds, 2020), 522.

¹⁴ See Keller *et al.*, 'Ancient *Yersinia pestis* Genomes from Across Western Europe Reveal Early Diversification during the First Pandemic'. For possible multiple stages, see Little, 'Plague Historians in Lab Coats', 282. The disease would appear to have split from *Y. pseudotuberculosis* around seven thousand years ago: see Julian Susat *et al.*, 'A 5,000-Year-Old Hunter-Gatherer Already Plagued by *Yersinia pestis*', *Cell Reports*, xxxv, no. 13 (2021), 109278. All discussion of ancient genetic material in the present article is accurate as of that date. For the problematic nature of some recent attempts to use genetic evidence from the Tian Shan region and the Caucasus to argue for a direct and proximate Central Asian origin to the Justinianic plague, see Marcel Keller *et al.*, 'Ancient *Yersinia pestis* Genomes Provide No Evidence for the Origin or Spread of the Justinianic Plague', pre-printed in *bioRxiv* 12 Nov. 2019.

¹⁵ For an important discussion of this, see Monica H. Green 'When Numbers Don't Count: Changing Perspectives on the Justinianic Plague', *Eidolon*, 18 Nov. 2019, <<https://eidolon.pub/when-numbers-dont-count-56a2b3c3d07>> (accessed 26 July 2021).

Until comparatively recently, the identification of the Justinianic Plague as ‘bubonic’ rested entirely upon the testimony of the literary sources, which frequently describe the appearance of buboes or swellings in the groins or armpits of its victims.¹⁶ Any doubt over this identification, however, began to be put to rest in the early 2000s, when, as was simultaneously being advocated by the historian Michael McCormick, and taking advantage of rapid advances in genomics, archaeologists and genetic scientists began to work together to look for traces of the ancient DNA of *Yersinia pestis* (the causative agent of bubonic plague) in skeletal remains in Early Medieval burial sites, following on from its identification in later sites associated with the Black Death.¹⁷

Especially in the early days of palaeogenetic research, such efforts were necessarily methodologically challenging, technically painstaking, and comparatively expensive. Nevertheless, from the early 2000s, fragments of *Y. pestis* began to be recovered from a sixth-century burial site in Bavaria. First in 2014, and then again in 2016, the entire genome of *Y. pestis* was recovered and identified from there and a neighbouring location, finally confirming the identification of bubonic plague.¹⁸ Soon, it was discovered in other Early Medieval contexts in Spain (Valencia) and France (Lunel-Viel and Saint-Doulchard).¹⁹ Crucially, as we have seen, newly published findings revealed that it had also been recovered from a sixth-century burial site at Edix Hill in Cambridgeshire (where, at the time of writing, it has been identified in roughly 40 per cent of the bodies from which DNA could be extracted and examined).²⁰ Indeed, phylogenetic analysis of the evidence

¹⁶ See Peter Sarris, ‘The Justinianic Plague: Origins and Effects’, *Continuity and Change*, xvii (2002).

¹⁷ Michael McCormick, ‘Toward a Molecular History of the Justinianic Plague’, in Lester K. Little (ed.), *Plague and the End of Antiquity: The Pandemic of 541–750* (Cambridge, 2007); Little, ‘Plague Historians in Lab Coats’.

¹⁸ See Michal Feldman *et al.*, ‘A High-Coverage *Yersinia pestis* Genome from a Sixth-Century Justinianic Plague Victim’, *Molecular Biology and Evolution*, xxxiii, no. 11 (2016).

¹⁹ Keller *et al.*, ‘Ancient *Yersinia pestis* Genomes from Across Western Europe Reveal Early Diversification during the First Pandemic’.

²⁰ I am grateful to Dr Christiana Scheib (who identified and analysed the evidence from Edix Hill as part of the University of Cambridge’s ‘After the Plague’ Project, <<http://www.aftertheplague.com/index.html>>), for information, discussion and elucidation. Importantly, at Edix Hill, the scientists have been examining individual and not just multiple burials. See also Johannes Preiser-

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revealed the strain of *Y. pestis* found at Edix Hill to have been the earliest lineage identified to date of the bacterium involved in the sixth-century pandemic.²¹ This meant that the strain identified in Cambridgeshire emerged earlier than the strains that had been found on the continent, which were, in effect, later variants that must have evolved from a strain related to that which reached Edix Hill.²²

These were startling discoveries, not only because the literary and palaeogenetic evidence was increasingly drawing together in terms of agreeing on the bubonic character of the sixth-century pandemic, but also because the geneticists were increasingly starting to reveal things that historians had not known before: from a sixth-century perspective, both Edix Hill and the Bavarian sites where the plague DNA had been recovered were remote and rural, indicating that the plague had spread even to relatively marginal, lightly populated zones. These were areas one might have imagined the plague to have spared.²³ The probable dating of the Edix Hill burial site, moreover, suggested that the plague may have arrived in England a good century before it was attested in any written source. In other words, it appeared to be a phenomenon of potentially greater significance than even the literary sources suggested.

II

That being the case, how have recent attempts to minimize the impact of the plague been constructed? And how convincing are they? In particular, how have they sought to respond to the new genetic evidence? The findings from Edix Hill and related sites were, after all, already in the public domain when the recent

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Kapeller, *Der Lange Sommer und die Kleine Eiszeit: Klima, Pandemien und der Wandel der Alten Welt von 500 bis 1500 n. Chr.* (Vienna, 2021), 54. For the archaeological context to Edix Hill, see Malim and Hines, *Anglo-Saxon Cemetery at Edix Hill*. The Anglo-Saxon burials have been dated through radio-carbon analysis and examination of artefacts to the late fifth and earlier sixth centuries. See Keller *et al.*, 'Ancient *Yersinia pestis* Genomes from Across Western Europe Reveal Early Diversification during the First Pandemic', Supplementary Table S10.

²¹ Keller *et al.*, 'Ancient *Yersinia pestis* Genomes from Across Western Europe Reveal Early Diversification during the First Pandemic'.

²² For an appreciation of the significance of phylogenetics to our understanding of plague, see especially Green, 'When Numbers Don't Count'.

²³ See Little, 'Plague Historians in Lab Coats', 277.

self-consciously 'revisionist' literature on the Justinianic Plague began to appear, and it is referred to in footnotes from the start.²⁴

The starting point of the recent literature has been to present debate over the Justinianic Plague as a 'David and Goliath'-style struggle between an established historiographical consensus (arguing for the historical significance of plague), and a new wave of young scholars confronting and tearing down earlier deeply entrenched models. In particular, the authors assert a 'maximalist' or 'catastrophist' consensus has emerged,²⁵ positing that the plague was 'an almost unparalleled catastrophe',²⁶ 'helping to end antiquity and start the Middle Ages'.²⁷ However, they go on to claim, 'written sources, legislation, coinage, papyri, inscriptions, pollen, ancient DNA, and mortuary archaeology ... fail to support' what they describe as 'the maximalist paradigm'.²⁸ As a result, as we have seen, they have inferred that the Justinianic Plague should be regarded as an 'inconsequential pandemic',²⁹ partly on the grounds that it did not lead to the 'collapse of states or empires'.³⁰ Indeed, in a subsequent piece of journalism, written just before COVID-19 had really impacted on the West (and when it was widely regarded as akin to influenza), Mordechai and Eisenberg wrote that the Justinianic Plague was 'hardly a killer on a catastrophic scale'. 'Instead', they suggested, in terms of impact it was 'not unlike our flu outbreaks'.³¹ The comparison did not age well.

It should be noted at the outset, however, that the entire 'revisionist' drive of this recent literature, beginning with the *Past and Present* piece, but gaining rhetorical momentum thereafter, rests on little more than a historiographical fiction, which, if not

²⁴ Mordechai and Eisenberg, 'Rejecting Catastrophe', 29 n. 107 — which gives the impression they had considered it.

²⁵ *Ibid.*, 22 ('catastrophist narrative'), 48 ('current scholarly consensus of the maximalist interpretation'); Mordechai *et al.*, 'Justinianic Plague', 25546 ('consensus maximalist position'), 25553 ('current scientific and humanistic consensus' [!]).

²⁶ *Ibid.*, 25547.

²⁷ *Ibid.*, 25546.

²⁸ *Ibid.*, 25546; Mordechai and Eisenberg 'Rejecting Catastrophe', 5 ('existing plague paradigm').

²⁹ Mordechai *et al.*, 'Justinianic Plague', *passim*.

³⁰ Mordechai and Eisenberg, 'Rejecting Catastrophe', 5.

