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ARTICLES

Mobility and Roman Britannia

David Roberts[1], Leah Reynolds[1], Rachèl Spros[1], Sophy Charlton[2] and Richard Madgwick[1]

[1]Cardiff University; [2]University of York
Corresponding author: David Roberts; robertsd30@cardiff.ac.uk

Abstract

This article reviews the evidence for mobility within, and into, the Roman province of Britannia, assesses the current state of the field and sets out how current approaches should be developed and improved. Mobility was foundational to the Roman empire and its provinces, and this paper demonstrates that Britannia provides a rich case study of the breadth, complexity and challenges of the datasets, methodologies and history of investigation of this central topic to understanding the Roman world. The review provides overviews of textual, epigraphic, material and bioarchaeological evidence and interpretive frameworks. Finally, it sets out a vision for holistic and ethical future archaeological research on this topic, especially in light of the bioarchaeological revolution in recent decades and rapidly developing datasets.

Keywords: mobility; isotope analysis; aDNA; epigraphy; historiography; material culture; Roman Britain

Introduction

Rome's rise to power stimulated a major increase in mobility in Europe, west Asia and north Africa. From the armies that conquered and annexed new territories and provinces, and the episodes of mass enslavement and population dispersal that could follow,[1] to the vast ensuing network of enslaved people, merchants, and craftspeople, movement and mobility can be seen to be defining characteristics of the Empire. For this reason, the mobility of people in the ancient world is a long-standing preoccupation of archaeology. In the nineteenth and early twentieth centuries, archaeologists drew on culture-historical invasion, migration and diffusion models of mobility, and were often strongly influenced by contemporary modern imperial contexts.[2] More recently, scholars have developed more complex understandings of mobility and how it can be identified in the archaeological and historical record. This paper will review the evidence for mobility in the Roman province of Britannia, as an example of how the study of movement and migration in one former region of the Empire has been shaped by taphonomy, historiography and disciplinary frameworks. Here we prefer the term mobility to migration, reflecting the variable character and scale of people's short-, medium- and long-term movement in the ancient world. Connectivity, an

[1] Roymans 2019; Fernández-Götz *et al.* 2020.
[2] Hingley 2000.

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affordant property of the topography of social landscapes,[3] is vital for its role in shaping mobility, but will not be considered at length here for reasons of brevity.

Mobility has been foundational to the study of Britannia, underlying the earliest antiquarian accounts of Roman remains interpreted in the light of textual sources regarding invasion and occupation.[4] Archaeological narratives of the Roman period in Britain through the nineteenth and twentieth centuries also focused strongly on themes of invasion, cultural influence and migration.[5] Towards the end of the twentieth century, as critiques of Romanisation — which is in effect a model of migration followed by diffusion — began to take hold, migration and mobility faded from the foreground of debate.[6] This hiatus was short-lived, however, as increasing theoretical interest in identity,[7] alongside the scientific revolution in bioarchaeological analysis of human skeletal remains through isotope analyses and ancient DNA (aDNA), stimulated new investigations of who people were and where they came from.[8]

Despite this, the last decade or more of scientific study of mobility in archaeology has primarily focused on prehistoric and early medieval material.[9] Major discussions surrounding the ethics, methodologies and disciplinary implications of new scientific approaches are predominantly happening outside of the Roman period,[10] although Late Antiquity provides a partial exception, spanning traditional boundaries of late Roman and early medieval studies.[11] The notable exception to this was the *Roman Diasporas* project, a trail-blazer in Roman archaeology, undertaking large-scale isotope analysis of three urban populations and one military settlement from Britannia and revealing notable diversity and complexity in those people's mobility and identities.[12] Since *Diasporas* came to an end in 2012, scientific studies of mobility in Britannia have not been conducted at the scale, or frequency, of cognate

[3] *Sensu* Horden and Purcell 2000; see also Woolf 2016.

[4] Hancock 2002; Hingley 2008.

[5] Haverfield 1912; see Hingley 2000 and 2008 for critical evaluation of earlier interpretive paradigms. Here we understand migration in the Roman period to be defined following de Ligt and Tacoma (2016b, 4) as the 'movement of humans by which they change their residence from one place to another on a permanent or semi-permanent basis. Migration is thus studied independent of agency or legal status'. For clarity, like de Ligt and Tacoma, we also include in this definition permanent or semi-permanent movement of military personnel or enslaved persons, despite these in Roman studies having historically developed as different subfields from that of migration. We therefore argue that migration is a type of mobility, and that as discussed above, mobility is a more holistic term, which we prefer for the purposes of our research questions.

[6] Millett 1990, for example, does not discuss migration or mobility in his treatment of population estimates, and neither term is present in the index of the most influential synthesis of Britannia for several decades. This would be inconceivable today. See latter parts of Gardner 2025 for consideration of the underlying theoretical issues in late Roman Britannia.

[7] Mattingly 2004; 2006; Revell 2009.

[8] For early isotope work, see Budd *et al.* 2001 and Richards *et al.* 1998; for early aDNA work, see Richards *et al.* 1993; Gowland 2004 provides a valuable palaeopathological framing of the study of identity in Britannia, and it is notable to today's reader how much has changed since Gowland (2004, 135) rightly stated that 'funerary remains per se have been one of the least exploited forms of archaeological evidence for the Roman period'. Gowland 2017 provides a thorough review of how rapidly Romano-British bioarchaeology shifted in scale and scope between her 2004 and 2017 papers, and this paper may demonstrate a similar expansion since 2017 in terms of isotope and aDNA work.

[9] Parker Pearson *et al.* 2019; Armit and Reich 2021; Gretzinger *et al.* 2022; Hamerow *et al.* 2024.

[10] Kristiansen 2014; Booth 2019; Hakenbeck 2019; Källén *et al.* 2024; Smyth *et al.* 2025; Sørensen *et al.* 2025; see Prowse 2016 for an example of a Roman bioarchaeologist having to justify the basic methods of isotope analysis in the face of sustained critique.

[11] Harland 2021; Hakenbeck and Büntgen 2022.

[12] Eckardt 2010; Eckardt *et al.* 2012; Gloucester, Lankhills, York and Catterick were the key case studies of the project. See below for detailed discussion and full references.

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research in the early medieval, or, especially, prehistoric periods.[13] Mobility in Britannia has continued to be explored through traditional approaches of analysis of epigraphy, burial rites and material culture. When scientific approaches such as isotope analysis and aDNA analysis are utilised, they are rarely undertaken in an integrated framework with other categories of evidence — or indeed each other — and only in relatively small-scale studies, usually of a site or individual burial.

The lack of application of scientific approaches may be due in part to the inheritance of Roman archaeology's unique disciplinary origins and exceptionally rich artefactual assemblages. The disciplinary prominence of epigraphy and ubiquity of artefactual material, some of which remains linked in the collective professional archaeological consciousness to migration and/or personal identity, has perhaps meant that large-scale scientific investigation of the people associated with such assemblages has been seen by some as less urgent than in prehistory.[14] Prehistory and the early medieval period do not have the Roman inheritance of a large body of textual and epigraphic evidence, even though the overwhelming majority of this material is from the Mediterranean, rather than Britannia. Literary evidence relating to Britannia is sparse and often unreliable,[15] although the province has produced a small but significant corpus of epigraphy.[16] Nevertheless, discussions of some aspects of mobility in Britannia have continued without bioarchaeology, using a combination of artefactual evidence, epigraphy and texts, and analogy with the Mediterranean.[17]

It should also be noted that mobility lies at the centre of increasingly hostile contemporary politics, into which studies of ancient mobility have been drawn.[18] This is particularly true of the Roman period, which has a comparatively high profile in public consciousness and has historically played an important role in the formation of British national identities.[19] Studies of mobility using aDNA and isotope analysis which have identified diversity in Roman Britain have sparked controversy and right-wing criticism.[20] Though comparatively little aDNA work has been undertaken in Roman Britain until very recently,[21] aDNA studies of other periods and regions have been subject to both backlash from, and weaponisation by, the far right.[22]

As archaeologists we are ethically, morally and professionally obliged to set out narratives of the past for the public insofar as we are able to recover it, with appropriate caveats[23] and acknowledging our own biases. To present archaeological or scientific data with no

[13] See note 9, also Olalde *et al.* 2018; Fowler *et al.* 2022; Patterson *et al.* 2022; Bleasdale *et al.* 2025; these are just a selection of key examples of such work.

[14] This effect has occurred in a similar manner to how the bounteous coin assemblages from excavations in Britannia have delayed the widespread adoption of detailed chronological modelling and radiocarbon dating of complex stratigraphy in the Roman period (P. Marshall pers. comm., 2025).

[15] Gerrard 2013, 17–26.

[16] https://romaninscriptionsofbritain.org/; Bowman and Thomas 1994; 1996; 2003; Bowman *et al.* 2010; 2011; 2019; McKie 2022; Tomlin 2024; the biases of the epigraphic dataset are discussed below.

[17] Mattingly 2006 provides an example of this approach from just prior to the explosion of bioarchaeological analysis of mobility; more recently, Symonds 2020 writes extensively about mobility without being able to draw on any evidence from bioarchaeology due to a lack of such work around Hadrian's Wall; Cooley 2023 discusses mobility and immigration to *Londinium* extensively in the course of a vivid exploration of Latinisation and literacy in the early city, yet only refers to bioarchaeological evidence from a single burial.

[18] Bonacchi *et al.* 2018; Hingley 2019.

[19] Hingley 2000.

