Offa's Dyke Journal

Volume 2

Edited by Howard Williams and Liam Delaney

Aims and Scope

Offa's Dyke Journal is a peer-reviewed venue for the publication of high-quality research on the archaeology, history and heritage of frontiers and borderlands focusing on the Anglo-Welsh border. The editors invite submissions that explore dimensions of Offa's Dyke, Wat's Dyke and the 'short dykes' of western Britain, including their life-histories and landscape contexts. *ODJ* will also consider comparative studies on the material culture and monumentality of frontiers and borderlands from elsewhere in Britain, Europe and beyond. We accept:

1. Notes and Reviews of up to 3,000 words
2. Interim reports on fieldwork of up to 5,000 words
3. Original discussions, syntheses and analyses of up to 10,000 words

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The 'Wall of Severus': Pseudoarchaeology and the West Mercian Dykes

Keith Fitzpatrick-Matthews

The dates and purposes of Offa's Dyke and Wat's Dyke have long been a subject of debate among historians and archaeologists. This paper examines and critiques several of the more unusual claims made over the past century. Prominence is given to the use of ancient literature and widespread misunderstandings of scientific dating techniques, both of which have been used to suggest a Roman date for the origin of the dykes close to the modern Anglo-Welsh border.

Keywords: Bad Archaeology, ley lines, prehistoric canals, pseudoarchaeology, revisionist history, Roman *limes*, scientific dating.

Introduction

Pseudoarchaeology – otherwise known as Fringe Archaeology or Bad Archaeology – is a phenomenon that continues to affect public discourse about the past profoundly. Focusing primarily on places outside the West (as broadly conceived), and thus at least partly a persistent dimension of European colonial legacies, it has relatively rarely focused on sites in Britain. Striking exceptions exist, however, notably Stonehenge (Hawkins 1963; Michell 1969; Menzies 2012: 229–242), Royston Cave (Beamon 1992; Houldcroft 2008) and the web of ley-lines promiscuously linking sites of disparate date (Watkins 1922, 1925). These have been the focus of populist speculations that go well beyond what the academic mainstream will accept. Yet, in contrast to the glaringly fantastical claims made about archaeological sites, monuments and material cultures found elsewhere across the globe, anyone claiming that (for example) ancient aliens built Hadrian's Wall, or that a colony of Peruvian Inka refugees was responsible for the Tower of London, would be given short shrift, even in venues where fact-checking is not the norm. William Corliss's Sourcebook Project aimed 'to provide libraries and individuals with a wide selection of reliable descriptions of unusual artifacts' (Corliss 1978, preface). In 774 pages of text derived mainly from nineteenth and early twentieth-century journals, he included only 28 British and Irish sites. Stonehenge accounts for no fewer than six of these.

Concurrently, there have been no shortage of books and articles addressing and critiquing the claims of pseudoarchaeologists. Science-fiction writer Lyon Sprague de Camp (1907–2000), who coined the terms 'extraterrestrial' and 'ET', wrote an early analysis of the modern Atlantis myth (de Camp 1954). A later book, co-written with his wife, dealt with twelve well-known 'unsolved puzzles' (de Camp and de Camp 1964).

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Francis Harrold and Raymond Eve's (1995) publication of papers from a symposium held in 1985 was a rare attempt to quantify the impact of fringe beliefs about the past. Garrett Fagan's (2006) edited collection also took a thematic overview that touched on the postmodernist denial of objectivity and the search for alternative voices. Peter James and Nick Thorpe's (1999) *Ancient Mysteries* dealt with individual 'mysteries', much like my own Bad Archaeology website (Fitzpatrick-Matthews 2020). Others, such as Ronald Fritze's (2009) *Invented Knowledge* cast the net more widely to deal with the strain of anti-intellectualism that has become commonplace in Western cultures. Ken Feder's (2019) *Frauds, Myths, and Mysteries* is now in its ninth edition, demonstrating a continuing need for such texts, although I am doubtful that followers of fringe beliefs ever read books of this sort. Most recently, an issue of *The SAA Archaeological Record* tackled pseudoarchaeology in the Americas and worldwide (e.g. Anderson 2019). Yet some archaeologists continue to debate engaging with proponents of alternative histories, such as Anna Simandiraki-Grimshaw and Eleni Stefanou's (2012) *From Archaeology to Archaeologies* which unusually invited a contribution from Hindu Creationist Michael Cremo. Tera Pruitt's (2012) analysis of the supposed pyramids at Visoko in Bosnia, 'discovered' by Semir Osmanagić, canvassed reactions to his presentation at Lund, organised by Cornelius Holtorf, an archaeologist who has occasionally engaged with pseudoarchaeologists.

