



# Blind to Chains? The Potential of Bioarchaeology for Identifying the Enslaved of Roman Britain

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## ABSTRACT

*This research explores the contribution bioarchaeology can make to the study of slavery in Roman Britain, responding to the calls by Webster and colleagues for the greater use of osteological and scientific techniques in this endeavour. It reviews the evidence for the bodies of the enslaved in the primary sources and bioarchaeological evidence from the New World and the Roman Empire. The paper aims to establish patterns of physiological stress and disease, which could be used to reconstruct osteobiographies of these individuals, and applies these findings to bioarchaeological evidence from Britain. It concludes that at the present time, it may not be possible for us to successfully separate out the enslaved from the poor or bonded labourers, because their life experiences were very similar. Nevertheless, these people are overlooked in the archaeological record, so unless we attempt to search for them in the extant evidence, the life experiences of the majority of the Romano-British population who were vital to its economy will remain lost to us.*

**Keywords:** bioarchaeology; enslavement; osteobiography; structural violence; Roman Britain; New World

## INTRODUCTION

The enslaved<sup>1</sup> of Roman Britain represent many hundreds of thousands of people who were captured and transported from their place of origin,<sup>2</sup> but only very rarely is direct evidence recovered in the form of skeletons with the bonds of slavery still present (FIGS 1 and 2).<sup>3</sup> This research focuses on the majority who remain ‘unseen’ in the archaeological record and uses a bioarchaeological approach to attempt to engage with this under-studied aspect of life. The aim is to contribute a new perspective to the extensive scholarship on slavery in the Roman world, which has

<sup>1</sup> The term ‘enslaved’ is used here to reflect their position in society rather than ‘slave’, which reinforces their status as property, an ‘object’, and as passive agent, rather than being capable of acts of resistance.

<sup>2</sup> As in the late Iron Age, indigenous people may have been captured and transported within Britain, as well as people being transported into Britain from overseas (Mattingly 2006, 294).

<sup>3</sup> Harward *et al.* 2015.

used material culture, inscriptions, funerary practices and primary sources to understand this diverse group of people.<sup>4</sup> It draws on the growing body of bioarchaeological evidence from the New World which uses patterns of physiological stress and disease to help identify captured and enslaved people in Pre- and Post-Contact societies, and tentatively proposes how we can use bioarchaeological data from Britain in our endeavours to 'see' the enslaved in this territory of the Roman Empire.

The use of comparative evidence from different periods and locales to explore enslavement remains under-utilised in Roman archaeology, despite strong advocacy over the years by Webster.<sup>5</sup> In contrast, within the discipline of bioarchaeology, cross-cultural and temporal comparisons of disease are a standard and robust aspect of practice, such as the Global History of Health Project.<sup>6</sup> Nevertheless, this research does not propose that a particular suite of disease variables and other archaeological data are incontrovertible evidence for enslavement, as Handler and Lange observe.<sup>7</sup> Instead, as they suggest, if historical sources provide evidence for the existence of slavery in a society, archaeological and bioarchaeological data can provide new perspectives on these sources. Without the historical sources, these datasets will not be able to independently identify slavery because, 'Slavery is an institution of variable structure that cannot be inferred, deduced or otherwise from purely archaeological remains'.<sup>8</sup>

#### VICTIMS OF STRUCTURAL VIOLENCE: CAN WE TELL THEM APART?

Structural violence is a distinct form of violence, which is embedded in existing social, cultural and economic systems; it governs the allocation of resources and determines agency, and because the inequalities it creates are often very long-lasting, individuals and communities may be blind to them. Farmer *et al.* describe it as 'one way of describing social arrangements that put individuals and populations in harm's way'.<sup>9</sup>

It is attested in the disease inequalities and disparities experienced by different socio-economic groups, arising from historical, cultural and political frameworks which create and perpetuate these hierarchies.<sup>10</sup> In many different time periods, the poor and bonded labourers, as well as the enslaved, were victims of structural violence, with primary sources revealing that the daily lives and standards of living of these different, but similarly marginalised groups were comparable.<sup>11</sup>

This is also true of the Roman period, where many writers observed that the lives of the urban poor and bonded labourers could be as bad as those working in mines or other hazardous enslaved occupations.<sup>12</sup> This perspective was reinforced by the huge variation in slave experience both in terms of occupation but also location within the Empire. The consequences of being poor and disenfranchised are proven by the osteological analyses of Roman cemetery populations from impoverished urban and suburban areas in Italy. These have shown that their demographic profiles

<sup>4</sup> Allison 2013; George 2011; Joshel and Hackworth Petersen 2014; Webster 2008a; 2008b; 2010a; 2010b.

<sup>5</sup> Webster 2005; 2008a; 2008b; 2010a; 2010b. Webster 2008a, 113 has comprehensively demonstrated that the frequently raised objections against comparing Atlantic and Roman slavery should be rejected because they are unfounded. These objections are: slavery is more archaeologically visible in the Americas, Atlantic slavery has a wealth of reliable primary sources, diachronic comparison should be limited to the southern states of the USA, Brazil, the Caribbean, and ancient Greece and Rome. Also see Hall 2008 and Taylor 2005.

<sup>6</sup> Steckel and Rose 2002.

<sup>7</sup> Handler and Lange 2006, 8: 'One problem in identifying the physical remains of slaves and artifacts indicative of slave culture is that slave status did not give people distinctive phenotypes or genotypes; nor did it give them material goods that were not found among other segments of the society.'

<sup>8</sup> Handler and Lange 2006, 9.

<sup>9</sup> Farmer *et al.* 2006, 1686.

<sup>10</sup> Farmer 2004.

<sup>11</sup> Philips Jr 2014.

<sup>12</sup> Knapp 2011.

are dominated by young and middle-aged adults who displayed high rates of degenerative osteoarthritis, suffered from high rates of dental disease, had physiological indicators of stress, sustained injuries caused by assault, and had high rates of non-specific infection.<sup>13</sup> The subadult osteological and dental evidence from these populations reveals poor growth, indicators of stress and metabolic diseases.<sup>14</sup> All these changes reflect lives dominated by poor nutrition, frequent disease events, inadequate living environments and hard labour — changes also found in the skeletons of the enslaved.<sup>15</sup>

Untangling the lives of these victims is difficult, because people (in any time period) can move up and down the social ladder over their life-time; nor is health a static phenomenon, as it changes according to environment, age, diet and life-style.<sup>16</sup> We have to accept that we may never be able to tell the different victims of structural violence apart, unless we are fortunate enough to discover their remains in a context which unequivocally describes or reveals their status.<sup>17</sup> As the work of Handler and Lange reminds us, this problem is not limited to the Roman period;<sup>18</sup> nevertheless, it still remains the case that victims of structural violence are overlooked in the archaeological record. Unless we employ novel strategies in an attempt to search for them in the extant evidence, then we are overlooking and excluding a significant portion of the population, who were vital to sustaining the Roman Empire.<sup>19</sup>

#### SLAVERY IN THE ROMAN WORLD

The origins of the enslaved were incredibly diverse, reflecting military campaigns and trading connections with bordering territories and parts of Asia and Africa. Many also became enslaved because they were born to an enslaved person, were a foundling, or were made slaves as a judicial punishment; some people even sold themselves to survive.<sup>20</sup> Slaves could be owned by the emperor and state, or another slave or a free-person, as attested in funerary epitaphs.<sup>21</sup> Imagery from public architecture suggests that in military campaigns, women and children were more likely to be enslaved than men, because they were considered to be less of a physical threat;<sup>22</sup> however, they were capable of immense resistance, as Cassius Dio observed of a group of German women and children who had been sold by the emperor Caracalla and committed mass-suicide to avoid enslavement.<sup>23</sup> Nevertheless, the general consensus is that the majority of enslaved people were male and numbered in their millions, with some estimates proposing that between 250,000 and 400,000 new slaves would be required every year.<sup>24</sup>

<sup>13</sup> Cucina *et al.* 2006; Facchini *et al.* 2004; Killgrove 2010; Paine *et al.* 2009.

<sup>14</sup> Prowse *et al.* 2010a.

<sup>15</sup> See Table 1. Note that the majority of these variables can be applied to cremated human remains. Blakey 2001 also raises the crucial point that owners and the enslaved could suffer from the same diseases because they were living in the same shared local environment (e.g. malaria); this is supported by bioarchaeological studies revealing, for example, that both groups had indicators of stress (cribra orbitalia, dental enamel hypoplastic defects and periosteal new bone formation) (among others, DeWitte and Stojanowski 2015; Roberts and Manchester 2010). However, the causative mechanisms and modes of transmission could be quite different.

<sup>16</sup> Riekert *et al.* 2014.

<sup>17</sup> In Britain, tombstones of the enslaved are known (e.g. *RIB* 1436) but to the best of the author's knowledge, none have been found in association with the original grave and/or human remains *in situ*.

<sup>18</sup> Handler and Lange 2006.

<sup>19</sup> Martin *et al.* 2013, 3–9. Similarly how women, children and the elderly were invisible before feminist and gender studies became more widely adopted and integrated into archaeological research.

<sup>20</sup> Arnold 1988; Scheidel 2011; Webster 2010a; 2010b. Prowse *et al.* 2010b identified a male with Asian mtDNA and local isotope values at the rural Imperial estate of Vagnari (Puglia, Italy).

<sup>21</sup> Knapp 2011; Wiedemann 1981.