[20] Eckardt and Müldner 2014, 215–16; Shaw *et al.* 2016; Beard 2017; Hingley 2019, 255; York Museums Trust 2021.

[21] Scheib *et al.* 2025; Walton *et al.* 2026; and NB the reaction to Walton *et al.* in the media.

[22] Booth 2019; Frieman and Hofman 2019; Hakenbeck 2019.

[23] See, for example, the careful critique by Smyth *et al.* 2025 of recent aDNA-based claims of an incestous dynastic elite for later Neolithic Ireland.

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proposed narrative of the past is to do no service to the discipline or to the public, and provides little justification for the destructive process of archaeological research. Without these appropriately caveated narratives, others will uncontestedly occupy that narrative space in our national and international conversations and debates. Here we aim to provide overviews of the most relevant categories of evidence for the character of mobility in Britannia, how the study of mobility has developed over time, and where it might go in future. While by no means exhaustive, this is intended to provide a firm footing for future endeavours by Roman archaeologists to develop work on the topic, including our own efforts.

Historical accounts of mobility

Mediterranean textual accounts leave little doubt that mobility was frequent, especially for the elite men who wrote the overwhelming majority of sources. The detailed character of mobility is considerably more complex to understand. It appears that much movement was local and short-term, whether due to labour commitments (transhumance, war, trading, or elite travel between multiple residences) or social obligations (visiting family, friends, or patrons, religious journeys, or civil commitments).[24] Elites, those connected to the military and enslaved people were likely to have experienced longer-term mobility, over longer distances, but patterns are challenging to discern, and some orthodoxies are being challenged by scientific studies.[25] Maritime transport was the key mode of longer-distance travel, but was highly seasonal, being concentrated in the sailing season of May to September. In a recent overview, Woolf has argued for the significant majority of the Roman period Mediterranean population being 'stayers', with a relatively small percentage of 'movers'.[26] He emphasises that this is not a binary; stayers may well be locally mobile and would have been aware of wider connectivity of others in their communities. The picture that emerges from his summary is one of a highly connected Roman Mediterranean world where only around 5% of the population were mobile beyond their immediate locality. However, these individuals and groups had significant transformative effects on communities they encountered. Recent bioarchaeological work in the Mediterranean has begun to demonstrate great variability in the proportion of the population who could be considered 'movers', with much higher rates of mobility at Portus and in imperial period Rome than in rural areas, as might be expected, but also significant differences between other urban sites.[27] Sample sizes remain small, and combined aDNA and isotope studies very rare, however, limiting the impact of these results in transforming narratives in the wider field. Nevertheless, they provide an important challenge to narratives based primarily on epigraphic and textual evidence, which reproduce strong gender and class biases.

For Britannia, textual sources allow us glimpses into mobility, some of which echo the consensus on the character of mobility in the Roman Mediterranean. The Claudian invasion saw significant numbers of legionaries and auxiliaries cross to Britannia, although estimates vary between 30,000 and 40,000 soldiers.[28] The overall number of people moving into Britannia was probably somewhat higher, when one considers accompanying enslaved people, merchants, camp followers and families, albeit these may not have followed until a little later. This was the largest textually attested mass movement of people in the early

[24] Woolf 2016 for an overview; Pudsey and Vuolanto 2022 and Gerrard 2023 provide stimulating recent examples of different approaches to mobility beyond bioarchaeology.

[25] E.g. Perry *et al.* 2011 re the origins of a mining population in Jordan, Roman Syria.

[26] Woolf 2016.

[27] Nikita 2024 provides a thorough and balanced summary of recent bioarchaeological research on mobility during the Hellenistic and Roman periods in the central and eastern Mediterranean.

[28] Mattingly 2006; Hingley 2022.

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Roman period relating to Britannia. The other main examples are the invasions by Julius Caesar,[29] the possible movement to Britain of the Gallic leader Commios and his followers in the Late Iron Age as a consequence of the Gallic Wars,[30] and, later, the movements of the Imperial field army to Britain in the third and fourth centuries, of which Septimius Severus' army was the largest.[31] Also notable in the literature is Marcus Aurelius' transfer of 5,500 Sarmatians to Britannia in the A.D. 170s, especially given the recent discovery of an individual of late second-century A.D. date with Sarmatian ancestry in Cambridgeshire.[32] Mobility from Britannia into mainland Europe is attested in the early Roman period through redeployment of major military units, and more often in the later period by the crossing of troops from Britain to the continent in support of various claimants of the imperial throne.[33] The majority of these episodes are military, which reflects both the bias of written sources towards military history and the historical reality that a large proportion of the empire's resources were dedicated to mobilising the army according to the priorities of the day; this military-associated large-scale movement regularly included large numbers of people from defeated communities.[34]

Beyond these larger-scale movements of people, a handful of individual journeys to and from Britannia are attested in the literary evidence. Other than those by Emperors, perhaps the most famous are those of Paul 'the Chain' in the mid-fourth century,[35] and although somewhat after the end of Roman imperial control of the province, Saint Germanus of Auxerre in A.D. 429 and possibly a second occasion some years later.[36] There are very few mentions of more ordinary journeys to or from Britannia in literary evidence, and thus we turn to epigraphy; the Vindolanda tablets, for example, show us that soldiers from the first cohort of Tungrians, based at Vindolanda, are recorded as being in Gaul.[37]

Epigraphy and textual sources

Epigraphy has been one of the primary means of engagement with mobility in the Roman world, not least because it is one of the only ways in which we can engage with biographical details of named individuals. In inscriptions individuals could represent themselves (or be represented by others), conveying what they wished to be known about their identities, their origins and their life courses. While published estimates of the total number of inscriptions from Britannia differ significantly,[38] and the body of evidence is comparatively small for a Roman province, it is well documented.[39] It is shaped by the limited spread of the epigraphic habit geographically, culturally and socially, and by practical factors such as the availability of good-quality stone for carving and the survival, reuse and

[29] Hingley 2022.

[30] Hingley 2022; though NB Bleasdale *et al.* 2025, who found no isotopic evidence for cross-channel mobility at the Late Iron Age cremation cemetery at Westhampnett, Sussex.

[31] Hanson 1980, 140–1; Gerrard 2013, 19–26.

[32] Silva *et al.* 2024.

[33] Although post-Roman, the crossing of a large military force to Gaul under Riothamus from Britain in the fifth century might reasonably be considered within the same sphere of activity: Gerrard 2013, 259.

[34] Duncan Jones 1994; see Boatwright 2015 re population transfers, albeit with an earlier Roman focus.

[35] Amm. Marc. XIV.V.

[36] Barrett 2009.

[37] *Tab. Vindol.* 154; *Tab. Vindol.* 857.

[38] The *LatinNow* dataset contains 2,869 stone inscriptions for Britannia (Mullen 2024, 356) drawing on published inscriptions in *RIB* and *Britannia*; Lloris 2023 gives a figure of 15,000, due to incorporating graffitos, etc.

[39] Collingwood and Wright 1965; 1991-5; Tomlin *et al.* 2009; also available at https://romaninscriptionsofbritain.org

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recovery of inscriptions in the archaeological record.[40] Epigraphic studies which have considered inscriptions solely as texts have also sometimes been disciplinarily isolated, though interdisciplinary approaches increasingly situate epigraphic materials within their wider archaeological, social and cultural context.[41]

The distribution of surviving inscriptions from Roman Britain (both funerary and otherwise) is strongly correlated with military sites, veteran colonies and other towns with military or official associations.[42] The epigraphic habit does not seem to have been very widely adopted outside of these settings, perhaps because there had been no pre-existing tradition of writing or epigraphy in Britain before the conquest.[43] The practice of epigraphy was therefore further restricted primarily to the Latin language — though the few exceptions to this rule are sometimes particularly illustrative (e.g. Barates, discussed further below). These restrictions mean that epigraphic studies of mobility have of necessity focused primarily on military and urban contexts. Tombstones dedicated to soldiers comprise the majority of such inscriptions in Britannia.[44] A study of public votive epigraphy similarly found that where the occupation of the dedicant could be identified, 43% of the dedications were made by soldiers.[45] Soldiers were an inherently mobile population, particularly in the early Roman period (somewhat less so as the frontiers settled, units became more stationary and local recruitment increased). Levels of mobility are difficult to assess, but where soldiers' origins are recorded they are diverse: Rowland's analysis of 94 inscriptions records 69 unique places of origin from across the empire.[46] Origins differed depending on the form of service to which a soldier was recruited. The requirement of citizenship meant that for legions in the western provinces recruitment was initially largely drawn from Italians and those of Italian descent, while auxiliaries were primarily recruited from particular regions and drew from local recruitment.[47]

In funerary inscriptions, too, it was common among certain groups — particularly soldiers, officials and traders — to record the ethnic, provincial, or regional origin of the deceased.[48] While these dedications were made by the living, it is an indication that the deceased's origins were known and asserted during life, and it has been noted that where the identity of the living dedicant is known, this was often similar to that of the deceased.[49] Interestingly, figurative tombstones dedicated by auxiliaries often asserted a visibly Roman military identity, emphasising their belonging to the community of the Roman army and their achievement of citizenship, such as the auxiliary veteran Dannicus, originally from Germania Superior but commemorated in Cirencester, whose tombstone shows him riding down his enemies,[50] or Crotus, veteran of the Fourth Cohort of Gauls, shown possibly holding a will which only a Roman citizen had the right to contract.[51]

Individuals with origins outside of Britannia also form a significant sub-group of the civilian corpus of inscriptions.[52] Recording a place of origin or ethnic affiliation clearly

[40] Hope 1997, 247.