Notwithstanding this extensive literature debunking and critiquing pseudoarchaeologies, archaeology is a rare discipline that welcomes the input of amateurs, who are often able to make significant discoveries, and new interpretations of old data. There is no conspiracy of university professors who knock back any suggestions that do not fit into their preconceived notions about the past, although many fringe writers claim precisely this. Nevertheless, there is an undercurrent of possibly wilful misunderstanding in the way the archaeological past is treated by some; this frequently appears to be designed as a means of courting controversy. Often, ancient places are framed by the media in terms of 'insoluble mysteries' that have been resolved by new discoveries, requiring us to 'rewrite history'. As a recent example, *The Daily Express* of 25 February 2020 carried the headline: Archaeology shock: China's Terracotta Army discovery 'to rewrite history books'. This one example could be multiplied many times over. Bad Archaeology is pervasive, apt to grab headlines and its prevalence forms part of the early 21st-century cultural zeitgeist, with its characteristic widespread mistrust of experts.

The public perception of the period between the collapse of Roman administration and the Norman Conquest continues to regard it as the 'Dark Ages'. Narratives based on outdated racial concepts bring scientific evidence in the form of DNA analyses to bear on the period (Manco 2015: 217 ff; 241 ff); books that were widely criticised in their day (such as John Morris's (1973) *The Age of Arthur*) remain in print; there is a time lag between academic discourse and its public promotion (Williams 2020: 3). Archaeology has long been used to underpin politicised narratives of ethnicity, nationhood and

individuality (Arnold 2006: 174); early medieval archaeology has hardly been exempt (see e.g. Williams 2020). A manifestation of these trends is the newly popular image of the female Viking warrior (Williams and Alexander 2019: 73), a character whose existence is hotly debated but whose depiction in popular culture is widespread.

Offa's Dyke and Wat's Dyke have not been altogether immune from the attentions of 'independent thinkers'. Their associations with English narratives of conquest, warrior kings and their linear character may be contributory factors to this. Both have seen efforts to redate their construction, sometimes drastically, including by professional archaeologists. The results of their fieldwork and scientific dating, as channelled through the media, can appear revolutionary. An initially enthusiastic uptake of these ideas by Steve Blake and Scott Lloyd (2000) resulted in a bizarre work of pseudohistory that recast the geography of early medieval Britain into Wales and the Marches. The author contends that the uncritical promotion of claims of revolutionary new dates by mainstream media and their dissemination via social networks undermines public understanding of the past. It creates a sense of mistrust in those involved professionally in investigating it, which reinforces the commonplace political narratives that deny the reliability of experts.

There has also been an attempt to recast the nature of Offa's Dyke as a canal (Langdon 2014). Perhaps this picked up on Fox's (1995: 251–253) observation that a 2km stretch of the River Morda had been straightened artificially at the southern end of Wat's Dyke. Fox's view was confirmed by the recognition of a previously unknown section of Dyke to its south in 1985 (Youngs *et al.* 1986: 150), demonstrating that early medieval societies in Britain had the capabilities and desire to undertake hydraulic engineering. John Blair and others (Blair 2007: 6) have drawn attention to other evidence for artificial and modified waterways from the middle of the early medieval period onwards. However, Langdon's imagined Offa's Dyke is not early medieval in date but prehistoric. Meanwhile, his identification of it as a canal is based on his assessment of the meaning of the word *dyke*, which he derives from Dutch *dijk* (Langdon 2014: loc 97).