³¹ Merle Eisenberg, Lee Mordechai and Robert Alpert, 'Why Treating the Coronavirus Like the Black Death Is So Dangerous', *Washington Post*, 6 Feb. 2020.

challenged, might soon solidify into a myth. There has never been a 'maximalist consensus', and there is no widely shared scholarly 'catastrophist paradigm'. On the contrary, the historical significance attributed to the bubonic plague of the sixth to eighth centuries has elicited consistently conflicting and contrasting positions over the course of the past fifty years. In 1979, for example, Pauline Allen wrote an important article on the plague in Byzantium, which remains well worth reading, in which she partly questioned the extent to which the contemporary literary sources might have distorted our understanding of it, and in 1989, the French Late Romanist Jean Durliat went on to argue that there was barely any evidence for the plague outside the literary canon.³² The recent 'revisionist' literature on the Justinianic Plague has, to all intents and purposes, largely re-hashed Durliat's argument, which was widely accepted at the time — and since — by leading historians of Byzantium and the Early Middle Ages, including Peregrine Horden, Mark Whittow, Chris Wickham and Anthony Kaldellis.³³

Certainly, there have been works published that have sought to argue that the impact of plague was greater than the likes of Wickham and Kaldellis have supposed — but none of these could possibly be regarded as having achieved 'paradigmatic' status.³⁴ One of the most recent, for example, Kyle Harper's *The Fate of Rome: Climate, Disease, and the End of an Empire*

³² Pauline Allen, 'The "Justinianic" Plague', *Byzantion*, xlix (1979); Jean Durliat, 'La peste du VI^e siècle: pour un nouvel examen des sources byzantines', in Catherine Abadie-Reynal, Cécile Morrisson and Jacques Lefort (eds.), *Hommes et richesses dans l'empire proto-byzantin*, i, IV–VII siècle (Paris, 1989).

³³ Mischa Meier, 'The "Justinianic Plague": An "Inconsequential Pandemic"? A Reply', *Medizinhistorisches Journal*, lv (2020), 175; Peregrine Horden, 'Mediterranean Plague in the Age of Justinian', in Michael Maas (ed.), *The Cambridge Companion to the Age of Justinian* (Cambridge, 2005); Mark Whittow, *The Making of Orthodox Byzantium* (London, 1996), 66–8; Anthony Kaldellis, 'The Literature of Plague and the Anxieties of Piety in Sixth-Century Byzantium', in Franco Mormando and Thomas W. Worcester (eds.), *Piety and Plague from Byzantium to the Baroque* (Kirkville, 2007); Chris Wickham, *The Inheritance of Rome: A History of Europe from 400 to 1000* (London, 2010). Whittow, it should be noted, would later modify his position.

³⁴ These are mostly works written either by or for non-specialists: see, in particular, William Rosen, *Justinian's Flea: Plague, Empire and the Birth of Europe* (London, 2007); David Keys, *Catastrophe: An Investigation into the Origins of the Modern World* (London, 1999). The latter, however, included much genuinely original thought and drew upon real scholarship: Keys' work in many ways anticipated, for example, Ulf Büntgen *et al.*, 'Cooling and Societal Change

(Princeton, 2017), almost immediately elicited a three-part, multi-authored response seeking to counter each and every one of Harper's claims.³⁵ Hardly, one might suggest, the most obvious sign of historiographical consensus.

Perhaps more significantly, one should note, there are major problems with the ways in which the various authors of the recent 'revisionist' literature on the Justinianic Plague handle the sources on which they base their claims. Too often, an awkward and problematic attempt to 'quantify' written evidence has come to be prioritized over contextual engagement with the primary sources. Here I will primarily limit my comments to the types of source that are most familiar to me from my own work: Byzantine literary texts, laws, coins and papyri. I then move on to the genetic evidence, which, I argue, provides the greatest opportunity for us to advance the field.

The Justinianic Plague, as mentioned earlier, has long been known to scholars primarily through the literary sources that survive from the sixth, seventh and eighth centuries. These sources survive in a range of languages (Greek, Latin, Syriac, Arabic and Old Irish), written by authors from different social levels, writing in different religious, political and geographic milieux. In each of these languages, we have sources that describe what appears to have been a bubonic disease, which arose in the sixth century, and had a major impact on communities both rural and (where they existed) urban. The impact of the plague is likely to have been at its most pronounced in the more urbanized parts of the regions affected by the disease, which in the 540s, were primarily under Roman control, ruled from Constantinople. The more urbanized and fiscalized a society, the more structurally vulnerable it is likely to have been to the externally generated shock of the plague

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during the Late Antique Little Ice Age from 536 to around 660 AD', *Nature Geoscience*, ix (2016), on the potential climatic context to the spread of plague.

³⁵ John Haldon *et al.*, 'Plagues, Climate Change, and the End of an Empire: A Response to Kyle Harper's *The Fate of Rome* (1): Climate', *History Compass*, xvi (2018); John Haldon *et al.*, 'Plagues, Climate Change, and the End of an Empire. A Response to Kyle Harper's *The Fate of Rome* (2): Plagues and a Crisis of Empire', *History Compass*, xvi (2018); John Haldon *et al.*, 'Plagues, Climate Change, and the End of an Empire: A Response to Kyle Harper's *The Fate of Rome* (3): Disease Agency and Collapse', *History Compass*, xvi (2018). Note also Harper's measured response to the rather disproportionate attack on him: Kyle Harper, 'Integrating the Natural Sciences and Roman History: Challenges and Prospects', *History Compass*, xvi (2018).

and its subsequent recurrences, with the loss of population (and taxpayers) likely to have had an impact on state finances, and dense, urban populations providing opportune conditions for contagion.³⁶

The fact that we have sources in such a range of languages and from such diverse contexts, conveying the impression that the plague had a major impact on such very different societies would, *prima facie*, suggest that the disease is likely to have had far-ranging and multiple consequences. Descriptions of the plague cannot simply be attributed to common literary topoi, as there was no single overarching literary culture that embraced the authors of all these works. In the context of how comparatively little evidence we have for this period (hence the traditional but now largely abandoned designation of the 'Dark Ages'), the number of sources that we do have that describe the plague must be significant, although the accounts are predictably at their shrillest and most detailed on the part of authors who were encountering bubonic plague for the first time during the sixth century, as opposed to those later authors for whom the plague had become part of a recurrent and all-too-familiar reality.³⁷

Chief amongst our sources for the plague is a detailed, eyewitness account written by the Greek historian Procopius, who was present in Constantinople when the disease first arrived in the imperial capital, and which he included in his *History of the Wars* waged by the Emperor Justinian.³⁸ A parallel eyewitness account of the arrival of the plague in the city also survives in Syriac from

³⁶ Sarris, 'Climate and Disease', 526–7.

³⁷ The same tendency would later be evident with respect to the Black Death: see Maurice Keen, *English Society in the Later Middle Ages, 1348–1500* (London, 1990), 29 ('There was nothing to herald the first onset of plague, and the reaction to it of the chronicles is accordingly of a different order to what they have to say of later outbreaks'), and *The Black Death*, trans. and ed. Rosemary Horrox (Manchester, 1994), 11 ('Later outbreaks of plague generally receive no more than a bare mention in the chronicles ... This does not mean they were a spent force').

³⁸ Procopius, *History of the Wars*, 2.22–3. It is sometimes suggested that Procopius's description of the plague is an act of mimesis, mimicking that of the pestilence that struck ancient Athens found in *The History of the Peloponnesian War* of Thucydides, who was one of Procopius's primary literary influences. However, it was long ago noted that Procopius uses an inherited classical vocabulary partly derived from Thucydides to describe a manifestly different disease, and does not in any respect slavishly copy him. See discussion in Sarris, 'Justinianic Plague' and Małgorzata Siwicka, 'Man in the Face of an Epidemic: Thucydides and Procopius of Caesarea', *Vox Patrum*, lxxviii (2021) (in Polish with English abstract).

the writings of the dissident clergyman John of Ephesus.³⁹ Each of these authors provides broadly comparable estimates for the death toll resultant from the disease, seemingly derived from official sources.⁴⁰ At its height, they describe the plague killing upwards of ten thousand victims a day, in a city with a population of perhaps half a million at this time, roughly half of whom may have been wiped out before the first onslaught of the disease abated. Procopius goes on to relate that even the Emperor Justinian contracted the illness, though he would go on to recover.⁴¹

As we have seen, historians have long argued — and the recent literature repeats the claim — that such literary accounts are likely to have been rhetorically exaggerated. It should be noted, however, that the sorts of daily death toll proposed for Constantinople by Procopius and John of Ephesus are, in fact, quite plausible in the context of later evidence that we have for the rates of mortality associated with subsequent and historically more fully recorded outbreaks of bubonic plague, especially if the bubonic plague was accompanied by pneumonic disease, which there are indications was the case for the Justinianic Plague.⁴² Nor should possible numerical exaggeration on the

³⁹ John's account is preserved in the writings of Pseudo-Dionysius of Tel-Mahre: see *Pseudo-Dionysius of Tel-Mahre: Chronicle: Part III*, trans. Witold Witakowski (Liverpool, 1996), 84–98.