<sup>22</sup> George 2011, 400–1.

<sup>23</sup> Cassius Dio, *Roman History* 72.14.2. Slavery is often described as a living or social death (see Patterson 1982).

<sup>24</sup> Harris 1999; Scheidel 2011.

Bradley describes the relationship of enslaved and owner as ‘consent, coercion and resistance ... threads woven inextricably together’,<sup>25</sup> a view reinforced by their legal status as a type of property, known as *res mancipi*, alongside working animals in the agricultural economy.<sup>26</sup> The range of occupations undertaken by slaves was vast, with many focused on the creation and support of elite life-styles and identities, ranging from maintaining their owner’s physical appearance to being a lamp-bearer.<sup>27</sup> These occupations and tasks were created by their owners,<sup>28</sup> but funerary epitaphs show that many enslaved people acknowledged the relationship between their identity and their occupation. However, in reality, occupations and daily tasks would have been very fluid unless they had received training in a specific skill, such as medicine or accountancy.<sup>29</sup> For example, an elite Julio-Claudian funerary monument from Rome contained numerous epitaphs of the enslaved household, whose occupations included weavers, a midwife, clothes-menders, accountants and Germanic bodyguards.<sup>30</sup> Many children and adults were also kept as pets (*deliciae*) by their owners, usually for sexual labour, but it was illegal to buy a person for prostitution.<sup>31</sup> Elite households also divided the enslaved into *familia urbana* and *rustica* groups reflecting where they were housed (urban versus rural) and what occupations they performed. However, these were changeable and often arbitrary divisions, as the enslaved frequently had the same occupation regardless of where they lived.<sup>32</sup> Nevertheless, the sources do paint a picture of harder conditions and work in a *rustica* setting.<sup>33</sup> All sources agree that those involved in mining had the most arduous conditions.<sup>34</sup> In the Roman world, careers could be upwardly and downwardly mobile but for many, particularly those owned by the Imperial family, they could be much better than the lives of many freemen.<sup>35</sup>

Many of the enslaved across the Empire are considered to have been employed in agriculture; however we are reliant on farming manuals written by elites to understand the roles and activities they performed.<sup>36</sup> From such texts we learn that they were often kept in underground prisons and made to work in chain-gangs.<sup>37</sup> It should be noted that the agricultural economy also employed many tenant farmers and other labourers, who were not enslaved but performed the same tasks.<sup>38</sup> McCarthy’s research on Romano-British peasants suggests that their activities would have involved walking long distances over rough terrain, clearing land, digging and lifting.<sup>39</sup> He also makes the important point that in a rural setting other occupations would also have been arduous, such as quarrying, mining and salt extraction.<sup>40</sup>

<sup>25</sup> Bradley 2011, 379.

<sup>26</sup> Gardner 2011, 415–16.

<sup>27</sup> George 2011, 404–5.

<sup>28</sup> e.g. one slave is charged with keeping the household staff quiet (Bodel 2011, 321).

<sup>29</sup> Bodel 2011, 318, 322–4.

<sup>30</sup> Edmondson 2011, 337.

<sup>31</sup> Bodel 2011, 328; Edmondson 2011, 350. However, enslaved children and adults could be ‘loaned’ out by their owners for this purpose (see Green 2015).

<sup>32</sup> Edmondson 2011, 350; Bodel 2011, 329–30.

<sup>33</sup> And free labourers. Edmondson 2011, 340–1; Joshel 2013.

<sup>34</sup> Edmondson 2011, 350; Mattingly 2008; Vitruvius, *De Architectura* 8.3.5, 6.11 noted that the water near lead mines would cause health problems; work by Grattan *et al.* 2002 and Pyatt *et al.* 1999; 2005 on the remains of Roman slaves who are believed to have worked at the copper mine at Phaeno, southern Jordan, has demonstrated that they had high levels of heavy metals in their bones.

<sup>35</sup> Bodel 2011, 322.

<sup>36</sup> *ibid.*, 315.

<sup>37</sup> *ibid.*, 330.

<sup>38</sup> Webster 2008b, 141.

<sup>39</sup> McCarthy 2013, 43.

<sup>40</sup> *ibid.*, 90–122.

The duration of a person's enslavement is a contested topic, but the epigraphic evidence suggests that there were gendered differences regarding when people were freed. Cicero<sup>41</sup> states that a good slave could be manumitted after six years; however, the consensus within scholarship is that enslavement would have been much longer, perhaps 20 years, especially for those in a rural setting, and for some individuals it lasted their entire life-time.<sup>42</sup> As for the majority of the Roman population, there was no retirement, and for the enslaved elderly this was a precarious stage of their lives, sadly one for which there is a paucity of information.<sup>43</sup> The limited primary sources give the impression that it was not acceptable practice to sell the infirm and elderly enslaved, one underlined by a legal principle established by the emperor Claudius that obliged the *familia* to care for these people.<sup>44</sup> Sadly, it seems that many owners manumitted the older enslaved in order to avoid caring for them; it was an expense they could not afford.<sup>45</sup> However, many older or impaired slaves were assigned lighter duties and continued to be fed and housed by their owners.<sup>46</sup> Reviews of the primary sources suggest that older women were a particularly vulnerable group, subject to physical and verbal abuse which focused on their physical appearance and frailty.<sup>47</sup>

#### SLAVERY IN ROMAN BRITAIN

Discussions of slavery in the Roman world acknowledge that the majority of evidence pertains to the Mediterranean, with other territories poorly understood and explored. In rural areas, on the margins of the Empire, it has been posited that earlier systems of labour continued during Roman occupation.<sup>48</sup> The Roman primary sources and Iron Age material culture show that slavery was a well-established trade between Britain and the Empire before the conquests of Caesar (55–54 B.C.) and Claudius (A.D. 43), with Caesar stating that the only booty from the territory was slaves.<sup>49</sup> However, post-conquest, the scale of this trade must have escalated considerably, especially with the development and expansion of the agricultural economy.<sup>50</sup> In discussing the evidence from Britain, Mattingly argues that the territory was a 'slave-using' society rather than a 'slave society', one constructed around slavery and reliant upon enslaved labour, with people being transported in and out of the territory.<sup>51</sup>

In Britain, epigraphic evidence reveals the presence of the enslaved, for example a tombstone from London which is dedicated to the wife of a slave, 'To the spirits of the departed ... Anencletus, slave of the province (set this up) to his most devoted wife',<sup>52</sup> and also writing-tablets, including new finds from Bloomberg, London.<sup>53</sup> The names of many enslaved in these sources are indigenous.<sup>54</sup> There are also small finds depicting shackled and bound

<sup>41</sup> Cicero, *Philippics* 8.32.

<sup>42</sup> Harris 1999; Scheidel 2011; Wiedemann 1996.

<sup>43</sup> Cokayne 2003; Parkin 2003.

<sup>44</sup> Wiedemann 1996.

<sup>45</sup> The suggestion in the sources that old and infirm slaves should be executed, should be regarded as a literary device rather than an actual practice; Harper 2016; Wiedemann 1996. Note, the evidence for the slitting of throats and multiple peri-mortem fractures observed in the remains of decapitated elderly females from Roman Britain, as described in Gowland 2016.

<sup>46</sup> Cokayne 2003.

<sup>47</sup> *ibid.*, 2003; Gowland 2006; 2016; Wiedemann 1996.

<sup>48</sup> Edmondson 2011, 339–40. For example, bonded labourers.

<sup>49</sup> Creighton 2000; Champion 1997; Mattingly 2006, 47; Thompson 1993.

<sup>50</sup> Mattingly 2006.

<sup>51</sup> *ibid.*, 294.

<sup>52</sup> *RIB* 21.

<sup>53</sup> Tomlin 2016.

<sup>54</sup> Webster 2005.

individuals, as well as finds of manacles and fetters,<sup>55</sup> the latter only very rarely recovered *in situ* on a skeleton.<sup>56</sup> Webster concedes that much of the evidence for the enslaved is most likely to be found by using archaeological data, primarily buildings and material culture, which raises the importance of studying human remains and cemeteries, though she acknowledges that we have yet (and still have) to identify a slave cemetery in Britain.<sup>57</sup>

#### ENSLAVED ROMAN BODIES

From the moment of capture to their eventual demise, bodies of the enslaved were controlled, manipulated and marked by their owners, as remarked upon in a funerary inscription from Gaul: ‘Gaius Ofilius Arimnestus ... a barbarian land gave me birth. Profit handed me over to undeserved slavery so that my whole being changed ... I obtained my freedom with my own money.’<sup>58</sup> As in later periods, natal origins were transformed to fulfil the owner’s desire; the emperor Caligula, for instance, transformed Gaulish slaves into ‘Germans’ as he had recently campaigned against these communities.<sup>59</sup> Ethnic origins did have to be stated by the seller, because some groups were more desirable than others — a point which should not be confused with proto-racism,<sup>60</sup> rather Roman society had stereotypes regarding the suitability of different groups for certain jobs, while people were urged not to have lots of slaves from a particular locale in order to avoid domestic unrest.<sup>61</sup>

At the point of sale, vendors had to state if the slave suffered from a disease or defect, though pregnancy, seen as a natural state, was not considered to detract from their value.<sup>62</sup> Their hair could be shaved, they could be tattooed, tortured and beaten; their passive status meant that they could be victims of sexual abuse and labour.<sup>63</sup> Harper goes so far as to say, ‘abuse of the slave’s body was built into Roman society’.<sup>64</sup> Bodies were also valued differently according to physical appearance. The number of enslaved Black and Asian people has been reckoned as lower than that of White European slaves, a factor which is thought to have contributed to them being prized as ‘exotic’, allowing their owner to increase their display of status and wealth.<sup>65</sup> Physically attractive slaves (children and adults) were valuable commodities, whose owners used them to serve and entertain guests at functions; they could use their physical capital to improve their standing within the household by becoming a favourite.<sup>66</sup> They could also be chosen for sexual labour either for their owner or as ‘reward’ for male agricultural

<sup>55</sup> Thompson 1993. See also the Portable Antiquaries Scheme online database <https://finds.org.uk/>.