To understand how some writers have aimed to redate the dykes of the Welsh Marches, we need first to examine mainstream assumptions. If writers such as Blake, Lloyd and Langdon are found to have made a convincing case, archaeologists must be open to the possibility that the consensus dating may be wrong. It is widely recognised that the conventional dates for these earthworks rest on slender archaeological and documentary evidence. Moreover, the published scientific dates have seemed to some to warrant a radical reassessment of the accepted dates.

The conventional dates

Documentary sources

There are no strictly contemporary sources mentioning the construction of Offa's Dyke. It is not noticed in the *Anglo-Saxon Chronicle*, and the difficulties in constructing

an historical narrative of Offa's reign in the absence of Mercian chronicles or histories have long been recognised (Stenton 1971: 206; Whitehead 2018: 86). Asser's *de Rebus Gestis Ælfredi* 14 (Stevenson 1959: 12) contains the earliest reference to the Dyke: *fuit in mercia moderno tempore quidam strenuus rex atque uniuersis circa se regibus et regionibus finitimis formidolosus rex, nomine offa, qui uallum magnum inter britanniam atque merciam de mari usque ad mare fieri imperauit* ('In recent times there was a certain vigorous king in Mercia and a king most fearful to all the kings around him and the neighbouring regions, Offa by name, who ordered a great wall to be built between Britannia and Mercia, from sea to sea.'). Even if the minority view that the work was forged in Asser's name by Byrthferth of Ramsey c. AD 1000 (Smyth 2002: 202) is correct, this is still the earliest mention of the earthwork.

According to the *Brenhinedd y Saeson* (the mid-fourteenth-century version in British Library MS Cotton Cleopatra B.v and Gutun Owain's later fifteenth-century version in National Library of Wales MS 7006D (*Llyfr Du Basing*, 'The Black Book of Basingwerk')), *D.CC.LXXXIIIJ. yr haf y᷑ diffeithws y᷑ Kymre kyuoeth Offa. ac yna y᷑ perys Offa gwneythur claud yn dervyn y᷑ryngthaw a Chymre, val y᷑ bei haws y᷑daw gwrthnebu y᷑ruthyr y᷑elyneon, a hwnnw a elwit yn Glawd Offa yr hynny᷑hyd hedyw* ('In the summer, the Cymru ravaged the territory of Offa. And then Offa had a ditch made as a boundary between him and Wales, to enable him more easily to resist the attack of his enemies, and it was called *Clawdd Offa* from that day to this.'). The *Llyfr Du Basing* adds: *ac ef y sydd yn estynnv o'r mor y'r llall, nid amgen, o'r Dehev yn emyl Brvsto tv a'r Gogledd gorvwch y Fflint y rwng mynachloc Ddinas Basing a Mynydd y Glo* ('And it extends from one sea to the other, that is from the south near Bristol to the north beyond Flint, between the monastery of Basingwerk and Coleshill.'). These additions to an originally thirteenth-century composition are of uncertain value for this period when we do not know their sources. Jones (1971: 10) suggested that the chronicler's year DCCLXXXIIIJ should be for AD 783, although it is unclear why.

The *Vitae Offarum Duorum* produced in St Albans during the twelfth century mentions the Dyke twice. At folio 15r, dealing with a truce at Christmas 775, we are told *Veruntamen cum nollent uel exercitus Regis Offę uel Walensium inde procul recedere, Rex Offa ad cautelam inter ipsos duos exercitus communi assensu unum fossatum longum nimis et profundum effodi, aggere terrestri uersus Wallenses eminenter elleuato, ne fallatium hostium irruptionibus repentinis preocupartetur* ('Nevertheless, as both the army of King Offa and that of the Welsh were unwilling to withdraw far from there, as a precaution, King Offa had an extremely long and deep ditch dug by common consent between those two armies, an earthen mound highly raised against the Welsh, to prevent unexpected invasions by the deceptive enemy'). Shortly after, we are told *Cumque tempus lecitię et requiei die Natalis Domini totum exercitum Offanis immo totum mundum exhilarauit, nocte sequenti, uidelicet nocte beati Stephani, cum se cuncti Merciorum principes immo eciam excubitores nichil sinistri pertimescentes se secure sopori dederunt, ipsi reges Walensium Northanhimbrorum, Australium Saxonum, cum suis complicibus, tota ipse opaca nocte, silenter et furtim magnam partem prędictę fossę, officio rustocorum propere repleuerunt* ('And