[41] For example, the ERC-funded project *LatinNow* and its outputs (e.g. Mullen 2023; Mullen and Woudhuysen 2023; Mullen and Willi 2024); see also Cousins 2022.

[42] Mullen 2023, 21.

[43] Cooley 2023; though NB the use of the Latin alphabet on Late Iron Age coinage: Creighton 2000.

[44] Mattingly 2008 notes 200 tombstones which can be attributed to soldiers; Redfern and Pearce note around 150 (2024, 51).

[45] Root *et al.* 2024, table 1.

[46] Rowland 1976, 444–6, analysing inscriptions recorded in Biró 1975.

[47] Haynes 2013.

[48] Noy 2010, 13.

[49] Hope 1997, 251.

[50] *RIB* 108; Hope 1997, 253.

[51] *RIB* 620; Tomlin 2018, 226–7.

[52] Mattingly 2008, 62.

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played an important role in the assertion of identity for those who found themselves living and working far from the place in which they were born. At Silchester, three inscriptions referring to a *collegium peregrinorum* (an association for non-citizens) perhaps suggest the importance of this self-definition.[53] However, it should be noted that the proportionally higher representation of immigrants to the province in Romano-British epigraphy is influenced by a range of factors and is almost certainly not representative of the broader population. People from other parts of the empire where the epigraphic habit was more established were more likely to dedicate inscriptions, and aligning with a non-local origin in this frontier province may have indicated a higher status.[54]

The mobility of Britons within Britannia is noted epigraphically only in rare instances; the best known example is the funerary monument of Regina, a Catuvellaunian freedwoman commemorated at South Shields.[55] The inscription and figurative depiction of Regina's memorial articulate both her origins and status at the time of her death.[56] It was dedicated by her husband and former owner, Barates, who was from Palmyra; the inclusion of a Palmyrene coda to the monument's Latin inscription suggests that this identity remained important to him.[57] The non-local origins of both Regina and Barates provide a tantalising glimpse into the extent of mobility in Britannia, particularly at its frontiers, and the complex relationships and power asymmetries that could arise from the interactions of mobile individuals.[58]

Inscriptions commemorating individuals with British ethnicities or places of origin are largely associated with the military, but this limited body of evidence is probably not representative of the real extent of Britons' mobility either within or outside the province.[59] Epigraphic evidence for mobility of Britons outside of Britannia is similarly limited, with *c.* 40 inscriptions and military diplomas of individuals with British origins known from the rest of the empire.[60] Again, this does not represent the full extent of the mobility of British individuals throughout the Roman empire, only the surviving evidence.

The Roman state generated a vast quantity of written documentation, the remnants of which survive in rare taphonomic contexts, given that biodegradable materials were normally used.[61] Literacy was not restricted to the official and military class, and though estimations of the extent of literacy among the population vary widely, written evidence offers another key dataset for the exploration of mobility in the Roman period.[62] London's Bloomberg Tablets provide early evidence; dating from the A.D. 50s to 80s, they provide evidence for around 92 named persons, all male, many of whom can be identified as mobile, though their identification as such is largely contextual: members of non-citizen auxiliary units of the Vangiones and Lingones, or citizen officers such as Julius Classicus, commander of the Sixth Cohort of Nervians.[63]

The Vindolanda tablets are the most famous corpus of written documentation of the Roman period in Britannia and provide contemporary evidence of the broad inter- and intra-provincial networks that characterised the Roman period, and of the army as a driver of mobility during this period. The documents date to the late first century and early second

[53] Frere and Fulford 2002; Eckardt 2012.
[54] Noy 2010, 25.
[55] *RIB* 1065.
[56] Carroll 2012.
[57] Mullen 2012, 4.
[58] Phang 2004.
[59] Mattingly 2008, 65; Noy 2010, 19; see Tacoma *et al.* 2016 for an example of long-distance British mobility.
[60] Ivleva 2014, 218–19.
[61] Pearce 2004, 47.
[62] Cooley 2023; Tomlin 2024.
[63] Tomlin 2016, 54.

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century, during which Vindolanda was garrisoned by Tungrian and Batavian auxiliaries; more than 60 known texts relate to the correspondence of Flavius Cerialis, the prefect of the Ninth Cohort of Batavians.[64] Auxiliary units were composed of non-citizen soldiers, often recruited from the same community or region (at least initially — while such recruitment characterised the early formation of auxiliary units, this practice did not persist through the life of the unit[65]) and intentionally stationed away from their regions of origin.[66] As well as strengthening the Roman army, targeted recruitment from particular groups also removed young men of fighting age from their home communities — an example of the wider Roman imperial practice of forced mobility as a tool of state control.[67] The distribution of military diplomas across the Roman world shows that some auxiliary troops settled in the provinces to which they had been posted after their term of service was complete, though others returned to their homelands. This serves as a reminder that while mobility is often conceptualised as a binary between two points of a journey, movement in the Roman world need not entail a permanent exile and the individual lifecourse could encompass a range of mobilities.[68]

Though the Vindolanda tablets largely deal with soldiers and military affairs, there are references to other mobile individuals. Notably, one individual identifies himself as a *hominem trasmarinum*, a man from overseas.[69] The letter is an appeal for redress for a beating received from a centurion, and the petitioner's distinguishing of himself as from overseas may be an attempt to contrast his higher status and rights (whether legal or perceived) with that of the local British population, who are referred to derogatorily elsewhere in the tablets as *Brittunculi*, 'wretched little Britons'.[70]

Beyond the Vindolanda tablets, some curse tablets hint at mobility into Britannia, chiefly through names. Almost all the personal names used therein are Latin, Celtic, or a combination of the two, and it is of course impossible to discern whether these individuals originated in Britannia or otherwise, although they should not necessarily be assumed to be locals.[71] 'Roman' names might be borne by those from Britannia or anywhere else within the empire, or even beyond, and some of the 'Celtic' names from tablets are paralleled in other provinces.[72] A curse tablet from the south Wiltshire temple bears the unusual Greek name of Hegemon, suggesting a non-native of Britannia, like the four names of Greek origin in the Bath tablets, and various Greek names from Roman London and elsewhere in the province.[73] Greek names appear infrequently but regularly in other epigraphic media, although not all the people who bore them were necessarily Hellenic; Webster reminds us that enslaved people might be given a Greek name unrelated to their origin.[74] The complexities of defining migration through onomastics are a salutary reminder of the limitations of reductive binaries in categorising people in Britannia.

[64] Bowman 1998, 17.

[65] Derks 2009, 243-4; Haynes 2013, 134.

[66] Roselaar 2016, 150.

[67] van Driel-Murray 2009, 813; Boatwright 2015.

[68] Mann 1983; van Driel-Murray 2012; Roselaar 2016; Gerrard 2023.

[69] *Tab. Vindol.* II.344.

[70] *Tab. Vindol.* II.164.

[71] See Tomlin 2016, 54 on 'Celtic' names of civilians possibly indicating migrants from other Celtic-speaking provinces in London; whilst this may be less likely in the countryside, we cannot be sure.

[72] Tomlin 2024, 44–5.

[73] Tomlin 1988; Henry *et al.* 2021; Tomlin 2024, 44. For London, brief examples from the corpus of Greek names written in Greek from Britannia include Tomlin 2013, 390–1; *RIB* 2494.158 (graffito); the former appears to have been written for a Greek person by a scribe whose first script was Latin.

[74] Webster 2010.

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Material culture

Until recent decades the identification of people moving into Britannia from the wider empire and beyond has largely depended on material culture. This has generally been from grave assemblages, though other forms of material culture have been used to explore the mobility of certain groups or individuals, such as craft workers with specialties which had little or no existing tradition in pre-conquest Britain, including stonemasonry, mosaic-making, or large-scale pottery production.[75] It is also important to consider the ways in which the larger-scale urban and rural material infrastructure of Britannia, public or private, has also been used to argue for mobility within, or into, the province.

The transport of people, goods, animals and information throughout the Roman world was crucial to the functioning of the Roman state and the endurance of its imperial power. This was facilitated by a transport infrastructure which encompassed maritime, riverine and road transport, connecting areas under Roman control with the central authority.[76] In Britannia, as in other provinces, the road network was systematically expanded as a means of bringing the province fully under Roman authority.[77] The road network also supported the *cursus publicus*, the official communications infrastructure comprising rest and relay stations along major routes, which enabled the movement of state communications, government agents and goods — all at provincial expense.[78]

While the Roman road network was extensive, road transport was still onerous and expensive and it is often assumed that maritime or riverine transport would have been preferred where possible. As an island province, Britannia would have been particularly dependent on maritime connections with the wider Roman world, yet despite this there are few Roman shipwrecks known from British waters and none are of Mediterranean origin.[79] Glimpses of the scale of cross-channel trade are provided by samian from the Pudding Pan wreck, though the ship's exact location remains unknown. The Blackfriars 1 ship sank carrying ragstone from Kent to London, but may also have been seagoing, given the great volume of activity at the Roman port of London.[80] The mobility of individuals engaged in ongoing cross-channel trade is further illustrated by the *negotiator Britannicianus* L. Viducius Placidus' dedication of altars both at the shrine of Nehalennia near Colijnsplaat and at York,[81] and by the dedication in London by a *moritix Londiniensium* (a term of Celtic origin which seems to have referred to cross-channel traders).[82]

When considering the larger-scale archaeological evidence for mobility, a relatively rich seam of evidence is provided by the rural residences of the elite: villas. Influential scholars in the twentieth century argued that some architectural expressions of material wealth at villas in late Roman Britannia were such a departure from the level of previous rural wealth that they must have been stimulated by capital flight from Gaul. Rivet, Branigan, Applebaum and other mid-century villa scholars argued that the third-century crisis provoked migration by wealthy members of Gaul's decurion class, who brought new forms of architecture, sculpture and, perhaps, social organisation, to the British countryside.[83] In this framing, although not the chronology, their thesis echoes that of Ling and others in

[75] Fulford 2010, 68.
[76] Carreras and De Soto 2013, 117.
[77] Kolb 2011-12, 62.
[78] Kolb 2001, 97.
[79] Walsh 2000, 63.
[80] Marsden 1994, 15–96; Walsh 2017.
[81] Fulford 2007, 61–2; Hassall 1978, 42; *RIB* 3195.
[82] Corcoran *et al.* 2002, 10–13; Adams 2003. A *moritix* is also attested in Cologne (*CIL* XIII 8164a).
[83] Applebaum 1966; Rivet 1969b, especially 208–9; Branigan 1976; in reality, closest to the wholesale implantation of Roman elite living happened shortly post-conquest at Fishbourne, where not only was a palatial villa constructed, but also new modes of interacting with the natural world were introduced: Miller *et al.* 2022.