<sup>56</sup> Such as a recently discovered burial from the East Midlands, where the lower legs of an individual had been restrained using a padlocked shackle (C. Chinnock, pers. comm.). Skeletons with iron rings around their lower legs have been discovered in Britain (e.g. York and London) but whether these objects are fetters is contested (see Cool 2015).

<sup>57</sup> Webster 2005. Nevertheless, we must recognise that archaeology may, in fact, be unable to do this, as Handler and Lange 2006 demonstrate in their work on Barbados.

<sup>58</sup> *CIL* 12.5026.

<sup>59</sup> Holmes 2010.

<sup>60</sup> Isaac 2006.

<sup>61</sup> Joshel and Hackworth Petersen 2014; Scheidel 2011.

<sup>62</sup> Gardner 2011, 416–17.

<sup>63</sup> Holmes 2010; Glazebrook 2015; Green 2015; see also discussion by Baird 2015.

<sup>64</sup> Harper 2016, 26.

<sup>65</sup> George 2013, 407; Knapp 2011, 129.

<sup>66</sup> For a discussion of physical capital see Shilling 2003, 111, 124–6; Bodel 2011, 313; Edmondson 2011, 356; Knapp 2011, 129.

slaves.<sup>67</sup> Green makes the important observation that the control and use of slave bodies by owners was frequently depicted in the frescos of many homes, an art form that both unequivocally reinforced their subjugation and humiliation and reflected their owner's wealth and status.<sup>68</sup>

The sources contain many examples of harsh physical treatment and abuse towards slaves by their owners, such as the medic Galen,<sup>69</sup> who observed that many were physically maimed by their owners; they could also be slapped, bitten or whipped, as Ovid says, 'What free man would willingly have sex with a house-slave and grab a back scarred by the whip?'.<sup>70</sup> The reasons for these punishments were varied, such as causing family disharmony or breaking their owner's possessions, but the general consensus is that they were beaten and abused because their owner wanted to and could do so on a whim.<sup>71</sup> The sources also describe the physical appearance of slaves engaged in hard manual labour: 'Their skins were seamed all over with the marks of old floggings ... they had letters tattooed on their foreheads, and their heads were half-shaved, and they had irons on their legs. Their complexions were frighteningly yellow.'<sup>72</sup>

Scheidel suggests that their risk of disease was no greater than that of their owners or those living in poverty, because they were living in the same environment.<sup>73</sup> At face-value this statement has merit but when viewed from a health perspective is problematic. It does not acknowledge the effect that capture and transport would have had on health, whereby people would have experienced psychological and physical traumas, compromised nutrition and exposure to new diseases.<sup>74</sup> Neither does it take into account the considerable amount of clinical and bioarchaeological data for the intergenerational consequences of poor health, with a mother's health-status having health and mortality consequences for her own offspring, as well as for her grandchildren and their descendants.<sup>75</sup>

#### BIOARCHAEOLOGY OF SLAVERY

Roman archaeology has called for stable isotopes and aDNA to be used when exploring enslavement, but is cautious about the extent to which science is a 'magic bullet';<sup>76</sup> sadly, also, despite a plethora of new bioarchaeological studies proving otherwise,<sup>77</sup> the belief that the extant datasets are too limited and biased to be of value still persists.<sup>78</sup> Over the decade or so since these calls were made, the discipline of bioarchaeology has significantly developed its approaches to the reconstruction of the lives of past individuals and communities, particularly because it now draws on multiple datasets to establish past experiences and is more thoroughly

<sup>67</sup> Many favourites also played this role as well; Green 2015. The narratives of people trafficked or kidnapped to be sex slaves are harrowing but provide a powerful insight into the lives of past slaves (see those in Bales and Trodd 2008), as are narratives by nineteenth-century female slaves about the threat of rape and bearing children (see Mattison 1861).

<sup>68</sup> Green 2015, 147–8.

<sup>69</sup> Galen, *Passions and Errors of the Soul* 1.4, 1.8; Hopkins 1993.

<sup>70</sup> Ovid, *Amores* 2.7.

<sup>71</sup> Bradley 2013; Hopkins 1993.

<sup>72</sup> Apuleius, *Golden Ass* 9.12; Hopkins 1993, 15–16.

<sup>73</sup> Scheidel 2011, 307.

<sup>74</sup> This is explored in the next section. See also Pickett and Wilkinson 2009.

<sup>75</sup> For bioarchaeology, see Gowland 2015. Hood 2001 provides an overview of the 'slave health deficit' — for example, hypertension in modern African-Americans is considered to result from their being descended from people who survived the Middle Passage. See also Whitfield *et al.* 2003 regarding the relationship between ethnicity and health.

<sup>76</sup> Mattingly 2008; Webster 2005.

<sup>77</sup> e.g. Killgrove and Montgomery 2016.

<sup>78</sup> e.g. McCarthy 2013, 142.



embedded in theoretical discourse.<sup>79</sup> The study of a person's skeleton creates a narrative, with the bioarchaeologist 'reading' the remains to establish aspects of their identity,<sup>80</sup> a strategy also used in ancient history, with Holmes suggesting that bodies 'become legible only in the presence of readers'.<sup>81</sup> A central concept in my work on Roman individuals is the recognition that a skeleton is not merely the physical remains of a person; it is a reflection of their social identity and shaped by the environment and culture that they inhabited.<sup>82</sup> The body categories suggested by Scheper Hughes and Lock<sup>83</sup> are ingrained in this review of the osteological evidence for enslavement, as these categories make clear that the body is regulated and controlled by others, and can be negatively impacted by structural violence.<sup>84</sup>

#### BIOARCHAEOLOGICAL PERSPECTIVES FROM THE NEW WORLD

Bioarchaeological research of the African Diaspora and Pre- and Post-Contact societies in the New World has analysed many diverse populations of the enslaved and has repeatedly identified compromised and stressed childhoods, which are reflected in the evidence for poor growth and development, the presence of infectious and metabolic diseases, injuries, poor dental health, indicators of physiological stress and high mortality rates.<sup>85</sup> This evidence is also found in adults who show high mortality rates for younger age-groups, injuries and musculoskeletal changes associated with high rates of physical activity,<sup>86</sup> evidence for assault injuries,<sup>87</sup> syphilis and metabolic diseases.<sup>88</sup> Sex differences are attested in many populations, with males experiencing the highest burden of injuries and activity changes, while females have high rates of syphilis and mortality during young adulthood.<sup>89</sup> Harrod and Martin<sup>90</sup> propose that

<sup>79</sup> Knudson and Stojanowski 2008; Martin *et al.* 2013; Stodder and Palkovich 2014, who raise the importance of reconstructing an individual's osteobiography.

<sup>80</sup> Redfern 2017.

<sup>81</sup> Holmes 2010, 166–7.

<sup>82</sup> See Gowland and Thompson 2013; Sofaer 2006.

<sup>83</sup> The 'body self' reflects the lived experience, the 'social body' examines how the body is represented as a natural symbol by a society, and the 'body politic' recognises that it is regulated, surveyed and controlled (Scheper-Hughes and Lock 1987).

<sup>84</sup> Bioarchaeology provides a unique perspective on this form of violence in the past (e.g. Klaus 2012). For the Roman period see Redfern 2013.

<sup>85</sup> See Table 1. Note that much of this work took place before the 2000s, before new ageing methods and techniques to identify (using aDNA and bioarchaeology) specific metabolic and infectious diseases were introduced. These populations are, for the most part, reburied and thus, we must accept that the dataset is of its time.

<sup>86</sup> Recent research has demonstrated that there is no direct association between occupations and musculoskeletal markers or osteoarthritic changes in a person's skeleton (Cardoso *et al.* 2012; Weiss 2005). However, it is possible to investigate activity levels and patterns at the specific population level (Henderson and Cardoso 2013; Weiss and Jurmain 2007). For example, the multidisciplinary analysis of a fifteenth–seventeenth-century plantation on Gran Canaria (Spain) (Santana *et al.* 2016) or the four individuals recovered from house-yard burials from Jamaica (Armstrong and Fleischman 2003).

<sup>87</sup> Such as craniofacial and post-cranial injuries produced by beatings and assault (e.g. nasal and zygomatic bone fractures) which can be differentiated from accidental fracture patterning (Redfern 2015; 2017). See the work by Blondiaux *et al.* 2012 concerning scapula fractures as evidence for beatings.

<sup>88</sup> See Table 1. Many studies have identified rickets and residual rickets but not scurvy (e.g. Kelley and Angel 1987). This result is proposed to be multifactorial: individuals can suffer from scurvy but not reach a state where a skeletal response is created; due to the poor bone quality resulting from this disease, the bones did not survive in a good state; and most importantly, that the majority of studies were undertaken before nuanced methods were published by Brickley and Ives 2008. Additionally, individuals could have received sufficient quantity and quality of food, see the work of Otto 1984 concerning food-ways on the plantations of Georgia (USA), his research did not find distinctive differences between the middens of planters, overseers and slaves.