when the time of leisure and rest of the Birthday of the Lord had cheered the whole Offan army – indeed, the whole word – on the following night, that is the night of Saint Stephen, when all the leaders of the Mercians, indeed even the guards, fearing nothing hostile, had given themselves with him to sleep in safety, the kings of those Welsh, Northumbrians and South Saxons, together with their accomplices, in that completely dark night, silently and furtively filled back in a great part of the aforementioned ditch, quickly in the manner of countrymen') (Swanton 2010: 67, 69). The work has been described charitably as one with 'no fixed boundary between fact and fiction' (Swanton 2010: ix), which helped to generate the legend of a pious and worthy founder of St Albans Abbey (Keynes 1999: 340–341).

At much the same time, Giraldus Cambrensis included a series of English kings who were victorious over the Welsh in his *Descriptio Kambrię* II.7. Part of the list includes Offa as the builder of the Dyke: *Sicut rex Offa suo in tempore qui et fossa finali in longum extensa, Britones ab Anglis exclusit…* ('just as King Offa, in his own day, shut out the Britons from the English even with a long ditch, the length of the frontier') (Dimock 1868: 217).

These few documentary sources – which appear to be independent of each other – are unanimous in ascribing the construction of the Dyke 'from sea to sea' to Offa, King of Mercia. This does not make the ascription true: we shall see that between the fourth and nineteenth centuries, the building of Hadrian's Wall (commencing in AD 122) was wrongly but unanimously ascribed to Septimius Severus for unknown reasons.

Wat's Dyke, on the other hand, has no documentary history whatsoever (Worthington 1999: 468). Its date has long been contentious, but the similarity in placement with Offa's Dyke – which it follows for a significant stretch only a few kilometres to the east – makes an early medieval and Mercian origin a strong possibility (Williams 2019: 45): this has been the consensus view for many years.

Archaeological evidence

Neither dyke is adequately dated archaeologically, except in terms of a *terminus post quem* in the Roman period. This has allowed speculation that the attribution of the larger monument to Offa is nothing more than a guess (Wat is more likely to be a figure of folklore than history (Fitzpatrick-Matthews 2001)). Fox recovered 'numerous Roman artefacts and nothing which can be dated later than the Roman period. These artefacts (potsherds, pieces of tile, glass) are small and for the most part abraded' from the section he excavated at Ffrith in 1926 (Fox 1955: 40–44),. This has usually been taken as a guarantee of a post-Roman origin for Offa's Dyke: the residual material deriving from the settlement (NPRN 275846) that may have been associated with lead mining and processing. The Offa's Dyke Project, run from the University of Manchester by David Hill and Margaret Worthington Hill from 1972 to the 2000s excavated a section that cut across a Roman marching camp at Brompton Hall, Shropshire, again providing a *terminus post quem* (Tyler 2011: 153).

Radiocarbon determinations have been made on samples from Plas Offa, Chirk (Grant 2014a: 18), discussed below. Secondary reports suggested that 'radiocarbon dates in one section ranged from AD 430 to AD 652 and in another section from AD 887 to AD 1019' (Belford 2017: 69). These are the sole scientific dates so far obtained from Offa's Dyke.

The date of Wat's Dyke has been somewhat better illuminated by archaeological investigations. In 1957, W.J. Varley excavated a section across the ditch of Wat's Dyke at Mynydd Isa, where he recovered a broken annular loom-weight. It had been placed, apparently deliberately, on top of a patch of burnt clay that he interpreted as a hearth (Varley 1975–76: 135). The form of the weight is 'Middle Saxon', c. 650–800, placing the filling of the ditch after the mid-seventh century. The Dyke also pre-dates the motte at Erddig Park, dated to the twelfth century (Worthington Hill 2019: 69).