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the field of art in Britannia, who essentially argued that the higher-quality sculpture and wall plaster art of the province was too sophisticated to be the product of British artists until a period of training and diffusion by immigrants from the continent, if it could be at all.[84] There are now serious issues with the argument for migration triggering the *floruit* of villas in Britannia; the chronology of villas is now better established and simply does not support the relatively precise timeframe posited for the greater villas of Britannia being established. Rather, continuity is very much better evidenced almost wherever sites have been systematically investigated, and larger villas emerge at different times across the province.[85] This is not to argue that villa owners could not be individually mobile; indeed, the only named landowner of Britannia, Melania the Younger, owned estates widely across the empire, and it is highly likely that other members of the highest social strata in Britannia moved between provinces.[86]

We can also consider those who served the elite of Britannia. Skilled workers were a mobile class in the Roman world, and their movements are well attested in the historical and epigraphic record. Medical practitioners in particular are known to have moved extensively throughout the empire; the close association of medicine with Greekness in the Roman world suggested mobility (whether real or implied to align with this expectation).[87] There are several inscriptions in Britannia dedicated by doctors, inscribed in Greek by dedicants with Greek names. [88] The distribution of collyrium stamps across the northern provinces may also suggest the movement of oculists and other medical practitioners on a more localised scale.[89]

Craftspeople also travelled significant distances to work on elite or state structures — Priscus, a stonemason from Gaul died in Bath (*RIB* 149), and artisans were sent from Britannia for the rebuilding of Autun in A.D. 296.[90] However, itinerant workers, if not commemorated in epigraphy, may leave little evidence for mobility except in any influences or connections which may be identified in their products. The classic example from Britannia is the identification of so-called 'schools' or workshops of mosaicists from stylistic similarities and geographic distributions of their work.[91] Smith's initial schema of urban *officinae* has been modified in the light of discoveries and meticulous scholarship to become a model of mobile groups of mosaicists moving around broad regions, overlapping and occasionally collaborating.[92] Some, such as those making black-and-white mosaics around Ilchester, ranged less broadly, whereas others, such as the Midland group, worked more widely. Erdkamp[93] discusses the importance of seasonal and temporary migration of labour, which is much more difficult to identify — ancient authors did not concern themselves with the movements of unskilled workers, and they leave fewer traces archaeologically.[94] These studies are directly concerned with the seasonal migration of rural Italian smallholders to the city of Rome, and little comparable work has been undertaken on seasonal labour migration in Britannia, although local transhumance is well attested in later periods.[95]

[84] Davey and Ling 1982, 48–9; Henig 1995.
[85] Roberts *et al.* 2025.
[86] Esmonde Cleary *et al.* 2022, 486.
[87] Holleran 2024, 53–62.
[88] *RIB* 461; *RIB* 3151.
[89] Boon 1983, 6; Baker 2013; Holleran 2024.
[90] *Pan. Lat.* 8.21, trans. Nixon 1995.
[91] Smith 1965; 1969.
[92] Cosh and Neal 2024.
[93] Erdkamp 2008; 2016.
[94] Erdkamp 2016, 35.
[95] McCarthy 2013 discusses workers, but does not deal directly with rural-urban seasonal movement.

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Certain classes of material culture have been repeatedly used to investigate mobility in Britannia. Pottery has been a particular focus, as a product in its own right and as a proxy for various aspects of economic and cultural mobility: the movement of skilled potters following particular markets; the movement of goods and traders through the transport infrastructure of the Roman world; and latterly as evidence of cultural and social practices around food and drink which may indicate the presence of non-local groups.[96] Legionary pottery at Usk, for example, was made in local fabrics but in forms more closely paralleled in the Rhineland. One explanation offered is that the pottery was manufactured by mobile potters (whether free or enslaved) catering to the legionary market, or by members of the legion itself, which had been stationed in Germany prior to the conquest of Britannia.[97] Swan's identification of distinctive vessels resembling North African types at sites in northern Britannia explores the presence of North African soldiers in the frontier zone, potentially linked to *Legio VI Victrix* and the Severan campaigns of the third century.[98] The vessel forms — deep, 'casserole' dishes — suggest distinctive traditions of food preparation,[99] though the extent to which the presence of these vessels indicates the presence of North Africans, or the transmission of a style which became increasingly popular across the Mediterranean, is debated.[100]

The presence of exotic materials has also been used to distinguish burials of potential non-local individuals, most notably the 'Ivory Bangle Lady', a high-status burial from York, whose burial included bangles in ivory and jet, an openwork mount bearing a Christian salutation, glass objects and glass and amber jewellery. Though her material assemblage marks her as distinctive, craniometric ancestry assessment (using FORDISC 3.0) suggested a mixed North African ancestry based on statistical comparisons with modern populations. However, using this approach, for archaeological material especially, is potentially problematic and isotope analysis was less conclusive and suggested regions across the Mediterranean or western Europe to be compatible.[101] An ivory leopard clasp knife also formed part of the high-status grave assemblage of an adolescent girl in Southwark, London, whose strontium and oxygen isotope results suggest a southern Mediterranean origin.[102] 'Exotic' materials such as ivory are not necessarily directly linked with North African heritage or origins, but perhaps indicate alignment with an elite identity in which cross-provincial connectivity and mobility was common.[103] Such burials also highlight the potential mobility of women in the Roman world, an aspect which is often difficult to identify otherwise, given the limited means for women to convey agency publicly in Roman society.[104] Variation in the distribution of beads and glass bracelets also suggests that female dress was more regionally distinctive.[105] However, a note of caution is required in overrelying on oxygen isotope data to establish origins, particularly from warmer areas of southern Europe, Africa and Asia. There is increasing evidence that high oxygen isotope values that have in the past sometimes been interpreted as evidence for Mediterranean origins[106] actually commonly occur in western Britain.[107] In short, understanding of local

[96] Cool 2006.
[97] Greene 1973, 31.
[98] Swan 1992; 1999.
[99] Cool 2006, 39; Croom 2001.
[100] Fulford 2010; Pitts 2021.
[101] Leach *et al.* 2010.
[102] Redfern *et al.* 2017, 267.
[103] Eckardt 2014, 104.
[104] Woolf 2013; Bruun 2016.
[105] Swift 2000, 228–30.
[106] E.g. Hemer *et al.* 2013.
[107] Faillace and Madgwick 2024.

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and regional ranges is constantly changing as more data comes to light. In addition, issues of method standardisation[108] and the effects of foodways[109] on elevating ratios makes oxygen isotope analysis a complex proxy.

Brooches have also been widely employed in attempts to distinguish regional or ethnic origins.[110] Their primary use as fasteners for clothing renders them highly visible objects, conveying information about the personal identitie(s) of the wearer(s).[111] While brooches were in use in Late Iron Age Britain, their use became more widespread following the conquest, and particular classes of brooch, such as the Aucissa, were certainly brought into Britain with the army.[112] The use of certain forms of brooch to signal military identities persists throughout the Roman period, most notably with the later Roman crossbow brooch — a form which was widespread throughout the western empire and closely linked in iconography with military and administrative status.[113] Crossbow brooches form part of a material suite that has been linked to late Roman military dress, also including belt sets,[114] which are sometimes found in furnished inhumations in the north-west provinces. These were commonly identified as individuals recruited into the army from beyond the imperial frontiers (*foederati*), though this interpretation has been critiqued.[115] Graves furnished in this fashion are limited in Britannia, and the direct nature of the link between this material and the ethnic origin of the person with whom it was associated has been challenged.[116] Crossbow brooches and belt sets likely displayed status, prestige and power through claimed or actual links to Roman authority; the mixed origins of groups wearing them reflects the nature of late Roman military and state personnel.[117]

Where small finds have been used to explore the extent of mobility in Britannia this has generally been in the context of burials and their associated material culture as a site of final deposition. In particular, this kind of study has focused on 'intrusive' burials and their associated assemblages, which are atypical in their immediate context but may have parallels in a distant context.[118] It should be noted, however, that identification of the 'local' mortuary practice often rests on an absence of distinctive material culture in contrast to the intrusive groups,[119] a somewhat recursive argument.