⁴⁰ John expressly refers to the number of dead at which government officials stopped counting (Witakowski, *Pseudo-Dionysius of Tel-Mahre*, 87); Procopius clearly had access to government records in Constantinople for his subsequent treatise on Buildings (*De aedificiis*) and so may well have done when writing his *History of the Wars*. For Procopius's use of official records in Buildings, see Federico Montinaro, 'Byzantium and the Slavs in the Reign of Justinian', in Vujadin Ivanišević and Michel Kazanski (eds.), *The Pontic-Danubian Realm in the Period of the Great Migration* (Paris, 2012), 102–4.

⁴¹ Procopius, *Anecdota*, 4.1.

⁴² White and Mordechai, 'Modeling the Justinianic Plague', 13–14, are obliged to acknowledge that on their attempted mathematical modelling of the impact of the disease, Procopius's figure of upwards of ten thousand deaths a day is entirely consistent with the sort of numbers one might plausibly encounter in the context of combined bubonic–pneumonic plague, for which they reckoned 'the maximum death count per day was c.12,800'. Possible compatibility is not, of course, emphasized in the article's distinctly partial commentary. For pneumonic plague, see Robert Sallares, 'Ecology, Evolution, and Epidemiology of Plague', in Little, *Plague and the End of Antiquity*, 240–5, and Michael McCormick, 'Gregory of Tours on Sixth-Century Plague and Other Epidemics', *Speculum*, xcvi (2021), 43, 80, 87, 90, 91. For the plausibility of the Late Antique figures in the context of nineteenth-century eyewitness accounts of outbreaks of bubonic plague in the Middle East, see Lawrence I. Conrad, 'Die Pest und ihr soziales Umfeld im Nahen Osten des frühen Mittelalters', *Der Islam*, lxxiii (1996). If Procopius's

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part of such authors be construed as signifying that the episodes they describe did not, in reality, matter. Rather, they should be read in terms of the writers of our accounts trying and struggling to convey the full horror of the situation that seemingly confronted them.

The real problems arise when Mordechai, Eisenberg *et al.* try to downplay the significance of our plague accounts by means of statistical analysis (primarily through their chosen technique of putting a selection of words concerned with plague through search engines such as the *Thesaurus Linguae Graecae*).⁴³ Less than 1 per cent of Procopius's voluminous writings, we are told, discuss the plague, and mentions of plague only appear, it is asserted, in a similarly small percentage of Greek literature that survives from the period.⁴⁴

The significance of an event in Procopius's narrative cannot be judged primarily, however, on the basis of what percentage of his vast, predominantly *military*, history it takes up, especially if it is not concerned with a *military* theme. The argument is akin to claiming that the extensive wars between Rome and Persia that characterized much of the sixth century did not matter because John of Ephesus barely discussed them in his *Book of the Plague* (which he subsequently incorporated into his *Church History*).⁴⁵ Rather, despite the overall architecture and concentration of his work, it is surely more striking that Procopius's direct, first-hand witnessing of the advent of the plague in Constantinople obliged him to break away from the flow of his military narrative, to provide a vividly harrowing account that would leave a deep impression on many subsequent generations of Byzantine readers and writers, who would draw on it to make sense of the later pandemics that they would experience in their own lifetimes.⁴⁶

(n. 42 cont.)

daily death tolls seem plausible, it is, of course, entirely conceivable that he misrecorded the length of the first outbreak of the disease in Constantinople.

⁴³ Mordechai *et al.*, 'Justinianic Plague', 25547, where they acknowledge their reliance on this search engine.

⁴⁴ *Ibid.*; Meier, '“Justinianic Plague” ... Reply', 176–7.

⁴⁵ See Witakowski, *Pseudo-Dionysius of Tel-Mahre*, 74 n. 347.

⁴⁶ For the later reception of Procopius's account, see Geoffrey Greatrex, 'Procopius and the Plague in 2020', *Boletín de la Sociedad Española de Bizantinística*, xxxv (2020). The main comparable *excursus* elsewhere in his work is when Procopius departs from his military narrative to describe the 'Nika' riot

(cont. on p. 328)

Different authors, writing different types of text, necessarily focused and concentrated on different themes, and their works must be read accordingly, rather than just trawled for 'key words' through search engines. As the leading German Byzantinist Mischa Meier has commented:

It goes without saying that the majority of the databases [on which Mordechai and Eisenberg rely] contain texts in which, due to the genus, topic, or interests, no mention of the plague would have been expected anyway; a simple offsetting of this mass of texts against the existing evidence cannot lead to valid results. Or did the Covid-19 pandemic of 2020 have very little impact because it did not play a role in the vast amount of esoteric literature, cook-books, romance and crime novels produced during this period?⁴⁷

Meier goes on to remark that when the authors note that our chief Middle Byzantine chronicle, the *Chronicle of Theophanes*, comments on what they describe as the 'supposed' plague wave of the year 732 in only 'two short sentences', they fail to spot the significance of the fact that Theophanes considered this recurrence of the disease to be so important 'that he selected it to be the *only* event of the year 732 worth mentioning at all'. This short passage thus proves the precise opposite of what the authors infer.⁴⁸ And, moreover, Mordechai and Eisenberg fail to note that plague is mentioned and discussed by all the major historical authors whose writings survive for the period: not one of them regarded the plague as 'inconsequential'.⁴⁹

The recent 'revisionist' literature, as noted earlier, repeats the arguments made by Jean Durlat in the late 1980s, that beyond the testimony of the likes of Procopius, there was little evidence from the non-literary sources (such as laws, coins and papyri) sufficient to indicate that the plague had a significant impact on the early Byzantine state or society, either in the reign of Justinian or beyond. In the mid 1990s, and then in an article

(n. 46 cont.)

of 532, which destroyed much of the monumental heart of Constantinople. See also n. 38 above.

⁴⁷ Meier, '“Justinianic Plague” ... Reply', 177.

⁴⁸ *Ibid.*, 178: this is ironic given that the authors openly accuse others of 'misuse' of evidence: Mordechai *et al.*, 'Justinianic Plague', 25547.

⁴⁹ One also needs to consider the plague accounts that we know to have existed but that have since been lost. The sixth-century civil servant John Lydus, for example, includes in the contents list of his account of the history of the 'Magistracies of the Roman State' an, alas, missing chapter on 'the most execrable plague'. See *Ioannes Lydus: On Powers, or, The Magistracies of the Roman State*, ed. and trans. Anastasius C. Bandy (Philadelphia, 1982), 9.

published in 2002 and re-published in 2007, I argued that the picture was rather less clear-cut than Durliat had supposed.⁵⁰ Durliat's argument that imperial legislation revealed little evidence for the plague was problematized by virtue of the fact that we have very little extant imperial legislation of any sort at all after 541, a fact perhaps indicative of a measure of plague-induced paralysis on the part of the state at that time (although this is not a hypothesis on which I placed much emphasis).⁵¹ Likewise, I noted that the numismatic evidence indicated that the period from the 540s onwards coincided with a period of major instability in the imperial coinage, consistent with a possible crisis in imperial finances (such as we also see in contemporary Axum), whilst the evidence of the documentary papyri (which primarily survive from Egypt) appeared to indicate a relative improvement in conditions for those who leased land in the second half of the sixth century, with tenants acquiring greater security of tenancy.⁵² This possibly indicated that those who worked the land were perhaps able to negotiate better terms for themselves in the context of plague-induced labour shortages comparable to those encountered in post-Black Death conditions in England (where the best evidence for the workings of the manorial economy survives), and thus might provide indirect evidence for the impact of the disease.⁵³ None of these phenomena *had* to be associated with the plague, but it was plausible that they were. As someone who has always written from a largely historical materialist perspective, seeking to exaggerate the role of plague is not really part of my intellectual DNA, and I have never accorded to the plague sole responsibility for anything.⁵⁴

⁵⁰ Sarris, 'Justinianic Plague' — first delivered as a seminar paper in Oxford in May 1994.

⁵¹ *Ibid.*, 174 ff.; Harper, *Fate of Rome*, 235.

⁵² For Axum, see Sarris, 'Climate and Disease', 526.