<sup>89</sup> Blakey 2001, 411–12; also Kelley and Angel 1987; Rathbun and Steckel 2002.

<sup>90</sup> Harrod and Martin 2014; 2015; and also Cameron and Martin 2012.



non-lethal injuries are positively associated with capture and subordination, and emphasise the importance of injury recidivism<sup>91</sup> as an integral aspect of a person's general health status.<sup>92</sup>

Although these bioarchaeological studies have identified the same diseases and lesions in the remains of the enslaved regardless of location within the New World, they have also found diversity, reflecting the inherent heterogeneous experience of capture and enslavement.<sup>93</sup> This is illustrated by the analysis by Owsley *et al.* of a cemetery from New Orleans (USA), dating from 1720–1810.<sup>94</sup> Here, the non-White European individuals had poorer health than the White Europeans buried in the cemetery. Some Black males had experienced assault and undertaken hard physical labour, while one had a chronic osteomyelitis (infection) of their tibia, suggesting they had worn a shackle. However, in comparison to enslaved individuals excavated from plantation cemeteries, they appeared to have 'lived slightly better lives',<sup>95</sup> which the authors suggest reflects the less arduous roles they performed in urban households.<sup>96</sup>

The patterning and distribution of injuries reported for enslaved people vary between cemetery populations, but for the most part reflect a combination of fractures produced by assault, abuse and accidental mechanisms, because of their work on plantations, in agriculture and with livestock. There are no consistent trends between the sexes, and injuries (assault and accidental) are reported in all age-groups, from children to older adults.<sup>97</sup> For example, in a population from Monserrat (Caribbean), six adult males and six adult females were excavated, but only the females had evidence for healed fractures, affecting the left metacarpals, one right fibula and one right tibia, all of which are likely to have been produced by accidental mechanisms.<sup>98</sup> In contrast, individuals interred at the New York African Burial Ground had evidence for healed fractures to the vertebrae and extremities, suggestive of manual labour, and peri-mortem fractures to the skull, torso and limbs produced by violent mechanisms in adults of both sexes and one subadult, which may have contributed to their death.<sup>99</sup>

Nevertheless, in the majority of cases, these are the remains of people who had been born into slavery or had been sold to an owner.<sup>100</sup> Very few known cases of captured people have been identified; their remains provide a window into a very specific part of the enslavement experience.<sup>101</sup> One unique mid-nineteenth-century cemetery population was excavated on the

<sup>91</sup> This is not synonymous with multiple injury and refers to a sub-group of young unmarried adults (usually males) in urban settings who sustain injuries (of any aetiology) over a short period of time, see Redfern *et al.* 2016a.

<sup>92</sup> Including, healed depressed cranial fractures, rib and long bone fractures, in addition to early death, work-related osteoarthritis, nutritional stress and specific infectious diseases (Harrod and Martin 2014, 109, table 7.1). Work by Redfern *et al.* 2016a shows that archaeologically derived individuals with multiple injuries have poorer health and a higher mortality risk and, therefore, such assertions about the relationship between slavery/captivity and injury recidivism must be made with caution.

<sup>93</sup> Blakey 2001; see also the work of de la Cova 2011; 2012.

<sup>94</sup> Owsley *et al.* 1987.

<sup>95</sup> Owsley *et al.* 1987, 196. Note that this work pre-dates the seminal publication by Wood *et al.* 1992 concerning the osteological paradox. The presence of lesions in these individuals shows that they were sufficiently healthy to produce a bone response (see DeWitte and Stojanowski 2015). Through a contemporary lens, these results indicate that they had a lower burden of disease compared to their rural counter-parts.

<sup>96</sup> With respect to physical labour rather than structural and psychological violence.

<sup>97</sup> Among others, Handler and Corruccini 1983; Rathbun and Steckel 2002.

<sup>98</sup> Harney site slave cemetery (Watters 1994). Metacarpal fractures are also produced by assault (fights or abuse) but victims are more likely to also have sustained craniofacial injuries/fractures (Shepherd *et al.* 1990).

<sup>99</sup> Wilczak *et al.* 2004. Peri-mortem injuries may be defined as those happening shortly before, during or shortly after the time of death (Loe 2008).

<sup>100</sup> It is recognised that there are diverse routes to and within enslavement. For many, this involves the stages of capture or kidnap, transport, acquisition by an owner and possible manumission (Patterson 1982).

<sup>101</sup> No health data could be found for the recently discovered African individuals from a medieval midden at Lagos (Portugal) (Martiniano *et al.* 2014).

island of St Helena,<sup>102</sup> where a burial ground was established for first-generation transported Africans who had been released from their slaving vessels by the British Navy; they had been captured and been at sea for several weeks. The excavation recovered 325 individuals, the majority of whom were less than 18 years old.<sup>103</sup> Four adult males had sustained peri-mortem injuries to the ribs and hand, with one having evidence for a sharp-force weapon injury to their shoulder blade,<sup>104</sup> injuries that could only have been acquired during capture and transport. Metabolic diseases were also encountered, with nine people suffering from active rickets (vitamin D deficiency) at the time of death, while 20.87 per cent of the sample had lesions indicative of scurvy (vitamin C deficiency), which was most frequent in males and children, aged 7–12 years old, and may reflect the perils of a long sea voyage but also their living conditions during capture.<sup>105</sup>

The literature has also reported discrepancies between the historical accounts of slave health and the diseases observed in their skeletons. The primary difference is in mortality profiles, particularly of infants and young adults, whose high death rates were recorded in the historical sources<sup>106</sup> but are not always encountered in the archaeological record. Nevertheless, some scholars suggest that this discrepancy must not be taken at face-value, because many cemeteries have not been fully excavated, while many of the enslaved and their owners did not know their chronological age — as in Roman funerary inscriptions, this was rounded-up.<sup>107</sup> For example, the English eighteenth-century Jamaican plantation worker Thomas Thistlewood recorded in his diaries that there were 153 pregnancies on his plantation which resulted in 121 live births; of the 66 of these who could be traced in his diaries, 51 died before the age of seven and only 15 lived longer.<sup>108</sup>

The prevalence of infectious diseases, particularly tuberculosis and leprosy,<sup>109</sup> is also lower than reported in the sources; however this is not unexpected, particularly for tuberculosis, because only a small portion of those infected will develop a skeletal response.<sup>110</sup> Both diseases can be incubated for several years before developing and therefore a person may die before any changes are initiated in their skeleton.<sup>111</sup>

More recently, bioarchaeological studies have utilised aDNA techniques to better understand mobility and ancestry in the New World and when full genomic sequencing is employed these studies have been very successful in identifying people who originated from Africa.<sup>112</sup> For

<sup>102</sup> Located in the South Atlantic ocean.

<sup>103</sup> The primary sources suggest that at c. 5,000 people were buried at Rupert's Valley. The sample demography included one fetus and 3 neonates, who are likely to have been born on the ship or after release, and 18 subadults aged 1–6 years, 105 aged 7–12 years and 50 who were 13–18 years. The population have been reburied. Pearson *et al.* 2011, 61–2.

<sup>104</sup> Pearson *et al.* 2011, 82.

<sup>105</sup> *ibid.*, 94, 96.

<sup>106</sup> Among others, Steckel 1986. Note that acts of abortion/infanticide were performed as acts of resistance by many slave mothers, Allain 2014.

<sup>107</sup> The majority of burial grounds have been encountered during construction work (i.e. CRM archaeology) or by accident, see Blakey 2001 and Handler and Lange 2006; see Frazier 2004, 13–14 for an example of how slave ages were estimated or reduced to age-groups. For example, the oral testimony of a former enslaved man, George Johnson (age unknown), recorded in 1941 (Voices from the Days of Slavery, The Library of Congress, <http://hdl.loc.gov/locafc/afc9999001.14777a>). See Carroll 2006 and Hope 1997 for an overview of the biases concerning reported ages in Roman funerary inscriptions.

<sup>108</sup> Burnard 2004, 220; Thistlewood was in Jamaica from 1750 to 1786.

<sup>109</sup> Roberts 2002; Roberts and Cox 2003, 120.

<sup>110</sup> Skeletal involvement is estimated to be 3–5 per cent of those infected with tuberculosis and 5 per cent for leprosy (Roberts and Manchester 2010, 188, 195).

<sup>111</sup> Britton and Lockwood 2004; see also Wood *et al.* 1992.

<sup>112</sup> This work does raise ethical issues and tensions in modern communities and in academia, see Abel and Sandoval-Velasco 2016.

example, the work by Schroeder *et al.* on three enslaved individuals from St Martin (Caribbean) was able to identify connections to Ghana, Nigeria and northern Cameroon.<sup>113</sup> Stable isotopic studies of diet and mobility are also contributing to our understanding of the life-ways of transported individuals and their descendants, as illustrated in the study of 25 enslaved individuals excavated from the Newton Plantation (Barbados).<sup>114</sup> For some, their dietary isotopes differed between their teeth and bones, showing that their diet had significantly shifted between childhood (teeth) and adulthood (bone). These individuals also had non-local mobility isotope values, which showed diverse origins within Africa, thus reflecting their capture, transport and eventual enslavement on Barbados.<sup>115</sup>

#### ROMAN BIOARCHAEOLOGICAL EVIDENCE FROM CONTINENTAL EUROPE

The cautious approach advocated by Handler and Lange<sup>116</sup> is most pertinent to this section, as although epigraphic evidence has identified the cemeteries and burials of slaves and freedmen,<sup>117</sup> there is a dearth of accessible or published osteological data. Bioarchaeological studies have been undertaken on this material, but these have focused on certain aspects of skeletal and dental biology, such as morphology.<sup>118</sup> The evidence presented below reflects data from populations considered to have slaves present.