The cemetery at Lankhills, Winchester, is perhaps the best known example of the identification of immigrants to the province through artefact and mortuary practice evidence and forms a case study for the ways in which the identification and study of mobility in Roman Britain has developed over past decades. Lankhills forms part of the cemetery of the *civitas* capital of Winchester. Excavations from 1967–72 produced 451 burials;[120] and a series of excavations by Oxford Archaeology 2000–05 produced a further 307 inhumations.[121] Clarke identified intrusive groups of fourth-century graves, defined by both burial rite and grave goods: in particular, one group of 16 burials whose grave goods and funerary practice were deemed to have parallels in Pannonia. While there was variation even within this group, consistent characteristics included bronze bracelets worn around the left wrist (in the case

[108] Démeny *et al.* 2019; Varkulevičiūtė *et al.* 2025.
[109] Brettell *et al.* 2012.
[110] Jundi and Hill 1998; Eckardt 2014; Cool and Baxter 2016, 71; Harlow 2021.
[111] Ivleva 2017, 70.
[112] Eckardt 2014, 133.
[113] Swift 2000; Collins 2010.
[114] Collins 2017, 31.
[115] Hawkes and Dunning 1961, 41; see Collins 2017, 35–6, for a summary of critiques.
[116] Cool 2010, 38.
[117] Swift 2000; Henry 2026.
[118] Pearce 2010, 79.
[119] Pearce 2010, 83.
[120] Clarke 2021.
[121] Booth *et al.* 2010.

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of females), cross-bow brooches at the right shoulder and belt-fittings at or near the waist (in the case of males), and coins provided but never placed in the mouth. Additionally, beads without parallel in Britain were found in several of the female graves around the neck.[122] While the criteria for distinguishing these graves have been debated,[123] the conclusion that these represented a distinctively different community was widely cited in literature on Romano-British archaeology, burial practice and migration.[124] The identification of distinct burial rites and the search for parallels across long distances as proof of non-local origin is problematic, however, given factors such as the taphonomic processes at work on burial assemblages. At Lankhills in particular, subsequent isotope analysis (explored in full below) has strikingly demonstrated the insecurity of identifying migrants by these means.

All this should caution against a direct correlation between material culture and ethnicity. Material culture and burial rites are the product of complex interactions of numerous factors.[125] Similarly, other characteristics — profession (e.g. military), age, gender, religion — also play an important role in the formation of identities, and may be expressed through material culture and burial rite.[126] Furthermore, the durability of small finds in metal meant that their use-lives could continue far beyond their period of manufacture: Roman objects are found in Anglo-Saxon burials,[127] and other objects were reworked and recycled into new forms.[128] The meaning and cultural associations of these objects likely shifted over the period of their use.

Isotope analysis

As discussed above, isotope analyses make it possible to test hypotheses about mobility within, and into, Britannia, although this kind of direct evidence has only been possible in recent decades. This discussion will introduce the principal techniques and summarise the state of the field of isotope studies on mobility in Britannia.

Oxygen ($\delta^{18}O$) and strontium ($^{87}Sr/^{86}Sr$) isotope analyses on bioapatites (e.g. dental enamel) are among the most commonly used proxies to study mobility in past human populations. Oxygen isotope ratios ($\delta^{18}O$) mainly reflect the oxygen in ingested water, secondly that from respiration and thirdly from the metabolism of food.[129] The $\delta^{18}O$ value of the water ingested is controlled by evaporation and condensation processes that are influenced by several environmental and anthropogenic drivers. The location of the source water (e.g. distance from coast, altitude, etc.), and its environment (humidity, seasonality, temperature, etc.) play a vital part in this.[130] For example, waters from warmer areas are typically enriched in ^{18}O as the lighter ^{16}O will evaporate first, resulting in higher $\delta^{18}O$ values.[131] The $\delta^{18}O$ value in an individual thus reflects the geographical location of their water source. Comparing the individual's $\delta^{18}O$ value with what is expected around their burial environment will therefore provide information on whether the individual is compatible with the region or not.[132] The assumption that past populations obtained their water locally is

[122] Clarke 2021, 377–8.
[123] Baldwin 1985; Cool 2010.
[124] E.g. Gardner 2007, 51; Mattingly 2006. The excavations were also influential for identifying intrusive groups in other cemeteries, e.g. Brougham: Cool 2004, 463–7, and Catterick: Cool 2002.
[125] Eckardt *et al.* 2014, 535.
[126] Moore 2014; Pearce 2015; Redfern and Pearce 2024.
[127] White 1988; Sherlock 2016.
[128] Swift 2012.
[129] Bryant and Froelich 1995; Podlesak *et al.* 2008.
[130] Gat 2010; Pederzani and Britton 2019.
[131] Dansgaard 1964.
[132] Pederzani and Britton 2019.

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vital in this. Additionally, human interferences, such as food and beverage preparation,[133] nursing and weaning,[134] or physical activity,[135] have also been shown to affect $\delta^{18}O$ values.

Strontium isotope ($^{87}Sr/^{86}Sr$) ratios in an individual mainly reflect the $^{87}Sr/^{86}Sr$ of the plant part of the diet.[136] These plants primarily reflect the bioavailable fraction of the strontium in the soil in which they were cultivated. The soil, in turn, obtains its strontium through the weathering of the underlying lithology. The $^{87}Sr/^{86}Sr$ ratio of the lithology depends on the type of bedrock, the original concentrations of rubidium 87 (which decays into ^{87}Sr), strontium 87 and strontium 86, and age of the bedrock. For example, in general, plants cultivated on younger bedrocks such as basalt will have lower $^{87}Sr/^{86}Sr$ values than those cultivated on older bedrocks such as granite.[137] Plant $^{87}Sr/^{86}Sr$ may also be affected, however, by environmental aspects such as the 'forest effect', which can elevate ratios,[138] dust,[139] or sea spray.[140] The latter is due to the continuous mixing of oceanic and continental bedrock strontium throughout the ocean which gives it a global $^{87}Sr/^{86}Sr$ value of about 0.7092.[141] Consequently, the $^{87}Sr/^{86}Sr$ ratios and concentrations of the plants growing within *c.* 5 km (depending on climatic factors) from the ocean,[142] or foods preserved in sea salt,[143] are substantially affected by the marine environment.

One of the earliest isotope studies on Roman Britannia by Budd *et al.* combined oxygen, strontium, and lead isotope (Pb) analyses on human dental enamel from Roman Winchester ($n = 4$) to explore the use of such isotope systems in mobility studies.[144] This pilot study was a success, demonstrating that diagenetic alterations had a minimal effect on the isotope results. The combination of three isotope systems thus provided key knowledge on the individual's environment during life, and using a combination of these isotope systems (with or without lead) is still routine in mobility studies today. As our understanding of the effects of anthropogenic activities and environmental processes on isotope data improves and as our knowledge of biosphere variation across isotope proxies advances, so do the interpretations. For example, after more research into climate and oxygen isotopes, Budd *et al.* revised their original interpretations made in 2001,[145] in which climate change was considered to have caused the human $\delta^{18}O$ values being higher than the environment. Instead, mobility from the western Mediterranean or North African coastal area became the more likely explanation for all four individuals. These studies around the beginning of the twenty-first century were important in the progress of the use of isotopes in mobility studies in general, but the findings also gave key insights into the lives of individual inhabitants of Britannia.

Isotope analysis is especially helpful in testing assumed correlations between 'exotic' material culture and mobility. A good example is the intrusive group at the cemetery at Lankhills, Winchester, introduced above.[146] Evans and colleagues[147] tested the hypothesis of non-local individuals at the site by analysing oxygen ($\delta^{18}O$) and strontium ($^{87}Sr/^{86}Sr$) isotopes in 18 fourth-century individuals, of whom 9 were in the 'Pannonian' group. Only

[133] Royer *et al.* 2017; Tuross *et al.* 2017.
[134] Wright and Schwarcz 1998.
[135] Bryant and Froehlich 1995.
[136] Montgomery 2010.
[137] Bentley 2006; Montgomery 2010.
[138] Johnson *et al.* 2022.
[139] Négrel and Roy 1998.
[140] Alonzi *et al.* 2020.
[141] Veizer 1989; Bentley 2006.
[142] Alonzi *et al.* 2020.
[143] Dalle *et al.* 2022.
[144] Budd *et al.* 2001.
[145] Budd *et al.* 2004.
[146] Clarke 2021, 376–86.
[147] Evans *et al.* 2006.

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5 out of the 9 buried with such objects, and 2 of the 9 buried with traditions more local to Lankhills, had isotope results inconsistent with being raised in Britannia. Interestingly, the authors identified the origins of the individuals to be dispersed throughout central Europe and as far south as Italy. The absence of a link between origin and burial rites was later confirmed by Eckardt *et al.*[148] This demonstrates that the presence of non-local objects within a burial does not mean the individual themselves originated from elsewhere. Cultural habits may have been passed on to the following generations or fused with the habits already present in Roman Britain.

Eckardt's *Diaspora Communities in Roman Britain* project[149] found that a substantial number of individuals buried in York,[150] Catterick,[151] Gloucester[152] and Winchester[153] were likely not local, based on strontium and/or oxygen isotope results. Some of them probably came from outside Britannia and some (from York) were hypothesised to have originated from as far as Northern Africa, based primarily on cranial morphometric techniques (FORDISC 3.0), in combination with artefacts found at the burial site and elevated oxygen isotope values. Importantly, the individuals identified to be non-locals were a mixed group of men, women and children. The results of the *Diaspora* project confirmed that mobility and migration were important in shaping the cultural landscape of urban sites in Britannia, and that migration encompassed a range of demographics.