⁵³ For the use of Later Medieval sources to cast light on Late Antique social and economic realities, see Peter Sarris, 'The Early Byzantine Economy in Context: Aristocratic Property and Economic Growth Reconsidered', *Early Medieval Europe*, xix (2011).

⁵⁴ Note the wry comments of Hatcher, with respect to the Marxist historiography of the Black Death: 'Devastating waves of mortality caused by a mutation in a micro-organism by fleas on the back of rodents living at high altitudes in the remote steppes of Asia are not easily fitted into a dialectical process'. John Hatcher, 'England in the Aftermath of the Black Death', *Past and Present*, no. 144 (Aug. 1994), 5–6.

Particularly with respect to imperial legislation, the testimony of the evidence that the plague posed fundamental challenges to the workings of the East Roman state remains compelling. Between Justinian's accession to the throne in 527 and the year 541 (when the plague arrived), the emperor issued around 530 extant laws. Between the year 546 (by which point the plague had taken hold) down to the end of Justinian's reign in 565, however, that number stands at just nineteen, with a flurry of significant legislation from 542 to 545 (for which see below).⁵⁵ That is a shift from roughly thirty-five laws a year to barely one. It is true that in 534, Justinian had promulgated his great imperial law code, the *Codex Iustinianus*, and it has been suggested that much of the legislation issued during the period from c.535 to 541 was primarily concerned with the need to 'resolve problems and issue corrections' arising from his Code, with further legislation thereafter being effectively unnecessary, as 'the codification project and its corrections were now complete'.⁵⁶ But that attempt to explain away the decline in legislation from the mid 540s only works if one effectively ignores the actual content of the laws themselves: for much of the legislation issued between 535 and 541, like that that came after it (known as 'Novels'), was primarily concerned not with mere legal technicalities arising from the *Codex*, but rather with provincial reform and other matters driven by objective social, economic and administrative problems. Many of the laws issued between 535 and 539, for example, were primarily driven by Justinian's desire to overhaul provincial and fiscal structures in the context of warfare with Persia.⁵⁷

The apparent diminution in legislation from 541 onwards need not, of course, necessarily be a sign of governmental paralysis. As I have recently argued, Justinian's concerns across the period from the emergence of the Three Chapters controversy (a major doctrinal dispute) in 543 down to the convocation of the Second Council of Constantinople in 553 (a

⁵⁵ David J. D. Miller and Peter Sarris (eds.), *The Novels of Justinian: A Complete Annotated English Translation* (Cambridge, 2018): I include the datable Justinianic laws contained in the 'Edicts' and the Appendix to the Novels, and exclude the tiny number of essentially undateable laws. The Novels include roughly 130 Justinianic laws dateable to the period prior to 542, to add to the 403 Justinianic constitutions Meier identifies in the *Codex*.

⁵⁶ Mordechai *et al.*, 'Justinianic Plague', 25548.

⁵⁷ See Peter Sarris, 'Introduction', in Miller and Sarris (eds.), *Novels of Justinian* (hereafter *Novels*), 40–5.

great gathering of the imperial Church), were increasingly theological and religious in character, a preoccupation perhaps intensified by the advent of the plague, which Justinian interpreted as a sign of divine displeasure, as well as the death of his wife, Theodora, in 548.⁵⁸

But perhaps more significant than the laws that we do not have are the laws that we do. Justinian's 'Novels' and associated texts reveal a series of crisis-driven measures issued in response to the advent of the disease, from 542 to 545. In March of 542, for example, in a law that Justinian describes as having been written amid the 'encircling presence of death', which, he continues, had 'spread to every region', the emperor attempted to prop up the 'banking sector' of the imperial economy (which played an important role in the fiscal operations of the state), making it easier for bankers to pursue the heirs of deceased debtors and giving bankers and money-lenders fast-tracked access to a special court.⁵⁹ The emperor's sense of encirclement proved accurate, as the disease would arrive in Constantinople just the following month (and the law was probably informed by news which had reached the imperial court of its impact on the provinces).⁶⁰

Likewise, in a law of 543, Justinian addressed the problems caused by people dying without having made proper wills (to which John of Ephesus also alludes in connection to the plague).⁶¹ In a law issued the following year, Justinian clarified the inheritance rights of minors, in response to the case that had arisen in Antioch after first a mother and then her daughter had died in quick succession 'in the recent epidemic of plague'.⁶² In a further important law of 544 (Novel 122), the emperor attempted to impose price and wage controls, as labourers, artisans and agricultural workers sought to take advantage of labour shortages to obtain higher wages or extract higher prices for goods or services.⁶³ As Justinian declared, making clear allusion to the plague:

⁵⁸ *Ibid.*, 45–6. For divine displeasure, see *J.Nov.* 77 and 122 (Miller and Sarris (eds.), *Novels*, 799–800 and 539–40).

⁵⁹ *J.Edict* 7: Miller and Sarris (eds.), *Novels*, 1043–50.

⁶⁰ Meier is of the opinion that the disease was already in the city: "Justinianic Plague" ... Reply', 179.

⁶¹ *J.Nov.* 118 (Miller and Sarris (eds.), *Novels*, 767–73). For John of Ephesus, see Witakowski, *Pseudo-Dionysius of Tel-Mahre*, 93.

⁶² *J.Nov.* 158 (Miller and Sarris (eds.), *Novels*, 987–9).

⁶³ *J.Nov.* 122 (Miller and Sarris (eds.), *Novels*, 799–80).

The chastening which has been sent by God's goodness ought to have made those following occupations and trades ... into better people, but it has come to our notice that instead, as a result of it, they have turned to avarice, and are demanding prices double or triple what was formerly customary.⁶⁴

This law was meant to be of empire-wide effect, and is reminiscent of the 'Ordinance of Labourers', with which the English Crown responded to the Black Death in 1349.⁶⁵ It is interesting in the context of this legislation that archaeological evidence is increasingly revealing that labour-intensive (and often ruthlessly exploitative) forms of industry and agriculture (such as copper mining and viticulture) would appear to have begun to go into decline from around this time.⁶⁶

In a further law of 544, Justinian sought to prevent tenants on Church lands from negotiating lower rents, whilst, significantly, allowing the Church to rent out land on perpetual ('emphyteutic') terms, so as to encourage the continuous cultivation of land.⁶⁷ From the late sixth century onwards, one should note, such *emphyteusis* (which was to the great benefit of tenants) emerged as a cornerstone of the imperial agrarian economy; it had barely featured in earlier legislation.⁶⁸ Justinian also permitted the Church to sell land to pay tax-debts to the

⁶⁴ *Ibid.*, 799.

⁶⁵ Mordechai and Eisenberg, 'Rejecting Catastrophe', 22, repeatedly and erroneously assert this law only applied to Constantinople, but see Miller and Sarris (eds.), *Novels*, 800 n. 4. For later comparisons, see Keen, *English Society in the Later Middle Ages*, 38–9, and Samuel K. Cohn, 'After the Black Death: Labour Legislation and Attitudes towards Labour in Late-Medieval Western Europe', *Economic History Review*, lx (2007).

⁶⁶ See Daniel Fuks *et al.*, 'The Rise and Fall of Viticulture in the Late Antique Negev Highlands Reconstructed from Archaeobotanical and Ceramic Data', *Proceedings of the National Academy of Sciences*, cxvii, no. 33 (2020); for bronze mining, see Vasiliki Kassianidou, 'Mining and Smelting Copper in Cyprus in Late Antiquity', *Cyprus in the Long Late Antiquity: History and Archaeology Between the Sixth and Eighth Centuries*, conference held at the University of Oxford Research Centre in the Humanities, 14 Jan. 2021 (proceedings forthcoming). For viticulture in Egypt and the possible impact of the plague, see n. 81 below. For further possible archaeological evidence for the plague, see Stephen Mitchell, *A History of the Later Roman Empire, AD 284–641*, 2nd edn (Chichester, 2015), 479–91, and Stephen Mitchell, 'The Great Plague of Late Antiquity in Asia Minor', in Celal Şimşek and Turhan Kaçar, *The Lykos Valley and Neighbourhood in Late Antiquity* (Istanbul, 2018).

⁶⁷ Perpetual 'emphyteusis' was a form of lease that (on condition that rent was paid) effectively granted a lessee full rights of ownership without conveying full title. See Justinian's *Institutes*, 3.24.3.