Excavations of the cemetery on the Imperial rural estate at Vagnari (Puglia, Italy) have uncovered the remains of 108 individuals buried between the first and fourth centuries. Although research on these human remains is ongoing, it appears that the cemetery was used to bury infants, children and adults of both sexes, the majority of whom were furnished with grave goods.<sup>119</sup> Preliminary bioarchaeological analysis has found evidence that both sexes have multiple fractures present, with males having the highest rates and more lower-limb fractures. In contrast, females sustained fractures to the vertebrae and upper limbs. Prowse *et al.* suggest that the patterning of injuries in this population reflects their activities in iron-working, tile production, animal husbandry and agriculture.<sup>120</sup> Also present were Schmorl's nodes and 'muscle tears', again suggestive of strenuous work.<sup>121</sup> Dental enamel hypoplastic defects and carious lesions likewise showed different prevalence rates between the sexes suggesting that food-ways on the estate were gendered.<sup>122</sup>

Analysis of the human remains from Pompeii (Italy) provides an unrivalled insight into the lives of urban-dwellers but because of its catastrophic destruction in A.D. 79, identifying who

<sup>113</sup> Schroeder *et al.* 2015.

<sup>114</sup> Schroeder *et al.* 2009.

<sup>115</sup> *ibid.* The remainder of the population have values consistent with being born on the island.

<sup>116</sup> Steckel and Rose 2002.

<sup>117</sup> See Tacoma 2016 for migration to Rome. The majority of evidence is from the Continent; see Carroll 2006, Hope 2007. For example, the Vatican opened a Roman cemetery that contained the tombs of slaves, including a child who was a lantern-carrier (Willey 2013). Excavation of a cemetery at Saintes (France) has encountered many mass burials where adults and children have *in-situ* restraints on (both) their neck and limbs; no osteological data could be obtained from this cemetery (Institut national de recherches archéologiques préventives 2014). The examples where human remains have been found *in situ* with shackles listed by Thompson 1993 were followed up: the one from Valon du Fou (France) has now been C14 dated to the Iron Age (<http://pm.revues.org/202>) and the literature for the remainder could not be sourced by the British Library.

<sup>118</sup> Such as Manzi *et al.* 1997. It is an understandable situation, in part resulting from funding strategies and issues of client confidentiality.

<sup>119</sup> Carroll and Prowse 2014; Prowse and Carroll 2015.

<sup>120</sup> Gilmour 2017; Prowse *et al.* 2014, 120.

<sup>121</sup> Prowse *et al.* 2014, 119. Note it is not clarified whether 'muscle tears' may refer to musculoskeletal markers or myostosis ossificans. The aetiology of Schmorl's nodes is described in Kwaku *et al.* 2012.

<sup>122</sup> Prowse *et al.* 2014, 112–17.

could be a slave is highly subjective, particularly given the poor post-excavation organisation of this material.<sup>123</sup> However, some evidence may point to differences in the burden of disease and in medical treatment between individuals. Lazer's research identified people with such poorly reduced leg fractures that they would have had considerable leg-length discrepancies; she also identified individuals with chronic degenerative osteoarthritis, poor dental health, physiological indicators of stress, and dental wear patterns suggestive of using teeth as tools in occupational activities, noting that one example was supposed to have been caused by a boy working in the fishing industry.<sup>124</sup> Although Lazer challenges earlier work which claimed to have identified sex labourers in the sample excavated from the town,<sup>125</sup> the body of a female found in a *caupona* near Pompeii has been the focus of debate, as a bracelet found on her arm has an inscription on its inner surface which reads, 'The master to his very own slave-girl'.<sup>126</sup> The female was aged *c.* 30 years old when she died and was found in association with another adult female and three children; however no pathological changes were reported.<sup>127</sup>

At the Italian cemetery of Lucus Feroniae (near Capena, north of Rome), Sperduti's examination of the human remains excavated from this low-status burial ground identified many individuals, usually male, who had musculoskeletal markers, degenerative osteoarthritis to their joints and vertebrae, and healed fractures indicative of accidental injury, which she suggests are associated with their engagement in heavy labour and manual occupations.<sup>128</sup> Similar osteological changes have been reported for the populations excavated from the cemeteries at Ostia and Portus (Italy).<sup>129</sup> There, studies have reported a demographic bias towards males aged 20–40 years old, who have musculoskeletal markers suggestive of hard manual labour, occupational injuries and degenerative osteoarthritis. This is not surprising given that this was the harbour used by the city of Rome and an area where salt was extracted.<sup>130</sup>

Unfortunately, only a limited number of aDNA and stable isotope studies of mobility have been conducted on Continental populations; these have found evidence for within region/country migration,<sup>131</sup> while only the mtDNA study by Prowse *et al.* at Vagnari has identified a person whose maternal line showed evidence for long-distance mobility, as their haplotype is found in modern Asian populations.<sup>132</sup> These findings support the evidence from the primary sources and inscriptions for the origins of enslaved people.<sup>133</sup>

<sup>123</sup> Lazer 2009, 102–4, and she often refers to human remains being disarticulated post-excavation or stored in a basket (e.g. 2009, 187).

<sup>124</sup> Lazer 2009, 218; assertion based on wear to the right central and lateral maxillary incisors, which is proposed to have been caused by the adolescent holding a bobbin of cord in their teeth when repairing fishing nets.

<sup>125</sup> Lazer 2009, 187–8. She also critiques the work of Biesel in *National Geographic*, which claimed to have identified enslaved individuals based on the presence of musculo-skeletal markers and indicators of stress (Lazer 2009, 29–30).

<sup>126</sup> At Moregine, to the south of Pompeii. For example, Edmondson 2011, 352–3. Baird 2015 has heavily critiqued the emphasis on this interpretation, showing that the context in which the person was recovered (carrying a bag of jewellery and wearing other items, and found in association with another woman and three children) is often passed-over in favour of her being a prostitute or an enslaved. Baird also notes that despite analysis showing that the remains are of a female in her 30s, she is often called a 'girl'. A similar case is the woman found in the gladiator barracks at Pompeii, discussed by Lazer 2009, 15–18.

<sup>127</sup> Baird 2015; Guzzo 2003.

<sup>128</sup> Sperduti 1997.

<sup>129</sup> Towns which served the harbour (Portus) of Rome. Data from the analysis of skeletons from tombs discovered at Ostia Antica and excavations of the cemeteries of Portus, at Caste Malnone.

<sup>130</sup> <http://www.ostia-antica.org/archnews.htm>.

<sup>131</sup> The numerous studies have recently been reviewed and collated by Prowse 2016. See also Killgrove and Montgomery 2016. Note, this is not to say that long- or short-distance mobility is indicative of or synonymous with an enslaved status.

<sup>132</sup> Prowse *et al.* 2010a.

<sup>133</sup> e.g. Carroll 2006, 209–32.

## SLAVE BODIES IN ROMAN BRITAIN

The bioarchaeological data from the New World emphasise a diverse range of palaeopathological evidence for enslavement. Using these findings to re-examine the evidence from Roman Britain obliges us to think again about the reasons why certain patterns of diseases, physiological indicators of stress and dietary stable isotope results are found,<sup>134</sup> as well as suggesting that we should be less reticent about proposing slavery as causality. One such disease is scurvy, which is a disease caused by a person having a diet lacking or with limited quantities of fruit or vegetables for several months<sup>135</sup> and for which the prevalence rates dramatically increase from the Iron Age.<sup>136</sup> At London, two cases were reported in infants less than a year old. Stable isotope analysis demonstrated that both were still being breastfed, which should have prevented them from developing the condition.<sup>137</sup> The identification of scurvy in this age-group shows us that whoever was nursing them was low in vitamin C which impacted on the vitamin levels in their breastmilk,<sup>138</sup> which as in the New World examples, perhaps reflects poverty or enslavement.<sup>139</sup> Although no adults have been identified with scurvy in Roman London, this does not mean that the disease was absent in this population, as people can have low levels but not become critically ill enough to initiate a bony response.<sup>140</sup> Therefore, because most of an infant's nutritional needs are met through breastmilk, the possibility is raised that their nurses had compromised nutrition, potentially implying that they (and their nurslings) may have been enslaved.

Another area which deserves closer scrutiny is rural-urban health inequalities, where slavery has been suggested as one of a number of causative factors,<sup>141</sup> but because data have typically been pooled and examined at the regional or national level, subtle trends within a locale, as well as individual experiences, will be masked.<sup>142</sup> Also to consider is the evidence for fracture treatment, as cemetery reports and regional studies reveal considerable variation in injury outcomes between individuals; this evidence, when combined with evidence for other disease and physiological indicators of stress, could provide new insights.<sup>143</sup>

<sup>134</sup> e.g. the work of Lewis 2010 and Rohnbogner 2016 identifying the presence of thalassaemia in Roman Britain, conditions typically only found in Mediterranean populations.