One isotope study of Roman migration in Britannia, however, identified a different pattern of migration to others previously published. Most of the individuals buried at Catterick were compatible with the same region, based on their oxygen and strontium isotopes.[154] While acknowledging the presence of similar isotope ranges across central Europe, Chenery *et al.* concluded local origins to be the most likely explanation despite the presence of Germanic or Danubian artefacts. A subsequent study by Crowder *et al.*[155] aimed to determine a more precise origin for individuals buried with Danubian artefacts in Britannia, whether they were considered non-local or not by Chenery *et al.* (2011). Using oxygen and strontium isotope data, Crowder and colleagues suggest the Transylvania region to be the most appropriate origin for many of the individuals from the *Diaspora* project with similar isotope values. In general, it is largely accepted that multiple regions within Europe and beyond may overlap in oxygen and strontium isotope ratios, and more comprehensive studies on bioavailability in the Pannonian region are required to support these interpretations. Nonetheless, the presence of eastern European artefacts on sites in Britannia emphasises the importance of considering Empire-wide mobility, and addressing the challenges of equifinality in isotope biosphere mapping.

Towns which were higher in Britannia's administrative hierarchy (e.g. the citizen settlements (*coloniae*), and to a somewhat lesser extent the *civitas* capitals), can be expected from historical and archaeological evidence to have had more mobile populations due to their greater connectivity with the wider empire. Isotope studies by Millard *et al.*,[156] Redfern *et al.*[157] and Shaw *et al.*[158] undertaken on cemeteries in Roman London have corroborated this, identifying that about 25%, 29% and 7–15% of the respective study samples had oxygen,

[148] Eckardt *et al.* 2009.
[149] Eckardt *et al.* 2012; Müldner 2013.
[150] Leach *et al.* 2009; Müldner *et al.* 2011.
[151] Chenery *et al.* 2011.
[152] Chenery *et al.* 2010.
[153] Eckardt *et al.* 2009.
[154] Chenery *et al.* 2011.
[155] Crowder *et al.* 2020.
[156] Millard *et al.* 2013.
[157] Redfern *et al.* 2016.
[158] Shaw *et al.* 2016.

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or strontium and lead isotope ratios compatible with origins in continental Europe or the Mediterranean. Other large urban sites, such as York,[159] Gloucester[160] and Winchester,[161] show similar proportions of non-local individuals. In contrast, fewer migrants have been identified at rural sites, albeit in a smaller number of studies. In Cambridgeshire, as will be discussed further below, of 64 individuals analysed for $\delta^{18}O$ by Scheib *et al.* (Cambridge and Duxford)[162] and Wiseman *et al.* (Knobb's Farm),[163] only 2 were considered to have isotope values incompatible with an origin in Britannia.

Beyond Cambridgeshire, few mobility isotope studies have been undertaken on small towns and rural areas, and of those undertaken, many have small sample sizes. For example, the studies by Budd *et al.*[164] on Mangotsfield, Gloucestershire, and O'Regan *et al.*[165] on Dog Hole Cave, Cumbria, had sample sizes of 2 and 7, respectively. Other publications have focused on exceptional burials, such as the military burial from Dorchester, Oxfordshire,[166] or the single apparent Sarmatian burial from Offord Cluny, Cambridgeshire, which showed no indication of being unusual until aDNA analysis was undertaken.[167] Such small or exceptional samples cannot be considered representative of the local populace. Furthermore, many regions are still underrepresented in isotope mobility studies. For example, while Wales has been pointed out as a possible origin for several outlying individuals,[168] studies on Roman burials from Wales are extremely scarce, partially as a result of acidic soils and a limited burial record. Faillace and Madgwick published the only study from Roman Wales with oxygen and strontium isotope values for five individuals from Five Mile Lane, Vale of Glamorgan,[169] of whom two appear to be non-local. Drawing firm conclusions on the extent of mobility in Britannia from currently published isotope datasets is therefore challenging. However, although more research is needed, the presence of non-local individuals — whether from within Britannia, or from beyond the province — at almost all sites studied show that movement was common, although the proportion of the population engaged in longer-distance mobility may have varied significantly through both time and space.

Smaller numbers of studies have also utilised isotopes other than oxygen ($\delta^{18}O$) and strontium ($^{87}Sr/^{86}Sr$) to identify mobility or non-local individuals. For example, lead (Pb) has also been used to explore origins.[170] Similarly, a small number of studies have attempted to determine non-local individuals through the use of carbon ($\delta^{13}C$) isotopes — identifying individuals consuming C_4 crops (e.g. millet) that were not cultivated in Britannia.[171] However, it should be noted that a number of authors (e.g. Müldner *et al.*[172] and de Hingh[173]) have also suggested that C_4 crops may have been imported from the continent — therefore suggesting the movement of foodstuffs rather than the individuals themselves. However, finding an individual with a C_4 signal in Roman Britain is rare. Müldner and colleagues, as well as other studies that have found such individuals,[174] therefore usually suggest that

[159] Leach *et al.* 2009.
[160] Chenery *et al.* 2010.
[161] Eckardt *et al.* 2009.
[162] Scheib *et al.* 2024.
[163] Wiseman *et al.* 2021.
[164] Budd *et al.* 2004.
[165] O'Regan *et al.* 2020.
[166] Booth 2014.
[167] Silva *et al.* 2024.
[168] E.g. Eckardt *et al.* 2009; Chenery *et al.* 2010; Shaw *et al.* 2016; O'Regan *et al.* 2020; Wiseman *et al.* 2021.
[169] Faillace and Madgwick 2024.
[170] Moore *et al.* 2020; Shaw *et al.* 2016.
[171] E.g. Chenery *et al.* 2010; Müldner *et al.* 2011; Pollard *et al.* 2011; Eckardt *et al.* 2015.
[172] Müldner *et al.* 2011.
[173] de Hingh 2000.
[174] Müldner *et al.* 2011; Pollard *et al.* 2011; Eckardt *et al.* 2015; Redfern *et al.* 2016; Ranieri and Telfer 2017.

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the individuals themselves came from outside Britannia as a more likely explanation. This is likely the case, as C_4 foods would have to form a major part of the diet for an extended period to show in collagen isotope values.[175] Another isotope approach, sulfur ($\delta^{34}S$) has become markedly more common in archaeological research in the last decade,[176] but it remains rare in studies of Roman mobility and represents a profitable approach for disentangling issues of equifinality in origins. For example, the study by Nehlich *et al.*[177] applied sulfur isotopes to examine weaning patterns in Roman Oxfordshire rather than mobility. That being said, compared to oxygen and strontium, sulfur isotope analysis is still in its infancy and debates on the comparability of past populations to modern sulfur maps are still ongoing.[178] For this reason, even if sulfur isotopes are analysed, the interpretations are still often inconclusive.[179]

As isotope provenancing is an exclusive approach rather than a designative one, using multiple proxies can refine resolution. For example, analysis of an individual from a late Roman rural cemetery in Gravesend, Kent, was found to have $^{87}Sr/^{86}Sr$ and $\delta^{18}O$ results consistent with the local range; however, the same individual's $\delta^{15}N$ and $\delta^{13}C$ values indicated a diet including a significant proportion of C_4 proteins, in contrast to the local diet.[180] This example also illustrates the problem of equifinality — the possibility that two regions can produce isotope values within the same range — and the importance of biosphere mapping for understanding local isotope signatures. Multi-isotope analysis is increasingly used to overcome this issue and to enrich more widely our understanding of mobility, whether human or animal.[181]

The impact of lead (Pb) on individuals has been studied through the analysis of lead isotopes and concentrations.[182] During the Romano-British period, lead was increasingly found in the environment,[183] and used in everyday household objects such as cosmetics,[184] vessels,[185] and even in food products to make them sweeter.[186] This cultural change is observable in the lead concentrations of an individual's skeletal remains, and this has been used as an opportunity to study mobility on several occasions. For example, Scott *et al.*[187] found that the population of Roman London had high lead concentrations which would have affected their health.[188] However, as these data were obtained from bone apatite which is strongly affected by diagenesis and prone to exchange contaminants with the burial environment[189] the reliability of the data is uncertain. Montgomery *et al.*[190] published >200 dental enamel samples dating to the Neolithic to the late Medieval period, from 33 sites in Britain, Ireland and Rome.[191] The dense crystallinity of enamel compared to the apatite

[175] Howland *et al.* 2003.
[176] Nehlich 2015.
[177] Nehlich *et al.* 2011.
[178] Nehlich 2015.
[179] Faillace and Madgwick 2024.
[180] Pollard *et al.* 2011.
[181] Scorrer *et al.* 2021; Blair *et al.* 2022; Esposito *et al.* 2025.
[182] E.g. Montgomery *et al.* 2010; 2011; Scott *et al.* 2020; 2024.
[183] McConnell *et al.* 2025.
[184] Van Elslande *et al.* 2008.
[185] Greene 2007.
[186] Pliny the Elder, *The Natural History*, Book XIV, chapter 24, 27.
[187] Scott *et al.* 2020; 2024.
[188] Moore *et al.* 2021a; 2021b.
[189] Driessens *et al.* 1978; Trueman *et al.* 2004.
[190] Montgomery *et al.* 2010.
[191] Molleson *et al.* 1986; Budd *et al.* 2004; Montgomery 2002; Montgomery *et al.* 2000; 2005; Parker Pearson *et al.* 2005; Knüsel *et al.* 2010.

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structure of bone makes it less susceptible to burial environment contaminants, thus providing more reliable data.[192] Montgomery and colleagues[193] then compared the data against the concentrations and lead isotopes from several lead ore locations in the west and north of the UK. By doing this, they found four additional individuals in York to have originated from the Mediterranean basin, and one woman from Roman London likely to have originated from Rome.