⁶⁸ *J.Nov.* 120 (Miller and Sarris (eds.), *Novels*, 781–93); Michel Kaplan, *Les hommes et la terre à Byzance du VI^e au XI^e siècle* (Paris, 1992), 163–9.

state, loosening his hitherto tight restrictions on the alienation of ecclesiastical property. In a law of 545, the emperor also reformed and extended the regulations whereby abandoned or uncultivated land was forcibly assigned to local taxpayers.⁶⁹ The plague may also have been alluded to in an otherwise undated law concerned with 'blasphemy', in which Justinian explained to his subjects that it was due to acts of immorality on their part that 'famines, earthquakes, and plagues occur', and that by virtue of their impiety they risked being 'destroyed under God's righteous anger'.⁷⁰

What we thus seem to see, from 542 down to 545, is a concerted effort to shore up the foundations of the East Roman state in the face of plague-induced depopulation, and to limit the damage inflicted by the plague on landowning institutions, the propertied classes and state finance. Justinian's legislation in the face of the first wave of plague not only paralleled, but far exceeded the efforts later recorded on the part of the English state in the face of the Black Death in the 1340s and 1350s.⁷¹ The social hierarchy, and the fiscal machinery of the East Roman Empire, had to be buttressed at any cost. Of course, each one of these laws (with the exception of Novels 122 and 158) could be accounted for differently; but for them to have come in such quick succession, at a time when we know the plague was spreading through the empire, is surely telling.

The bubonic plague seems to have exacerbated the East Roman Empire's existing fiscal and administrative difficulties, which Justinian had hitherto attempted to address via his provincial reforms. This fiscal instability, as noted earlier, also appears to have been reflected in the coinage.⁷² A series of light-weight gold coins (*solidi*) were issued at around this time, seemingly in either 542–3 or 547–50 (the first such reduction in the gold currency since its introduction in the fourth century CE), and the weight of the heavy copper coinage (*folles*) of

⁶⁹ *J.Nov.* 128 (Miller and Sarris (eds.), *Novels*, 845–57).

⁷⁰ *J.Nov.* 77 (Miller and Sarris (eds.), *Novels*, 539–40). Alternatively, the law may have been issued earlier in response to recent earthquakes.

⁷¹ Keen, *English Society in the Later Middle Ages*, 38–43.

⁷² For evidence of fiscal exhaustion on the part of the East Roman state after Justinian's reign, see Sarris, 'Justinianic Plague', 178–9, and Andrei Gandila, 'Heavy Money, Weightier Problems: The Justinianic Reform of 538 and Its Economic Consequences', *Revue Numismatique*, clxviii (2012), 370.

Constantinople was also reduced significantly in the spring of 542 (hence at around the same time as the emperor's emergency banking legislation, which refers explicitly to the disease).⁷³ Whilst neither policy was *necessarily* a response to the plague, it remains plausible to argue that they were.⁷⁴ Perhaps potentially most visually striking, however, as an *éminence grise* of Byzantine numismatics has suggested, is the fact that the Emperor Justinian, who (Procopius tells us) caught but then recovered from the plague, seems to have issued a series of coins in 542–3, on which he may have been depicted with either a bubo in his neck or under his chin, or, on one of the coins, possibly wearing a mask covering such a bubo. The feature disappears from the coinage thereafter. The emperor's recovery, these coins may

⁷³ Michael F. Hendy, *Studies in the Byzantine Monetary Economy, c. 300–1450* (Cambridge, 1985), 492–3; for possible dating of this reform on textual and prosopographical grounds, see Sarris, 'Justinianic Plague', 176, and Procopius, *Anecdota*, 22.38, where he accuses the Count of the Sacred Largesses, Peter Barsymes, of 'making the gold coinage smaller'; for the copper *folles*, see Gandila, 'Heavy Money, Weightier Problems', 367, 371, 373, 381, 383; see also his references to work by Pottier and Morisson discussing the plague in the light of the small denomination coinage (*ibid.*, 367). Mordechai and Eisenberg, 'Rejecting Catastrophe', 21 and n. 75, simply ignore the argument presented in Sarris, 'Justinianic Plague', over the dating of the lightweight *solidus* (whilst citing the article), falling back on older literature and giving no justification or reason for doing so. In other words, they cite the literature that suits their argument. It is significant that the coinage has been found in archaeological contexts both within and beyond the empire, signifying that it was probably not just minted for purposes of external trade: see Zeliha Demirel Gökulp and Andrei Gandila, 'A Hoard of Sixth-Century Solidi, Light-Weight Solidi and Fractions from Gökler (Phrygia)', *Revue Numismatique*, clxxii (2015). The most detailed discussion of the lightweight *solidus* to date (also suggesting it may have been a response to straightened circumstances on the part of the state) is to be found in Filippo Carlà, *L'oro nella tarda antichità: aspetti economici e sociali* (Turin, 2009), 378–90 (although he does not interpret it as a response to the plague). For purposes of internal expenditure, the lighter-weight coins were conceivably tariffed at higher than their correct value, as was seemingly the case with respect to the silver hexagram coinage of the seventh century.

⁷⁴ The argument proposed effectively on behalf of Mordechai and Eisenberg by Alan Stahl ('Numismatic Evidence for the Pandemic of Justinian', International Congress on Medieval Studies, Kalamazoo, 12 May 2021 — which forms the basis of a forthcoming article), essentially boils down to asserting that there is no numismatic reason to necessarily associate the lightweight *solidus* with the plague, and that the reform of the *folles* was perhaps introduced too soon to have been a response to it. However, Stahl seems unaware of the context suggested by both Procopius and the legislation. For additional possible numismatic evidence for the plague in southern Palestine, see most recently Donald T. Ariel, 'The Coins from Gane Tal', *Atiqot*, cii (2021).

have been meant to signal to the population of Constantinople, would also be the empire's (although this reading of the coinage is highly speculative).⁷⁵

What of the claim that there is no evidence for the plague amongst the documentary papyri from Egypt (the only region of the empire from which significant numbers of documentary texts survive)? Mordechai, Eisenberg *et al.* have declared that they 'know of no papyrus document that definitely refers to the plague among the tens of thousands of surviving papyri from the period in which the plague allegedly ravaged the Mediterranean'.⁷⁶ The figure of 'tens of thousands of papyri' that they cite is pure fantasy; excluding Biblical texts and identifiable literary works, the search engine on which they rely in their effort to identify words that might refer to plague, lists only 4,107 papyri securely datable to the period 550–750 CE for which transcriptions exist, including documents from outside Egypt.⁷⁷ Reading these texts (as opposed to just searching through them electronically) reveals that the types of documentary papyrus in which one might expect *explicit* mention of the plague (such as private letters and so forth) are extremely rare.⁷⁸ Lists of income and expenditure, scraps of receipts, and fragmentary but highly formulaic contracts are unlikely to contain much by way of detailed discussion of disease.

Moreover, it should be noted that we currently have no substantial body of estate accounts from Egypt such as would

⁷⁵ Henri Pottier, 'L'empereur Justinien survivant à la peste bubonique (542)', *Travaux et Mémoires*, xvi (2010). For further discussion of the numismatic evidence, see also Preiser-Kapeller, *Der Lange Sommer und die Kleine Eiszeit*, 57–8.

⁷⁶ Mordechai *et al.*, 'Justinianic Plague', 25548.

⁷⁷ <<http://papyri.info/>> (accessed 14 July 2020). Even including untranscribed papyri, the figure only reaches just over 5,400. I am grateful to Dr Norman Underwood for assistance with this material. Mordechai and Eisenberg go on to produce figures to indicate that papyrus documents continued to be produced in Egypt from 500 to the 620s (Mordechai *et al.*, 'Justinianic Plague', 25548). Nobody, of course, has ever claimed that they ceased to be produced, or were produced in smaller numbers. This is mere tilting at windmills. For the reliance on search engines, see Mordechai *et al.*, 'Justinianic Plague', 'Supplementary Information', p. 12; alas, we are not told what these words were (the documents that survive for the period were written in Latin, Greek, Coptic and Arabic: did they search in all of these?).

⁷⁸ For Sarris, *Economy and Society in the Age of Justinian* (Cambridge, 2006), I attempted to read every published documentary papyrus for the sixth century, and have repeatedly returned to the material since.

enable us to track and trace how the plague impacted on a particular landowning institution, by giving us sufficient data from both significantly before the plague and after (that is, the sort of evidence that has allowed historians to trace the impact of the Black Death on the rural economy of Late Medieval England).⁷⁹ With respect to the best-recorded large estate from Late Antique Egypt — the Apion estate around the Middle Egyptian city of Oxyrhynchus — we only have that sort of information, and then only to a very limited extent, from the 540s *onwards*. Recently published documents have demonstrated that this estate was not expanding in the late sixth century (as many of us once believed), but rather was stable or stagnant, apparently maintaining its cohesion primarily through the imposition of tighter social and managerial control.⁸⁰ Such estate cohesion notwithstanding, it remains the case that the evidence for Egypt would still seem to suggest that the late sixth century saw tenants acquiring greater security of tenancy, such as one might expect in the context of a demographic shift that rendered labour more scarce. Jairus Banaji's study of Egyptian land leases with discernible durations, for example, long ago revealed the proportion of leases of indefinite duration to have increased from roughly one in ten in the early sixth century to almost four out of ten in the late sixth century, perhaps paralleling the greater security for tenants discernible in the legal evidence for the empire at large.⁸¹ These figures are in urgent

⁷⁹ See Keen, *English Society in the Later Middle Ages*, 30–3; Horrox, *Black Death*; and among a vast and still growing literature, L. R. Poos, *A Rural Society after the Black Death: Essex, 1350–1525* (Cambridge, 1991); Christopher Dyer, *An Age of Transition? Economy and Society in England in the Later Middle Ages* (Oxford, 2005).