<sup>135</sup> Additionally, cooking reduces levels of vitamin C in foods, so it may be that low quantities combined with cooking strategies act together to cause the disease (see Brickley and Ives 2008, 41–5, 49–53).

<sup>136</sup> See Redfern *et al.* 2012 and Rohnbogner 2015. It is proposed that this increase is multifactorial: an increase in population, the introduction of urbanism, new food-ways and childcare practices, as well as slavery, see Redfern and DeWitte 2011.

<sup>137</sup> Powell 2014.

<sup>138</sup> Brickley and Ives 2008, 41–6. Alternative interpretations include the consumption of contaminated weaning foods and the co-occurrence of gastrointestinal diseases.

<sup>139</sup> No adults with scurvy have been published from Roman Britain (Brickley and Ives 2008, 72; Roberts and Cox 2003, 142–3). Despite the high numbers of the enslaved living in Rome, only a subadult case was identified in a review of Imperial age cemeteries from the city (Minozzi *et al.* 2012) — no cases have been reported from elsewhere in the Empire (see Brickley and Ives 2008, 72–4).

<sup>140</sup> Brickley and Ives 2008, 49–50, 61–2. It is likely that more cases (in all age-groups) would be identified if biochemical techniques were applied see Koon 2012. To the best of the author's knowledge, these have yet to be tested on human remains from the Roman period.

<sup>141</sup> Pitts and Griffin 2012; Redfern *et al.* 2015.

<sup>142</sup> See Handler and Lange 2006, 8–9. Also, Woolf 2013, 352 describes it: 'a complex landscape formed by the interplay of different migratory movements, among them inward flows of slaves and provincials and the constant flow of peasants from fecund rural locations into urban zones characterized by high morbidity.'

<sup>143</sup> Redfern 2010. For example, the cemeteries from Cirencester (McWhirr *et al.* 1982). See Redfern 2010 for a discussion of alternative interpretations of the evidence for inadequate treatment, including that these may in fact represent those living in poverty. Note that the primary sources do provide evidence for slaves receiving good medical care, but these are limited and biased in scope (Wiedemann 1987).

Stable isotope analyses of diet using bone collagen have been undertaken on many hundreds of inhumed individuals from Roman Britain derived from rural, urban and military funerary contexts.<sup>144</sup> These results have shown that there is an increase in nitrogen values ( $\delta^{15}\text{N}$ ) compared to late Iron Age individuals,<sup>145</sup> which is typically explained as an increase in the consumption of marine resources, reflecting how food-ways were transformed from the late Iron Age.<sup>146</sup> Interestingly, a similar result has been observed in both individuals and populations who have experienced physiological stress, such as victims of famine and abuse, because when a person's body enters a catabolic state, the nutritional stress causes the  $\delta^{15}\text{N}$  values to rise but the carbon values ( $\delta^{13}\text{C}$ ) typically remain the same.<sup>147</sup> A study by Redfern *et al.* has examined the relationship between dietary stable isotopes and mortality risk for Roman Britain and found sex differences in the median values of  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ , which they propose reflect the lower socio-economic status of many females post-conquest, and that individuals with elevated  $\delta^{15}\text{N}$  levels had an increased mortality risk which in some individuals may not indicate diet, but rather physiological stress, perhaps associated with enslavement.<sup>148</sup>

Focusing on specific burials, in Britain there are several instances where human remains have been uncovered with restraints *in situ*, but the majority are unlinked iron rings around the lower legs; whether or not these rings are actually restraints is debated in the literature.<sup>149</sup> If indeed they are, then these may well be the bodies of enslaved individuals and a vital source of evidence.<sup>150</sup> In London, where epigraphic and material culture finds attest to enslavement in the city, two burials have been encountered that may be of enslaved people. One male, aged 18–25, was excavated with iron rings around his ankles, one being welded around each leg (FIG. 1).<sup>151</sup> This male only had two reported pathologies: Schmorl's nodes to the thoracic and lumbar vertebrae and dental calculus.<sup>152</sup> Schmorl's nodes have multifactorial origins, including congenital factors, trauma and degenerative osteoarthritic changes.<sup>153</sup> The second example of iron rings around a person's ankles was found on the heavily truncated remains of an adult, for whom only the lower legs survived; no pathology was reported (FIG. 2).<sup>154</sup>

<sup>144</sup> See Müldner 2013 for a review of the evidence.

<sup>145</sup> This is observed at the national level (Müldner 2013), regional and intra-cemetery level (e.g. Redfern *et al.* 2010).

<sup>146</sup> Müldner 2013. The association between high social status and the consumption of marine resources first proposed by Richards *et al.* 1998 based on the Poundbury Camp population has not been found in other cemeteries within Dorset or elsewhere in Britain (Redfern *et al.* 2010; Cheung *et al.* 2012).

<sup>147</sup> See Beaumont and Montgomery 2016 and Reitsema 2013.

<sup>148</sup> Redfern *et al.* (submitted).

<sup>149</sup> From London and York, Harward *et al.* 2015 and Cool 2015. Both sources explore whether (or not) these are restraints. It may well have been that they were secured together using rope which has not survived to excavation. The recent find from the East Midlands has yet to be published, and due to client confidentiality it was not possible to share the information at the present time (C. Chinnock, pers. comm.). For example, it may well be that some deviant burials (encountered in community burial grounds and other non-normative contexts, see Taylor 2008) are those of captured or enslaved individuals, and re-analysis of their remains would bring new bioarchaeological evidence to light.

<sup>150</sup> They could also be prisoners. The author is mindful of Handler and Lange's 2006 arguments on this matter here.

<sup>151</sup> Individual ENS03 sk 347 (BU30). Harward *et al.* 2015, 144 state that although they would have been welded onto the leg, there is no sign of a moveable fastening and they do not conform to the classifications of shackles or fetters.

<sup>152</sup> *ibid.*

<sup>153</sup> Kwaku *et al.* 2012.

<sup>154</sup> ELD88 sk 216 (BU73) (Harward *et al.* 2015, 148–9). These appear to be the same type as reported for ENS03 sk 347.



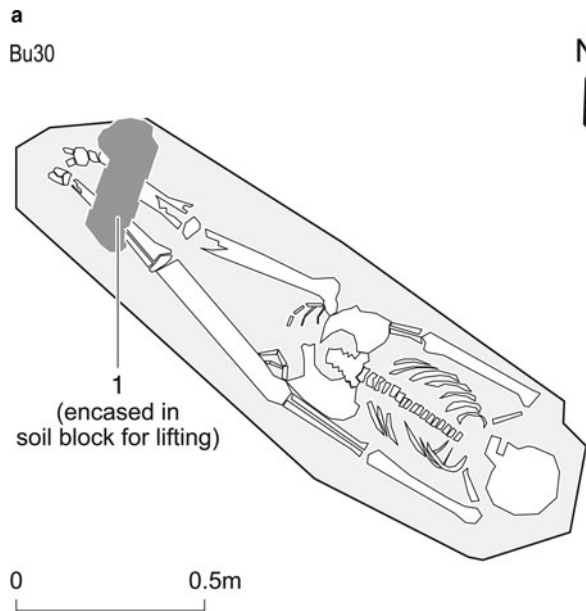


FIG. 1a. Grave of the adult male burial (ENS03 sk347 BU30) with iron rings from London. (Harward *et al.* 2015, 145, fig. 108. © MOLA (Museum of London Archaeology))



FIG. 1b. Anterior view of the tibiae of an adult male (ENS03 sk347 BU30) with the iron rings *in situ*. (Harward *et al.* 2015, 145, fig. 108. © MOLA (Museum of London Archaeology))





FIG. 2 (a) Example of an iron ring from London found on the left lower leg of an adult (ELD88 sk 216 BU 73). (Harward *et al.* 2015, 149, fig. 115. © MOLA (Museum of London Archaeology)); (b) Anterior view of the left lower leg bones of an adult. (Harward *et al.* 2015, 145, fig. 108. © MOLA (Museum of London Archaeology))

In the cemetery at 3 Driffeld Terrace in York,<sup>155</sup> a male (3DT37), aged 26–35, from a double burial, was interred with an iron ring around each ankle and had been decapitated. Analysis of his skeleton revealed that he had degenerative osteoarthritis to his spine and other joints, evidence for trauma to his head, teeth, hand and a leg, developmental changes to his spine and right shoulder joint, non-specific evidence for infection to his ribs and sacrum, active new bone present to his legs and evidence for a reduction in tooth size and over-crowding.<sup>156</sup>

<sup>155</sup> This is an atypical cemetery in York and, among other interpretations, has been suggested as being the burial ground for gladiators or members of the military (Caffell and Holst 2011; Müldner *et al.* 2011); unfortunately mobility isotopes were not tested on this individual, see Caffell and Holst 2011 and Montgomery *et al.* 2011.