It is not only studies on the mobility of humans in Britannia that have employed isotope analysis. The movement of animals, either as imported exotica[194] or domesticates for food,[195] has been explored through strontium and sulfur isotope analysis. In some instances, animals provided a useful proxy for patterns of human movement as their faster-developing teeth and relatively short lives mean greater temporal precision and less bioavailable averaging can be achieved. These studies have generally demonstrated strong evidence for the movement of animals, sometimes over vast distances, occasionally from beyond, but especially within, Britannia.

While isotope analyses of Roman mobility are increasing, there remain biases in site selection and individual sampling that reduce the representativeness of these studies. Research has largely focused on military and urban cemeteries, and selected groups already identified as exceptional through distinctive burial practice or grave assemblages (e.g. the Lankhills burials with 'exotic' material culture,[196] or the 'Headless Romans'[197]). Geographical biases also exist, which are partially the result of modern development and archaeological practice (e.g. towards areas of central and south-east England where large-scale construction projects are concentrated), and partially the result of taphonomic factors (e.g. acidic soils largely precluding bone preservation in Scotland, Wales and the south-west peninsula[198]). There are also chronological biases which are difficult to overcome — with the study of mobility largely dependent on grave assemblages there is a bias towards inhumation, which had largely replaced cremation by the later third century,[199] meaning that the earlier Roman period has been investigated less intensively than the third and fourth centuries. However, the relatively recently development and validation of methods for $^{87}Sr/^{86}Sr$ on cremated remains[200] provides new potential, albeit without the benefit of multiple isotope proxies. For example, as part of the bigger *Decoding the Dead* project by the Colchester Museum, a cremation cemetery was studied through strontium isotope analyses. Among the individuals are the cremated remains of an older male who was buried in the 'Colchester Vase'. While the intensely decorated vase itself was likely produced locally, Davis *et al.* found that the individual was not from the Colchester area.[201] However, without the addition of other proxies such as oxygen, whether the individual arrived from within or outside Britain remains uncertain.

Isotope analysis remains a rapidly evolving sub-discipline of archaeological science. While certainly no longer in its infancy, having been deployed in bioarchaeology for almost half a century,[202] it is arguably still in its adolescence. The integration of multiple isotope proxies has transformed both the resolution and the confidence of interpretations relating

[192] Driessens *et al.* 1978; Lee-Thorp and van der Merwe 1991; Snoeck *et al.* 2015.
[193] Montgomery *et al.* 2010.
[194] Sykes *et al.* 2006; Madgwick *et al.* 2013.
[195] Gan *et al.* 2018; Madgwick *et al.* 2019; Guest *et al.* 2023; Madgwick et al. in press.
[196] Evans *et al.* 2006; Eckardt *et al.* 2009.
[197] Müldner *et al.* 2011.
[198] Pollock 2006, 7.
[199] Pearce 2010, 82.
[200] Bleasdale *et al.* 2025; Snoeck *et al.* 2015.
[201] Davis *et al.* 2024, 12.
[202] Vogel and van der Merwe 1977.

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to mobility and issues of equifinality, where different regions have the same bioavailable range in an isotope system, are being overcome more frequently.[203] However, challenges with method standardisation and data reliability and comparability pose interpretative challenges, particularly in relation to oxygen isotope analysis.[204] In addition, understanding of bioavailability[205] and the range of variables that impact on isotope variation[206] is advancing all the time and interpretative revision of legacy data may often be required. The integration of multiple isotope proxies with wider evidence for mobility undoubtedly provides the best pathway to confident interpretation.

aDNA

In recent years, multi-isotope analysis has been supplemented by ancient DNA (aDNA) analysis. Where isotopes can provide information on childhood origins and lifetime mobility, aDNA can give insights into kinship, descent and genetic ancestry. Aided by recent advances in sequencing technologies and laboratory methods, aDNA can provide a holistic view of past mobility, relatedness and genetic ancestry — and has to date provided significant contributions to our understanding of many archaeological periods.[207] Richards *et al.*, in one of the very first papers to use aDNA analyses to answer archaeological research questions, highlighted the potential genetic complexity of Britannia's population — 'the mixed ethnic composition of the subjects of the Roman Empire'.[208] Yet few studies of Britannia's populations have been undertaken, although the volume of sampling undertaken in recent years is likely to change this significantly in the near future. The majority of aDNA work undertaken on Britannia thus far has focused instead on unusual individuals, including possible victims of infanticide and Roman Londoners buried with exceptional objects.[209]

The largest study published to date, and also one of the few studies focused on rural sites, is that by Scheib *et al.*, which generated genome-wide data from 52 individuals from eight cemeteries in Cambridgeshire.[210] The authors suggest that communities in Britannia saw a low genetic impact from the Roman occupation, with little genetic ancestry differentiation between Roman, Bronze Age and Neolithic individuals. This is in contrast to smaller aDNA studies of urban or unusual burials from Britannia which have often identified non-local individuals. For example, Martiniano *et al.* analysed seven individuals from York, one of which appeared to have Middle Eastern ancestry,[211] and Silva *et al.* identified Sarmatian ancestry in an isolated burial from Cambridgeshire.[212] Interestingly, however, oxygen ($\delta^{18}O$) isotopic data generated from the same Cambridgeshire individuals did suggest a number of non-local individuals.[213] This therefore highlights the need for future studies to sample the rural population of Britannia more extensively than has hitherto been the case, but also the need to combine multi-isotope systems alongside aDNA data in order to gain a more detailed understanding of Roman mobility.

[203] Madgwick *et al.* 2021.
[204] Demény *et al.* 2019; Varkulevičiūtė *et al.* 2025.
[205] Evans *et al.* 2010; 2022.
[206] E.g. Lamb *et al.* 2023.
[207] Olalde *et al.* 2018; Parker Pearson *et al.* 2019; Armit and Reich 2021; Gretzinger *et al.* 2022; Patterson *et al.* 2022; Hamerow *et al.* 2024.
[208] Richards *et al.* 1993, 19.
[209] Redfern *et al.* 2017.
[210] Scheib *et al.* 2024.
[211] Martiniano *et al.* 2016.
[212] Silva *et al.* 2024.
[213] Scheib *et al.* 2024.

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Another notable study is that undertaken by Redfern *et al.*, who investigated four individuals from Roman London using aDNA analysis in tandem with oxygen, strontium and lead isotope analyses, alongside contextualising the burials through analysis of their material culture and site context.[214] These analyses indicated that one female individual grew up in Britain but had genetic ancestry from somewhere within eastern Europe, the Caucasus or central Asia.[215] One male had ambiguous results indicating he may have had genetic ancestry beyond Britannia, or may have been local. Another male had Black African ancestry but spent his childhood in the London region, and the final individual, a 14-year-old girl, grew up around the Mediterranean and moved to Britannia around the age of 9. The study indicates a high degree of migration into Britannia and a diverse population, but the individuals analysed were drawn from London, possibly the most cosmopolitan urban settlement in the province, perhaps alongside York.[216] Rural populations may not have had the same levels of mobility.

Most recently, Walton *et al.*[217] have reported aDNA data alongside macroscopic craniofacial analysis and isotope data for an individual known as 'Beachy Head Woman' (BHW), believed to be recovered from the coastline near Eastbourne. BHW serves as an important reminder of the development of aDNA technologies within the last decade, and how significantly our interpretations of even a single individual can shift. Initial low-level sequencing of BHW in 2017 suggested an east Mediterranean origin, posited to be Cyprus. However, more recent aDNA data generated using capture array technology has instead suggested a strong genetic affinity to individuals from Roman Britain — thereby indicating local British ancestry, and supported by $^{87}Sr/^{86}Sr$ values.

The future of aDNA studies in Roman archaeology is rich with possibility, given the complexity and geographical spread of the empire, its connectivity and the suite of material evidence available. The potential of aDNA for investigating aspects of human populations beyond mobility, such as genetic relatedness, genetic diversity, population structure, disease and phenotypic traits has also barely been explored in the Roman period. In particular, recent developments in kinship analysis now mean it is possible to determine genetic relatedness between individuals at both an intra- and inter-site level. While these methods determining levels of genetic relatedness have been employed extensively to prehistoric human skeletal material, they are yet to have been applied to individuals from Roman Britain. In future, considering genetic relatedness alongside broader narratives surrounding mobility and gender has the potential to enable a deeper understanding of Britannia. Lastly, there is additionally vast scope for investigating not only human populations but also domestic animal and plant genetics in the period, given the outstanding existing aDNA work on selective breeding, species introductions, domestication, commensal animals and human–animal relations.[218] However, it is important to note that, particularly in framing results to the public and press, lessons can be learnt from other periods where aDNA has been more extensively employed.[219] As the field of ancient DNA has developed and becomes more interdisciplinary, significant progress has been made in improving collaborative culture and presenting more nuanced narratives to the public. It is vital we learn from these experiences in Roman archaeology, particularly given the centrality of the period in public narratives.

[214] Redfern *et al.* 2017.

[215] NB Redfern *et al.* 2023 correcting Redfern *et al.* 2017's published result from aDNA analysis stating that this individual had male chromosomes; in fact, the individual is female.

[216] Leach *et al.* 2009; Martiniano *et al.* 2016; see also Tomlin 2016; Pitts 2021 for non-bioarchaeological evidence.

[217] Walton *et al.* 2026.

[218] Duval and Albarella 2022; Miller *et al.* 2022; Sesvold and Webb 2020.