⁸⁰ Mordechai and Eisenberg rely on Gilles Bransbourg, 'Capital in the Sixth Century: The Dynamics of Tax and Estate in Roman Egypt', *Journal of Late Antiquity*, ix (2016). This article, however, is now obsolete in the light of documents published in Amin Benaissa *et al.* (eds.), *The Oxyrhynchus Papyri: vol. LXXXIV* (London, 2019), especially *POxy* LXXXIV 5457 and 5466. See Peter Sarris, 'Egypt in the Age of Justinian: Connector or Disconnecter?', in P. Sijpesteijn *et al.* (eds.), *Incorporating Egypt: From Constantinople to Baghdad, 500–1000* (Cambridge Univ. Press, forthcoming). For tighter managerial control, see Sarris, *Economy and Society*, 227.

⁸¹ Jairus Banaji, *Agrarian Change in Late Antiquity: Gold, Labour, and Aristocratic Dominance*, 2nd edn (Oxford, 2007), 238 Table 12. The difficulties faced in analysis of the papyrological evidence for leases are discussed by Antti Arjava, 'The Mystery Cloud of 536 CE in the Mediterranean Sources', *Dumbarton Oaks Papers*, lix (2005), 89–91. He notes that in terms of the published papyri available at the time of writing 'after twenty short-term leases between 531 and

(cont. on p. 337)

need of updating as new texts have been edited and published since Banaji produced his account. Until any such updating has taken place, however, the hypothesis still holds.

III

The legal, numismatic and papyrological evidence has been available to historians for decades, and debate on what it does and does not tell us will inevitably persist. But what of the new evidence provided by ancient DNA? How has that been responded to in the recent 'revisionist' literature? The tendency of the revisionist authors has largely been simply to ignore it or — worse — to dismiss it by suggesting that the number of bodies in which bubonic plague has been identified is not, to their mind, statistically significant, asserting that 'this new evidence must be considered against the many cases in which plague was *not* identified across the vast number of burials in Late Antiquity'. However, this rhetorical flourish gives the totally misleading impression that evidence for the plague both *could have been and has been* looked for amongst that 'vast number' of burials.⁸² The technologies to identify and extract plague DNA are, of course, relatively recent and have been relatively expensive. The DNA tends to survive best in very specific climates and contexts, and even when looked for, only a subset of bodies may preserve the type of tissue required for proper

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541, there is not a single securely dated one between 542 and 550', although many of the leases that survive for that period are of unknown length: see Arjava, 'Mystery Cloud', 89. Unfortunately, the duration of leases is not discussed in Kyle Harper, 'People, Plagues, and Prices in the Roman World: The Evidence from Egypt', *Journal of Economic History*, lxxvi (2016). His statistical analysis of the papyri does, nevertheless, show a late sixth-century increase in the real wages of unskilled labourers. Although the price of wheat simultaneously fell precipitously, rents in kind typically associated with arable land, however, appear to have risen. See Harper, 'People, Plagues, and Prices in the Roman World', 819–30. It is possible that the latter phenomenon was due to less productive land falling out of cultivation or having its type of cultivation changed in the context of the plague (and thus may be an optical illusion of the sources). *P.Oxy* LV 3804 lines 149–50 and 162, for example, records a section of vineyard on the estates of the Apion family in the late sixth century to have been turned over to meadow — with viticulture being especially sensitive to shortages in labour. Estate workers may also have been able to negotiate lower levels of estate or labour service, which they provided alongside paying rent: for such labour services, see Sarris, *Economy and Society*, 29–70.

⁸² Mordechai and Eisenberg, 'Rejecting Catastrophe', 29 n. 107.

examination. Of the 456 Early Medieval bodies found at Aschheim in Bavaria, for example, only nineteen were sampled for the analysis and extraction of ancient DNA from their dental remains, and due to the high rate of false negatives partly arising from conservation issues one cannot realistically calculate any epidemiological metrics on the basis of the figures we currently have.⁸³ As the costs of the technology diminish, and techniques advance, more findings will of course be made, but counting bodies is not the point of the work the palaeogeneticists are undertaking, and it is not helpful to the advancement of interdisciplinary approaches to judge their work by such standards.⁸⁴ As with analysis of literary texts, the cavalier offsetting of evidence that we *do* have against a nebulous mass of evidence that we *do not* have, is heuristically unhelpful, to say the least.

Indeed, the discovery of even a few skeletons showing signs of the plague can tell one a great deal if one imagines those victims in their ecological context. For the presence of even a single plague-bearing body (and at Edix Hill, for example, considerably more than that have been found) obliges the historian to consider the whole landscape of plague ecology that would have surrounded that victim: the hundreds, maybe thousands of infected rodents; the millions of infected fleas; the billions of bacteria. When one finds one infected human body, one has to infer a whole host of mechanisms of transmission that must have been in place to bring a non-motile bacterium such as *Y. pestis* to that new location.⁸⁵ It is precisely at this moment that the disciplines of genetics, ecology, archaeology and history suddenly converge as one begins to ask how the disease was brought here. What do we know of historical rodent populations in the area? Did plague-bearing rodents or fleas perhaps travel with commodities or tribute in clothing or grain? What can the historical sources tell us of the possible social and institutional

⁸³ Preiser-Kapeller, *Der Lange Sommer und die Kleine Eiszeit*, 54. The low figure may have been a result of over-concentration on multiple burials from which the Edix Hill team has turned away. I am grateful to Marcel Keller for discussion of this material.

⁸⁴ See the exemplary explanation in Green, 'When Numbers Don't Count'. For further criticism of this and related aspects of the treatment of genetic analysis in the recent 'revisionist' literature, see Meier, '“Justinianic Plague” ... Reply', 185–6, and Alain Bresson 'Fates of Rome', *Journal of Roman Studies*, cx (2020).

⁸⁵ This is a point I owe to Monica H. Green.

contexts to contagion? What does the genetic evidence suggest of co-infections amongst the human population attested at the site?⁸⁶ How might these have amplified the plague's demographic impact? The evidence thus requires an imaginative and truly interdisciplinary response, less fixated with raw numbers.⁸⁷ Certainly, if one were to find the body of an extraterrestrial buried on a Welsh hillside, one would hardly just dismiss it with words along the lines of: 'Well, it is only *one* alien'. One would want to know how it got there, and one would have to work on the assumption that the voyager probably had not travelled alone.⁸⁸

So how do we take this forward? How do we stop being sucked into the vaguely 'Through the Looking Glass' world into which study of the Justinianic Plague has at times recently appeared to be slipping? Alas, to start off with, some very basic issues of historical methodology need to be re-asserted or re-learned. The first point is that we need to set aside the extraordinarily simplistic terms in which debate over the plague has come to be framed and the ways in which those attempting to re-set that debate have sought to construct what constitutes historical 'proof'. It has long been understood, for example, that lowland Britain in the fifth and early sixth centuries underwent major social, economic and political disruption and re-configuration and (seemingly) demographic contraction. All of that is acknowledged, for example, by Chris Wickham, who, as we have seen, is one of those who has always been resistant to assigning any significant role to plague.⁸⁹ Now that we know

⁸⁶ For such questions with respect to the plague in seventh-century England, see J. R. Maddicott, 'The Plague in Seventh-Century England', *Past and Present*, no. 156 (Aug. 1997).

⁸⁷ See Green, 'When Numbers Don't Count'.

⁸⁸ I owe the analogy to John Arnold. For a further recent attempt to dismiss the genetic evidence (as well as to argue against the grain of the literary sources), see Eric Faure, 'Did the Justinianic Plague Truly Reach Frankish Europe about 543 AD?', *Vox Patrum*, lxxviii (2021). Faure is obliged to acknowledge that the Edix Hill finds 'could suggest a plague outbreak', but he goes on to suggest that the sixth-century plague might have been 'very benign to humans'. The author is clearly unaware, however, that if one survives bubonic plague, the bacterial evidence for it gets washed out of the body: if an individual is found to have died *with* bubonic plague, it is very likely he or she died *of* it. At Edix Hill the bubonic plague has been found in individual as well as multiple burials (a point the author also overlooks): see Faure, 'Did the Justinianic Plague Truly Reach Frankish Europe?', 456–7.