<sup>156</sup> He had Schmorl's nodes in his vertebrae, degenerative osteoarthritis to his spine and hip joints, robust musculoskeletal markers, evidence for soft-tissue injuries to his right clavicle, a finger and left tibia; he also had fractured his left fibula and sustained two blunt-force injuries to his frontal bone, with his dentition revealing evidence for fractures and chipping. Furthermore, he had several developmental conditions: dysplasia of the right glenoid cavity on the scapula bone, a sacralised supernumerary vertebra and a thoracolumbar caudal border shift. Non-specific periosteal changes affected his sacrum and rib lesions were also present. On his femora and tibiae,

In 1976, Calvin Wells suggested that the severe infection (osteitis) affecting the distal portion of the forearm bones and the distal portion of the left lower leg which had formed into a ‘ring shaped zone’ in an ‘elderly man’ (Burial 6) (FIG. 3) from the cemetery at Icklingham, Suffolk,<sup>157</sup> may have developed in response to the use of shackles. He went on to suggest that new bone formation to the wrist and ankle area of a ‘middle-aged woman’ (Burial 35) and osteitis at the distal portion of the right lower leg in a middle-aged man (Burial 38) may also have developed in response to being shackled.<sup>158</sup> While Wells was renowned for ‘pushing the envelope’ on interpretation, in the author’s experience these changes are as Wells describes them, ‘exceedingly puzzling ... very perplexing ... I have never previously seen such a group as these’.<sup>159</sup>

Other cases suggestive of an enslaved status can be proposed though this is by no means the only interpretation. For example, at the same cemetery, another potential enslaved elderly person could be Burial 1, a female described as ‘relatively advanced [in] years’, who had mild congenital kyphoscoliosis, and a poorly reduced fracture to the distal end of her right clavicle that also resulted in considerable ossification of the surrounding tissue, a healed fracture to the proximal third of her left fibula, degenerative osteoarthritis to her shoulder, knee joints and first metatarsal-phalanx joints, and ‘gross thinning of the symphyseal surfaces of both pubic bones ... with the L. side obliquely overlapping the R.’.<sup>160</sup> Her skeleton has many of the conditions associated with enslavement,<sup>161</sup> particularly the degenerative osteoarthritic changes showing that these joints were used and she was mobile, but the changes to the pubic bones are harder to understand and may well reflect a subluxed (partially dislocated) joint, again related to occupation.<sup>162</sup> The location of these fractures corresponds to accidental injury mechanisms that may be related to her spinal condition but also to agricultural work.<sup>163</sup>

Excavations at Oxford Road (Gloucester) recovered two individuals from a mass pit who are tentatively thought by Márquez-Grant to have suffered from congenital syphilis.<sup>164</sup> The first is

active periosteal new bone formation was present. He also had reduced crown size of his second molar teeth, evidence for dental crowding, carious lesions, calculus and abscesses (Caffell and Holst 2011) — see Table 1.

<sup>157</sup> Wells 1976 also notes that the cemetery is of a mixed population, with poor dental health and evidence of over-crowding, indicators of stress and osteoarthritis. Iron shackles (FNG Misc) have also been reported from Suffolk during this period (Suffolk Heritage Explorer 2014).

<sup>158</sup> Wells 1976, 112–13, notes that it is very different to the normal appearance of this condition in skeletons from this period. Additional pathology (Wells 1976, 114, table 12): Burial 6 has osteoarthritis to his spine, wrist/hands, and ankle/foot, Burial 35 had synostosis of the left sacroiliac joint and Burial 38 is reported as having a miscellaneous condition but this could not be identified in the text.

<sup>159</sup> Wells 1976, 112–13. Many rural cemeteries deserve reconsideration as the burial grounds of potentially enslaved individuals, including ‘deviant’ burials within normative cemeteries, such as that of a male, aged 25–30, from the villa site of Dalton Parlours (sk 10 [5005], Yorks.). He has remodelled sinusitis, poor dental health, Schmorl’s nodes in his spine, healed periosteal lesions on his lower legs, a healed fracture to the base of his left fifth metacarpal and a remodelled green-stick fracture to the shaft of his left humerus. He was buried in a sufficiently large grave for his stature; however, he was placed prone, with his neck in extreme extension. His hips were slightly flexed and his knees were flexed at 50–60 degrees, his right arm was flexed, with the hand under the left shoulder, and the left arm was also under his body, with the hand beneath the right side of his pelvis (Wrathmell and Nicholson 1990, 172–3).

<sup>160</sup> Wells 1976, 109–10.

<sup>161</sup> See Table 1.

<sup>162</sup> Wells 1976, 109–10 does suggest that this change was caused by birth trauma, which remains a possibility, although the pubic instability can also be caused by repetitive micro-trauma and low-energy pelvic strains (Anderson and Read 2008).

<sup>163</sup> Wells 1976, 109–10 does propose that her developmental spinal condition would have increased her risk of injury, which is supported by clinical data (Redfern 2017). Nevertheless, an intentional mechanism cannot be entirely ruled out as studies of medieval and post-medieval people with this condition in London observed more fractures caused by assault than accident (Redfern 2017). This injury patterning is common in agricultural populations (Redfern 2017).

<sup>164</sup> The authors of the report suggest that the C14 dates from the mass grave could mean that these individuals died during the Antonine Plague (A.D. 165–80); neither individual was subject to stable isotope analysis for mobility or diet (Simmonds *et al.* 2008).



FIG. 3a. Severe infection of the lower portion of the forearms of an older adult male from Icklingham, Suffolk. (West and Plouviez 1976, 112, pl. IV lower. © East Anglian Archaeology)



FIG. 3b. Example of the severe infection to the left lower leg of an older adult male from Icklingham, Suffolk. (West and Plouviez 1976, 113, pl. V. © East Anglian Archaeology)

a subadult (sk 1277) who had very severe enamel hypoplastic defects to their deciduous dentition and unerupted permanent dentition.<sup>165</sup> Unfortunately, their skeleton was incomplete and cribriform orbitalia (indicative of anaemia) was the only observable pathology.<sup>166</sup> The second individual is an adolescent (sk 1672), aged 15–18, with dental changes identified by Márquez-Grant as mulberry molars and notched incisors<sup>167</sup> — dental changes caused by congenital syphilis.<sup>168</sup> These are the earliest cases of congenital syphilis in Britain and, at present, the only cases from the Roman period.<sup>169</sup> The incomplete nature of their skeletons and the lack of associated bony lesions is problematic, but the extant lesions and dental morphology do conform to the late-onset changes described in the clinical literature.<sup>170</sup> The presence of these two potential cases provides a window into sexual health at this time and could reflect that their mothers were victims of sexual violence or their involvement in sexual labour.

Work by Eckardt *et al.*<sup>171</sup> has spearheaded the use of mobility isotopes in Britain, with their work focusing on diaspora communities, predominantly analysing cemeteries from Yorkshire and Hampshire, which identified migrants from within Britain but also from the Continent. Their stable isotope studies were supplemented by ancestry assessment of skull metrics in a number of populations, which revealed the presence of people with mixed White European and Black ancestries, as well as Black ancestries.<sup>172</sup> Recent stable isotope studies of individuals from London have identified migrants from Rome, the Continent and the southern Mediterranean, with assessments of ancestry based on craniofacial morphology identifying White European and African people.<sup>173</sup> Only a small number of aDNA studies have been published from Britain,<sup>174</sup> these have revealed Continental and Middle Eastern relationships.<sup>175</sup> These are fascinating results, but on their own do not provide evidence of enslavement, as many different groups of people were mobile within the Empire, not just the enslaved.<sup>176</sup> It is

<sup>165</sup> Márquez-Grant 2008, 45–6.

<sup>166</sup> *ibid.*, 46. Their remains consisted of their skull, vertebrae, and the shafts of one humerus and femur. Cribriform orbitalia has a multifactorial aetiology (see Rivera and Lahr 2017).

<sup>167</sup> *ibid.*, 48. Their remains consisted of a skull, vertebrae and a left tarsal bone.

<sup>168</sup> Hillson *et al.* 1998; Ioannou *et al.* 2017; Nissanka-Jayasuriya *et al.* 2016. These sources note that less-severe defects are similar in appearance to hypoplastic defects (i.e. case P00011R, fig. 1, published by Ioannou *et al.* 2017), which is the differential diagnosis proposed in the site report and one supported here, as it is the author's experience that individuals with congenital or acquired treponematoses or syphilis often have very severe (and plane-form) enamel hypoplastic defects present (see Connell *et al.* 2012). Research by Towle *et al.* (2017) suggests that for sk 1672, these are a severe form of enamel hypoplastic defect and not caused by syphilis; they propose that these are the earliest examples of a severe plane-form defect.

For a description of the diagnostic criteria for syphilis and treponematoses see Ortner 2003, 273–318; note that how the disease manifests in the skeleton shows variation over time (Walker *et al.* 2015). Sexually transmitted infections were present in the Roman period (Berg 2012), but none of those described are comparable to treponematoses or syphilis — it is unsound to diagnose diseases based on ancient descriptive reports (Mitchell 2011). At the time of writing, aDNA has not been able to identify syphilis in individuals with diagnostic skeletal lesions, only in neonates with bony changes suggestive of an infectious disease — not specific to syphilis/treponematoses (Montiel *et al.* 2012).

<sup>169</sup> Roberts and Cox 2003 and Rohnbogner 2015; the latter has undertaken an extensive and comprehensive re-examination of many populations from Roman Britain but has not found any cases. Cases of syphilis and treponematoses have been reported but not always published in the peer-review literature from Roman Spain (Rissech *et al.* 2013), late Roman Gaul (Pálfi *et al.* 1992; 1995) and Pompeii (Italy) (Beard 2010).

<sup>170</sup> Patterson and Davies 2016.

<sup>171</sup> Summarised in Eckardt 2010.

<sup>172</sup> e.g. Leach *et al.* 2010.