[219] Booth 2019; Frieman and Hofmann 2019; Hakenbeck 2019; Harland 2021.

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The future of studying mobility in Britannia

The examples discussed here from across the suite of evidence of mobility in Britannia demonstrate both the historiographical development of Roman mobility studies and the difficulty of truly holistic work in the field, given the breadth and complexity of the data and their history of collection and study. Interdisciplinary work across archaeology, history, biosciences and beyond is therefore necessary to provide more comprehensive insights into mobility;[220] it is insufficient to rely primarily on one line of evidence, whether epigraphic, genetic, or whatever else, to advance a general narrative, given the richness of the data and historiography. Evidence sources operate at different scales and have complementary strengths: therefore ambiguities in one proxy can be clarified using others.

This is the aim of our Arts and Humanities Research Council-funded *Roman Britannia: Mobility and Society* project (RoBMobS). Drawing together cutting-edge aDNA, multi-isotope analysis (Sr, O, S, C and N) and scientific dating with expertise in artefactual and stratigraphic research, we will work in partnership with archaeological units and museums to develop multi-scalar and temporally rich narratives of the many mobilities within, and into, Britannia through the Roman period. Through collation of all previous isotope and aDNA data from the province, and by undertaking isotope analysis of up to 400 individuals and aDNA screening of 200 individuals, from non-military inhumation cemeteries across the province, we will test the interpretative potential of an integrated approach. This research will provide the first large-scale multi-proxy study of this kind for any Roman province, and in targeting non-military and principally non-urban cemeteries will provide a more balanced view of mobility both within and beyond Britannia.

We have argued that Roman archaeology has a problematic inheritance of its long-term entanglement with modern imperialism, with the embedded reification of 'Roman' culture and widespread conceptualisation of Romanisation explaining cultural change promulgated by that ideology and perpetuated by the biases towards the survival and study of material culture in elite or more durable media. This exploration has, we hope, shown that parsing the ancient and modern biases in our datasets, such as the privileging of male, high-status and often military individuals in epigraphy, or the preferential study of exceptional or unusual burials or urban centres in much bioarchaeological research, is just as key to successful future studies of mobility in Britannia as the creation of truly interdisciplinary research groups to exploit the richness of Roman archaeology's data. In future, we must, if our collective consensus that Britannia was a colonial encounter is to be meaningful, focus the cutting-edge tools of our discipline on the people at the sharp end of that encounter, the rural poor.[221] There is a deep and ironic echo of older historiographies in the methods of bioarchaeology being used to enrich narratives of the upper classes of Britannia.[222] Work on urban, elite and military assemblages must be rebalanced through investigation of the mobilities of the rest of Britannia's population. New narratives will emerge from holistic research into these communities, which will surely disrupt current understandings and provoke new questions.

Focusing on mobility in this review leaves us open to critique for privileging the 'movers' over the 'stayers'.[223] It has also been argued that theoretical frameworks such as globalisation and glocalisation, with their emphasis on connectivity and the variably shared 'Roman' cultural milieu of much of higher-status Roman society, simply reproduce Romanisation

[220] Carlin *et al.* 2025.

[221] Gerrard 2013.

[222] Scheib *et al.* 2024 provide a creditable demonstration of the alternative approach to selecting a population to investigate, although not discussing the social or historical implications of their findings at any length.

[223] Woolf 2016.

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under another name.[224] We argue that this review has again demonstrated that mobility was fundamental to society in Britannia, *whether or not* an individual moved. Given the improving precision of multi-isotope analytical techniques and UK biosphere mapping, modern bioarchaeology may be able to contribute significantly to dissolving that dichotomy through multi-scalar nuance. Indeed, if conducted in combination with detailed artefactual study, stratigraphic analysis, scientific dating and chronological modelling, the widely neglected temporal dimension of changes in mobilities through time can also be greatly enhanced.

Much valuable work has been undertaken to draw out the complexities and nuances of group, individual and other identities articulated by material culture, epigraphy and burials in Britannia. Thomas Booth argues that 'when addressing simple questions of demographic history, genome-wide palaeogenetic analyses reasonably take precedence over the archaeological record, as genetic evidence is a direct measure of population change, rather than a potentially poor proxy'.[225] For questions of demography focused on ancestry, this is surely the case, just as isotope analyses provide direct evidence of individual mobility within the lifecourse. However, these issues are far from the limit of our questions. Whether or not one was a migrant or descendant of migrants in the Roman world is not the same question as whether one identified, or was identified by others, as such. Nor have questions of social and economic transformation during the Roman period often been framed so simply as cultural change being caused by population replacement.[226] Rather, thanks to the rich archaeological and historical dataset of the period, the critical questions revolve around the character of the encounters caused by the historical conditions of Rome's expansion, control and transformation. To emphasise the importance of exploring these in a spatially and temporally multiscalar way, engaging with the nuance of individual identities and biographies, whether they include mobility or not, as well as investigating the colonial experience of Britannia in the Roman period at a provincial level, is to argue that archaeologists asking questions of the Roman period should be empowered by the bioarchaeological revolution in collaborative ways, rather than disenfranchised.

Future work on the topic should meet Woolf's three requirements of archaeological studies of mobility in antiquity.[227] Firstly, to differentiate between different kinds of migrants and different kinds of mobility. Secondly, to investigate changes over time in mobility, rather than simply acknowledge it as a structural fact; this latter is one consequence of less-than-nuanced readings of Horden and Purcell's grand narrative of Mediterranean ecological diversity and socio-economic connectivity, and is essentially reductive.[228] Thirdly, to make quantitative claims about mobility; how many, how often, how far, and how many did not move. While formulated for the Mediterranean, these sensible criteria are highly relevant to Britannia, and achievable given the evidence and techniques available to archaeology today. To these we would add that, if undertaking primary sampling of human remains, a partnership with the custodians of those individuals is vital to maximise the value to today's society of the destruction of human remains. Completing the research loop through prioritising timely dialogue and resourcing the renewal or creation of public-facing interpretive materials relating to the individuals is ethically vital. Without this, researchers abdicate responsibility and leave an opening for the misuse of results, without assisting museums with the specialist knowledge to respond to external criticism.

[224] See van Alten 2017, 143, for a summary.
[225] Booth 2019, 590.
[226] *Sensu* Booth 2019 in genetic terms, rather than the modern colloquial understanding of this term.
[227] Woolf 2016, 442.
[228] Horden and Purcell 2000.

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As this interdisciplinary field develops, we anticipate greater integration of scientific techniques and increasing interdisciplinary work across the old boundaries of arts and science. Some work will shift from publishing smaller datasets or individuals to focus on population dynamics and better chronological resolution, as well as site- or region-based studies. As datasets grow larger, scientific data will become more reasonably able to be compared to large provincial epigraphic datasets to provide overviews of mobility. Woolf argues that migrants would mostly have been male, and highlights Haley's epigraphic study of mobility in Spain and Wierschowski's in Gaul.[229] Both studies suggest a migration rate of around 5%, and that most migration was local or regional, and by men. These studies deploy large datasets, identifying 649 and 715 migrants respectively. The well-known biases of epigraphic commemoration are not considered at length in these studies, and it will be fascinating to see if these patterns are borne out in large-scale scientific studies.[230] So far, for Britannia, estimates of longer-distance mobility vary significantly. The gender narrative in Woolf's argument is reminiscent of those around women in studies of military communities, before the pioneering work of Lindsay Allason-Jones and others demonstrated conclusively the presence of women in military spaces from archaeology.[231] Given the evidence of mobility of the less wealthy from historical sources, it is debatable whether the practice of founding society-wide narratives for mobility on epigraphic evidence can be sustained in light of the scientific datasets currently being generated.

As bioarchaeological techniques, alongside artefactual analysis and scientific dating and modelling, refine our understanding of how people moved and when they did so, we will be better empowered to answer the questions of why people moved and how they understood themselves in a social context. After all, mobility is a social behaviour conducted in specific contexts; as Gerrard emphasises, if mobility is bluntly defined as those who die in a different place from where they were born, this can dehumanise these individuals' lives, so we must more subtly explore this behaviour's complexities at different temporal and spatial resolutions.[232] This future and continued work on mobility within Britannia will therefore enable other significant questions to be addressed: for example, the extent to which the rural poor became increasingly tied to the land as the Roman period went on;[233] whether pre-conquest elite groups maintained wealth and power in Britannia, and if this varied by region; and the changing demographic profile of supposed ethnic auxiliary units in the Roman army. All of these have much wider implications for understanding the imperial encounter in Britannia than simply characterising mobility, and can be greatly enhanced through using the latest bioarchaeological techniques alongside historical and archaeological analysis in current theoretical frameworks. There are undoubtedly significant challenges accompanying the adoption of bioarchaeological approaches into our studies of mobility in the Roman period in a holistic, nuanced manner, but we are convinced that the opportunities to address critical questions anew to Roman archaeology, with relevance to much wider academic and contemporary debates, must be taken.

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[229] Haley 1991; Wierschowski 1995; 2001; Woolf 2016, 454.

[230] Initial results suggest that, if anything, this is an underestimate for Britannia's urban centres: Leach *et al.* 2009; Eckardt *et al.* 2012; Redfern *et al.* 2017.

[231] Allason-Jones 1989; van Driel-Murray 1995; see Greene and Brice 2024 for a summary; this is not to suggest Woolf is biased, simply that the epigraphic dataset presents a male-focused picture.

[232] Gerrard 2023; Högberg *et al.* 2025.

[233] Gerrard 2013, 236–43.

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