⁸⁹ Chris Wickham, *Framing the Early Middle Ages: Europe and the Mediterranean, 400–800* (Oxford, 2005), 139. For a more culturally focused analysis of events in Britain at this time, see Susan Oosthuizen, *The Emergence of the English*

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that bubonic plague was present in sixth-century England, it would be counter-intuitive to deny that plague is likely to have played a part in that process: 'the seeming origin of many Anglo-Saxon kingdoms in the years after c.550 — Bernicia, Deira, Essex and Kent, for instance — could indicate a new start after a demographic and political hiatus'.⁹⁰ Just because plague was not the *sole* cause, it does not automatically follow that it was not *a* cause. This is a core and fundamental error that the recent revisionist literature has repeatedly made. Of course, plague was just one factor in historical change amongst others, but it was clearly a potentially important part of the mix.

Second, of course the plague is likely to have had greater impact on some societies than others, but one cannot assert a universalizing 'minimalist' model from the 'best-case scenarios' any more than one should do a 'catastrophist' model from the 'worst-case' ones. As noted earlier, in those parts of the Early Medieval West that bubonic plague reached in the sixth century, populations were more rural and dispersed than they were in the contemporary Near or Middle East, or would be in the context of the Black Death in the Later Middle Ages, probably allowing for the more rapid abatement of the disease. As a result, the Justinianic Plague is likely to have significantly impacted the longest in those territories where urbanism was at its most deeply entrenched; by the eighth century CE, that primarily meant lands that were under the control of the Umayyad and Abbasid caliphates or, to a lesser extent, Byzantium.⁹¹ In these areas, the survival of plague reservoirs near substantial urban populations is likely to have been conducive to repeated high-fatality recurrences, whilst the disease is likely to have effectively burned itself out elsewhere.

Third, how are we to judge whether a disease is 'consequential' or not? Contrary to the impression one would derive from some of the recent literature, the significance of a historical pandemic should never be judged primarily on the basis of whether it leads to the 'collapse' of the society or

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(Leeds, 2019), and Mateusz Fafinski, *Roman Infrastructure in Early Medieval Britain: The Adaptations of the Past in Text and Stone* (Amsterdam, 2021). The latter account still makes it clear that the period witnessed a major (though not absolute) depopulation of urban sites, for example, whilst eschewing an excessively 'catastrophist' approach.

⁹⁰ Maddicott, 'Plague in Seventh-Century England', 11.

⁹¹ As argued in Sarris, 'Climate and Disease'.

societies concerned; that is an attitude better suited to the world of disease-related computer games, such as the recently popular *Plague Inc.* rather than the realm of historical research.⁹² Let us return to the case of Byzantium: it is entirely conceivable, for example, that the emergency legislation and coinage reforms introduced by the East Roman authorities in the period from 541–5 did indeed succeed in stemming some of the worst administrative ramifications of the plague. Indeed, there is considerable numismatic, legal and documentary evidence that the late sixth century witnessed something of a 'seigneurial reaction' on the part of the East Roman state, whereby the imperial government and both secular and ecclesiastical landowners were effectively able to claw back some of the gains in living standards achieved in the context of demographic attrition by members of the lower strata of East Roman society.⁹³ The resilience of the East Roman state (the strongest state anywhere to the west of China at this time) in the face of the plague, should not, however, be misinterpreted as signifying that the challenge posed by the plague was not real. The consequences of the 'seigneurial reaction' of the late sixth century, for example, would appear to have included rising social tensions across the lands of the Roman Near East that would serve to undermine the East Roman state's political and military cohesion in the face of first Persian and then Arab invasions in the early seventh century.⁹⁴

Fourth, the facile division of scholarship into 'minimalists' or 'maximalists', based on whether the scholars concerned believe populations may have been reduced by less than 25 per cent or more than 50 per cent, or whatever, needs to be abandoned.⁹⁵ Such percentages or figures mean nothing, especially for a period in which all that historians can realistically hope to proffer are guesstimates and subjective probabilities.⁹⁶ As we

⁹² <<https://www.ndemiccreations.com/en/22-plague-inc>> (accessed 26 July 2021). Admittedly, this approach has perhaps been informed by overly monocausal and populist accounts of historical change such as Jared Diamond, *Guns, Germs and Steel: The Fates of Human Societies* (London, 1997).

⁹³ Sarris, *Economy and Society*, 222–7.

⁹⁴ *Ibid.*, 228–34.

⁹⁵ Mordechai *et al.*, 'Justinianic Plague', 25546 (ascribing to 'maximalists' 'belief in mortality rates of '25% to 60%').

⁹⁶ See the highly thought-provoking essay by Myles Lavan, 'Epistemic Uncertainty, Subjective Probability, and Ancient History', *Journal of Interdisciplinary History*, 1 (2019).

have seen, the loss of 15 per cent of the population in a highly fiscalized state such as the East Roman Empire in the sixth century is likely to have been far more destabilizing than the loss of twice that percentage or more of the population in a less fiscalized society such as contemporary East Frankia or Anglo-Saxon England, where political elites primarily depended on the direct exploitation of the land rather than tax revenues. As the great historian of plague in the Islamic world, Larry Conrad, long ago put it:

The real challenge confronting the historian is not to estimate the specific range and magnitude of overall mortality, which were for the most part unknown even to the survivors and can hardly be discovered by modern researchers on the basis of the information available thus far, but rather to determine the impact of this mortality on society.⁹⁷

These are all issues of fundamental methodology, which no professional historian of the Early Middle Ages should be (or should have been) allowed to forget. Beyond these, scholars need to re-focus on what both the older and newer sources of evidence reveal when read synthetically. As we have seen, the literary sources provide a rough chronological and geographical timeline and itinerary for the Justinianic Plague from Pelusium to Ireland. The genetic evidence has now added much more detail to the whence, when, where and whither of the disease. At the time of writing, for example, it now looks entirely conceivable that the disease was introduced to Frankia via lowland Britain (the westernmost parts of which remained in economic contact with the Mediterranean until the mid sixth century, when, in terms of the plague, a chronologically significant contraction in East–West trade appears to have occurred).⁹⁸ If that should be the case, we need to look more closely and in finer detail at how the plague would have been transmitted to Britain. The probable date range ascribed to the Edix Hill finds on the basis of radio-carbon analysis and archaeological examination of artefacts, one should note, currently places them within a span extending from the later

⁹⁷ Lawrence I. Conrad, 'Epidemic Disease in Central Syria in the Late Sixth Century: Some New Insights from the Verse of Ḥassān Ibn Thābit', *Byzantine and Modern Greek Studies*, xviii (1994), 13.

⁹⁸ For references, see Peter Sarris, *Empires of Faith: The Fall of Rome to the Rise of Islam, 500–700* (Oxford, 2011), 200–1.

fifth through into the earlier sixth century.⁹⁹ It is thus conceivable that the Justinianic Plague may have reached the British Isles *before* it was discerned at Pelusium (diseases, of course, always have a tendency to spread more quickly than they are spotted, something further amplified by the nature of the patchy archive for premodern times). It may even have arrived via a different route.

We thus need to look more closely for where the plague was prior to its arrival in the Mediterranean. Although climatic conditions for the preservation of ancient DNA are far from ideal in East Africa, southern Arabia and the Middle East (and political conditions for conducting excavations no less so), trying to reconstruct the movement of plague from Central Asia, via the Red Sea or through other routes prior to and during the Age of Justinian is a major desideratum.¹⁰⁰ The advances in our genetic understanding of the plague, in other words, need to be harnessed to facilitate our understanding of it as an Afro-Eurasian phenomenon, encompassing the histories of Central Asia, China, Africa, Arabia and the Middle East as well as Europe and the Mediterranean.¹⁰¹ As in England, we may well find evidence for the Justinianic Plague in locations (such as the Crimea or Baltic) or periods (such as the fifth century) with respect to which the literary sources are entirely silent.¹⁰² Our

⁹⁹ See n. 20 above and McCormick, 'Gregory of Tours on Sixth-Century Plague and Other Epidemics', n. 188. One is reminded of the outbreak of an earlier 'memorable plague' recorded by the later sixth-century British historian, Gildas (who seems to have composed his historical work c.536–7). See Gildas, *De Excidio Brianniae*, 2; David Woods, 'Gildas and the Mystery Cloud of 536–7', *Journal of Theological Studies*, lxi (2010); John Wachter, *The Towns of Roman Britain*, 2nd revised edn (Abingdon, 1995), 412–21. As early as the 1970s, Wachter had anticipated the possibility that one day bacterial evidence for the plague would be forthcoming for late or sub-Roman Britain. Alas, he did not live long enough to see his hunch proved to be correct. See Wachter, *Towns of Roman Britain*, 421.