<sup>173</sup> Redfern *et al.* 2016b; Shaw *et al.* 2016.

<sup>174</sup> The author is aware that other unpublished aDNA studies have been conducted on populations from Bath and Colchester, and given the rapid developments in this field, the veracity of these results can no longer be accepted without revisions.

<sup>175</sup> Martiniano *et al.* 2014; Redfern *et al.* 2017.

only at the individual level that these results combined with other bioarchaeological data can contribute to reconstructing an osteobiography that may suggest enslavement.

## CONCLUSIONS

This review suggests that an osteobiographical approach affords us the opportunity of identifying the enslaved of Roman Britain. Such an approach needs to be multidisciplinary, drawing on work undertaken in the New World and elsewhere in the Roman Empire.<sup>177</sup> However, the literature shows that enslavement does not create specific or unique health and disease patterns. Instead, it recognises that the ‘body politic’ records these insults and suffering, and it is this evidence which allows us to identify victims of structural violence.<sup>178</sup> Now, more than at any other time, bioarchaeology, aDNA and stable isotopes are able to provide a unique insight into Romano-British enslavement. British bioarchaeology has a robust and strong theoretical grounding and recognises that the valuable research by New World scholars should inform our practice rather than acting as a universal template for past communities. Above all, bioarchaeology has the potential to ‘see’ the enslaved of Roman Britain through the careful consideration of the person’s burial context, their identity, health and genetics.<sup>179</sup>

TABLE 1. BIOARCHAEOLOGICAL EVIDENCE ASSOCIATED WITH CAPTIVITY AND ENSLAVEMENT

Age-group: social and biological ages (Harlow and Laurence 2002)	Bioarchaeological evidence	Source(s)
Subadults: those not living as an ‘adult’ in the Roman life course (<14yrs for females and <20 for males)	Infanticide	Gowland <i>et al.</i> 2014; Booth <i>et al.</i> 2016
	Mortality: high infant mortality; atypical demographic profile: juvenile and adolescent individuals Morbidity: increased risk	Burnard 2004; Corruccini <i>et al.</i> 1982; 1987; Handler and Corruccini 1983; Kelley and Angel 1987; Owsley <i>et al.</i> 1987; Pearson <i>et al.</i> 2011; Rathbun 1987; Steckel 1986
	Delayed puberty and skeletal maturation	Arthur <i>et al.</i> 2016
	Delayed or compromised growth Death in childbirth at a young age	Bogin 2002; Ulijaszek <i>et al.</i> 1998 Burnard 2004; Bush-Slimani 1996; Steckel 1986

*Continued*

<sup>176</sup> Note that many of the Yorkshire cemetery populations studied by Eckardt *et al.* 2010 are associated with the military community, e.g. Catterick. See also Mattingly 2008 who observes that migrants are not synonymous with the enslaved.

<sup>177</sup> Summarised in Table 1.

<sup>178</sup> Redfern 2017.

<sup>179</sup> Note that the analysis, dissemination, curation and use of genetic information obtained from long-dead individuals involves professional and robust ethical management, see (among others) Solbakk *et al.* 2009; Widdows and Mullen 2013.

Adults: those living as an 'adult' in the Roman life course (>14yrs for females and >20 for males)	Mortality: catastrophic profile; older adults Morbidity: increased risk	Blakey 2001; Cameron and Martin 2012; Corruccini <i>et al.</i> 1982; 1987; Handler and Corruccini 1983; Harrod and Martin 2014; 2015; Harris and Rathbun 1989; Kelley and Angel 1987; Okumura 2011; Owsley <i>et al.</i> 1987; Pearson <i>et al.</i> 2011; Rathbun 1987; Shuler 2005; 2011; Shuler and Schroder 2013; Shuler <i>et al.</i> 2012
Both groups	Short stature Stable isotope analysis: evidence for dietary and physiological stress; evidence for breastfeeding and weaning strategies Stable isotope analysis: mobility aDNA analysis: oral microbiome evidence for disease and stress; disease and virus evidence	Rathbun and Steckel 2002 Beaumont and Montgomery 2016; Beaumont <i>et al.</i> 2015; Brown and Brown 2011; Jay 2009; Reitsema 2013; Tsutaya and Yoneda 2014 Budd <i>et al.</i> 2000; Evans <i>et al.</i> 2012; Montgomery <i>et al.</i> 2010 Brown and Brown 2011; Warriner <i>et al.</i> 2015; 2017
	Ancestry: haplotype and other genomic information; skeletal morphology and metrics	Edgar 2013; Elliot and Collard 2009; Hefner <i>et al.</i> 2012; Pilloud and Hefner 2016; Prowse <i>et al.</i> 2010a; Sauer and Wankmiller 2009; Schroeder <i>et al.</i> 2009; 2015
	Diet: skeletal and dental evidence for metabolic diseases cause by nutritional insufficiencies	Blakey 2001; Brickley and Ives 2008; Cameron and Martin 2012; Corruccini <i>et al.</i> 1982; 1987; D'Ortenzio <i>et al.</i> 2016; Harrod and Martin 2014; 2015; Harris and Rathbun 1989; Jacobi <i>et al.</i> 1992; Kelley and Angel 1987; Okumura 2011; Rathbun 1987
	Skeletal and dental malformations associated with sexually transmitted diseases (e.g. syphilis)	Hillson <i>et al.</i> 1998; Jacobi <i>et al.</i> 1992; Lambert 2006; Nissanka-Jayasuriya <i>et al.</i> 2016; Pálfi <i>et al.</i> 1992; 1995; Patterson and Davies 2016
	Death in childbirth at a young age	Burnard 2004; Bush-Slimani 1996; Steckel 1986
	Congenital and developmental defects associated with maternal health being compromised during pregnancy and reflecting genetic inheritance	Barnes 1994; Shuler <i>et al.</i> 2012; Shuler and Schroeder 2013
	Non-specific indicators of stress: cribra orbitalia, new bone formation, dental enamel hypoplastic defects, reduced vertebral dimensions	Blakey 2001; Cameron and Martin 2012; Corruccini <i>et al.</i> 1982; 1987; Harrod and Martin 2014; 2015; Harris and Rathbun 1989; Jacobi <i>et al.</i> 1992; Kelley and Angel 1987; Newman and Gowland 2015; Okumura 2011; Owsley <i>et al.</i> 1987; Pearson <i>et al.</i> 2011; Rathbun 1987; Rivera and Lahr 2017; Shuler 2005; 2011; Weston 2008; 2012

*Continued*



TABLE 1. CONTINUED

Age-group: social and biological ages (Harlow and Laurence 2002)	Bioarchaeological evidence	Source(s)
	Injuries (ante- and peri-mortem): stress fractures particularly to load-bearing joints; presence of multiple fractures; fractures to the head, teeth, face and bones of the torso; injury patterning that conforms to child abuse, domestic violence, assault or elder abuse Injury healing: evidence for insufficient treatment outcomes (e.g. poor apposition); evidence for poor care vs. recommendations provided by the Index of Care	Blakey 2001; Cameron and Martin 2012; Corruccini <i>et al.</i> 1982; 1987; de la Cova 2011; 2012; Handler and Corruccini 1983; Harrod and Martin 2014; 2015; Harris and Rathbun 1989; Kelley and Angel 1987; Owsley <i>et al.</i> 1987; Pearson <i>et al.</i> 2011; Rathbun 1987; Redfern 2010; 2015; 2017; Shuler 2005; Tilley 2015; Tilley and Cameron 2014; Wilczak <i>et al.</i> 2004
	Biomechanical and musculoskeletal changes associated with high levels of physical activity	Blakey 2001; Cardoso <i>et al.</i> 2012; Handler and Corruccini 1983; Henderson and Cardoso 2013; Henderson <i>et al.</i> 2015; Weiss 2005; Weiss and Jurmain 2007; Wilczak <i>et al.</i> 2004
	Respiratory conditions: sinusitis and rib lesions	Roberts 2007; Roberts and Lewis 2002; Roberts <i>et al.</i> 1994; Weston 2008; 2012
	Localised areas of inflammation and injury to wrists, ankles and neck suggesting use of restraints and collars	Harrod and Martin 2014; Owsley <i>et al.</i> 1987; Wells 1976
	Dental health and morphology: carious lesions; calculus; ante-mortem tooth loss; periodontal disease; dental asymmetry; malocclusion; reduction in tooth size between different phases of burial	Blakey 2001; Corruccini <i>et al.</i> 1982; 1987; Handler and Corruccini 1983; Harris and Rathbun 1989; Kelley and Angel 1987; Okumura 2011; Owsley <i>et al.</i> 1987; Pearson <i>et al.</i> 2011; Rathbun 1987; Shuler 2005
	Infectious disease (specific and non-specific): tuberculosis, osteomyelitis, malaria, ear infections, endocranial lesions	Armstrong and Fleischman 2003; Blakey 2001; Corruccini <i>et al.</i> 1982, 1987; Handler and Corruccini 1983; Harris and Rathbun 1989; Kelley and Angel 1987; Lewis 2004; Rathbun and Steckel 2002; Roberts and Buikstra 2008; Roberts and Manchester 2010; Smith-Guzmán 2015 Mitchell 2016
	Parasites	
	'New' diseases in the period: leprosy, thalassaemia	Baker 2013; Lagia <i>et al.</i> 2007; Lewis 2010; Roberts 2002; Rubini <i>et al.</i> 2014

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