¹⁰⁰ For a recent attempt to cast light on the plague in the Middle East (Syria) through combined genomic and archaeological analysis, see Megha Srigyan *et al.*, 'Bioarchaeological Analysis of One of the Earliest Islamic Burials in the Levant', *bioRxiv* preprint (3 Sept., 2020), 10, <https://doi.org/10.1101/2020.09.03.281261>.

¹⁰¹ For the existing somewhat limited textual evidence for the Justinianic Plague with respect to China, see Sarris, 'Climate and Disease', 524–5.

¹⁰² For possible earlier occurrences of bubonic plague in Libya, Egypt and Syria recorded by the Roman medical author Rufus of Ephesus, see Sarris, 'Climate and Disease', 521 (positing an earlier focalization of the disease in East Africa), and Monica H. Green, 'Putting Africa on the Black Death Map: Narratives from Genetics and History', *Afriques*, ix (2018). Just prior to publication new finds of

understanding of the chronological and geographical spread of the Black Death, for example, has recently been transformed in precisely this way by closer attention to the genetic history and phylogeny of the disease, and by closer consideration of how it may have affected and moved through nomadic populations, as opposed to sedentary ones.¹⁰³ It may be significant, in this respect, that the advent of both the Justinianic Plague and the Black Death were preceded by the expansion of nomadic empires across Eurasia (the Huns in the fourth and fifth centuries, and the Mongols in the thirteenth), uniting regions where the plague had become endemic amongst the rodent population to those inhabited by settled and urbanized human populations.¹⁰⁴ What might this tell us about modes of transmission of the sixth-century disease? In the Middle East, in particular, did the Justinianic Plague *really* fade away in the mid eighth century, as is commonly supposed, or did it in fact last longer there and continue to have a cumulative impact on the history of the region into the ninth century and beyond?¹⁰⁵

Perhaps most excitingly, the genetic evidence will also lead in directions we can scarcely yet anticipate, and historians need to be able to respond to such developments positively and imaginatively, rather than with a defensive shrug. In particular, issues raised by palaeogenetic work are likely to be increasingly turned into laboratory-based research questions from which historians can potentially learn much (examining the biological impact and legacy of different historical variants of the plague, and so on). By way of example, in June 2020, a team of genetic scientists reported a potentially remarkable series of findings.¹⁰⁶ On the basis of their research, focused on populations in modern

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Justinianic plague victims were indeed reported near the Russian Black Sea coast and the highlands of the Lebanon.

¹⁰³ Monica H. Green, 'The Four Black Deaths', *American Historical Review*, cxxv, no. 5 (2020).

¹⁰⁴ *Ibid.* For Late Antiquity as a period of unprecedented Eurasian connectivity, generated by the expansion of nomadic empires from the late fourth century onwards, see Richard E. Payne, 'The Silk Road and the Iranian Political Economy in Late Antiquity: Iran, the Silk Road and the Problem of Aristocratic Empire', *Bulletin of the School of Oriental and African Studies*, lxxxi, no. 2 (2018).

¹⁰⁵ As suggested in Michael G. Morony, 'For Whom Does the Writer Write? The First Bubonic Plague Pandemic According to Syriac Sources', in Little (ed.), *Plague and the End of Antiquity*.

¹⁰⁶ Yong Hwan Park *et al.*, 'Ancient Familial Mediterranean Fever Mutations in Human Pylori and Resilience to *Yersinia pestis*', *Nature Immunology*, xxi (2020).

Turkey (Byzantine Anatolia and Asia Minor), but also reflected elsewhere in the Middle East (such as amongst Armenians and Druze), genetic mutations that are associated with a propensity to 'familial Mediterranean fever' have been found, which appear to have been positively selected reproductively across the centuries in the region because they confer heightened resistance to *Y. pestis*. The episodes most associated with the spread of the mutations that confer such resistance seem to have coincided first with the Justinianic Plague and then the Black Death, with the bubonic plague remaining thereafter in the Middle East until the nineteenth century, thereby intensifying the process.¹⁰⁷ The effects of both the Justinianic Plague and then the Black Death appear, in other words, to have left a genetic imprint on modern Middle Eastern populations, just as plague can also be seen to have been memorialized ritually and institutionally amongst them:¹⁰⁸ in the third week before Lent each year, for example, Christian populations in Syria and Iraq, who are the heirs to the communities who inhabited the region in the sixth century, continue to observe the three-day 'Fast of Nineveh', which entered devotional practice in the late sixth century in response to the arrival of the Justinianic Plague in Sasanian Mesopotamia, probably introduced under the Catholicos Ezekiel (576–85).¹⁰⁹

And the memory of the Justinianic Plague is, of course, an additional and important area that also invites closer and more detailed examination. In both the Early Medieval Irish and Early Islamic worlds, for example, the era of the Justinianic Plague would be remembered as one of unprecedented mortality and pestilence.¹¹⁰ In certain of the Islamic accounts, for instance,

¹⁰⁷ *Ibid.*, Table 1d.

¹⁰⁸ After a manner expressly denied by Mordechai *et al.*, 'Justinianic Plague', 25547 ('contemporaries ... did not memorialize plague').

¹⁰⁹ I am grateful to Philip Wood for elucidation of this point. See the *Chronicle of Seert*, II. 100–1; Lawrence I. Conrad, 'The Plague in the Early Medieval Near East' (Princeton Univ. Ph.D. thesis, 1981, 125–6); Rifaat Ebied and David Thomas, *The Polemical Works of 'Alī al-Ṭabarī* (Leiden, 2016), 165 with n. 237.

¹¹⁰ For Ireland, see especially Ann Dooley, 'The Plague and Its Consequences in Ireland', in Little (ed.), *Plague and the End of Antiquity*, and David Woods, 'Acorns, the Plague, and the "Iona Chronicle"', *Peritia*, xvii–xviii (2003–4). For the Early Islamic world, see Michael W. Dols, 'Plague in Early Islamic History', *Journal of the American Oriental Society*, xciv (1974); Conrad, 'Plague in the Early Medieval Near East': for further items by Conrad, see Green, 'Justinianic Plague Bibliography', 82. It is striking that this literature is completely ignored in the recent 'revisionist' literature despite its repeated evocation of the concept of 'interdisciplinarity'.

one particularly severe outbreak of the disease would be known as 'the Plague of the Torrent', because of its apparently unique capacity to sweep away so much of the population.¹¹¹ In a world in which death and disease were even more omnipresent than they are today, such embedded memories are surely telling. Again, such memories of the plague are perhaps more revealing of its contemporary impact than any amount of supposed number crunching, statistical speculation or computerized searches. In particular, they remind us that we perhaps need to focus less on the texts written in Latin and Greek, from Byzantium and the West, and do more to draw upon the rich testimony, in particular, of the sources written in Arabic and Syriac, on which a great deal of work has been done by scholars such as Michael Dols in the 1970s, Larry Conrad in the 1980s and 1990s, or, more recently, Justin Stearns, but in which only, really, historians of Medicine have shown much interest (partly because the Arabic authors in particular sought not only to collect, codify and analyse occurrences of the plague, but also to describe the disease medically).¹¹² To conclude, the 'Justinianic Plague', despite its most commonly attributed soubriquet, was never a purely or even primarily Roman phenomenon, and scholarship on it cannot be left to scholars of Roman Late Antiquity alone.

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¹¹¹ Lawrence I. Conrad, 'Arabic Plague Chronologies and Treatises: Social and Historical Factors in the Formation of a Literary Genre', *Studia Islamica*, liv (1981), 67. The 'Plague of the Torrent' is to be dated to the year 688–689 CE (= 69 AH).

¹¹² For Dols and Conrad, see n. 110. For Stearns, see Justin K. Stearns, *Infectious Ideas: Contagion in Premodern Islamic and Christian Thought in the Western Mediterranean* (Baltimore, 2011), esp. ch. 1. For medical descriptions in the Arabic sources, see Lawrence I. Conrad, 'Ta'ūn and Wabā': Conceptions of Plague and Pestilence in Early Islam', *Journal of the Social and Economic History of the Orient*, xxv, no. 3 (1982). Within early Islam, uniquely for a disease, death from bubonic plague bestowed the status of martyr.