Furthermore, excavations at two locations on Wat's Dyke, at Maes-y-Clawdd (also known as Mile Oak, Oswestry) and Gobowen, have yielded scientific dating evidence (Ray and Bapty 2016: 384). The former involved a radiocarbon sample from a hearth thought to have been in use before or at the time of the dyke's construction (Hannaford 1998: 5); this is the date that has been used to suggest a fifth-century origin for the earthwork. The second has provided Optically Stimulated Luminescence determinations that have been taken to indicate construction in the late eighth or early ninth century (Malim and Hayes 2008: 164–165). The uses to which these dates have been put will be examined below.

The scientific dates make an early medieval origin for both dykes a near certainty. Nevertheless, Langdon (2014) was willing to dismiss all archaeological data to promote his prehistoric dating of Offa's Dyke, while the seemingly precise date of AD 446 publicised by Nurse (1999) gave fringe writers ample opportunity to suggest alternative early medieval dates. Moreover, the imprecision of radiocarbon determinations and Optically Stimulated Luminescence measurements allows room to argue how they should be interpreted.

Not Offa's Dyke but the 'Wall of Severus'

The most startling claim to have been made is that Offa's Dyke was built by the Roman Emperor Septimius Severus (AD 145–211). Late Antique writers, beginning in 360 with Aurelius Victor's *Liber de Caesaribus*, credited him with building a wall across Britain during his military campaigns in the province, early in the third century. For many centuries, this was identified with the construction now generally credited to Hadrian (AD 76–138). In 2000, Steve Blake and Scott Lloyd equated the Severan frontier with the earthwork known as Offa's Dyke. They supported this contention with the radiocarbon date associated with Wat's Dyke first publicised by Keith Nurse (1999) in *History Today*, following a typically more cautious report from the archaeologist involved (Hannaford 1998: 8). Nurse reported the date as 'around AD 446', an impressively precise figure

for those not accustomed to dealing with radiocarbon determinations, uncalibrated or otherwise.

Blake and Lloyd (2000: 60–67; 141–142) marshalled principally literary evidence as well as a radical reanalysis of place-names to bolster their reattribution of the Dyke to Severus. There was minimal consideration of archaeological data. Their overall hypothesis – that the Arthurian legends refer to a real history that can be localised entirely within Wales – used the Dyke only as a small element. Furthermore, if their claims were to be accepted, they would involve a complete reassessment of our understanding of Late Antique and early medieval Britain.

They began with the premise that Geoffrey of Monmouth had translated *quondam britannici sermonis librum uetustissimum* ('a very old book of British speech') (Reeve and Wright 2007: 5) into Latin but misunderstood the original's place-names. Their reading of Geoffrey led them to propose an entirely new geography for early medieval Britain. According to them, texts referring to *Britannia* should be understood as referring only to Wales. They cited Asser's *de Rebus Gestis Ælfredi* 14, describing Offa's Dyke, which uses *Britannia* in opposition to *Mercia* (*inter britanniam atque merciam* ('between Britain and Mercia')) to show that this was standard usage of the term. However, Asser uses the same word to refer to the whole island in Chapter 49, where *mare meridianum... interluit galliam britanniamque* ('the southern sea flows between Gaul and Britain.'). Further, they proposed that Geoffrey of Monmouth's *insula britannia* ('the island *Britannia*') translates in Middle Welsh as *Ynys Pridein* ('the island *Prydain* (*Britannia*)'), and that *ynys* meant 'peninsula' rather than 'island'. They failed to cite any examples of this usage of the term and ignored the origin of Geoffrey's description of *Britannia* in the *Historia Brittonum*, whose author took it from Gildas (Curley 1994: 13), who in turn found it in Paulus Orosius.

They failed to follow through the implications of their toponymic hypotheses, which located Northumbria in the northern Welsh Marches (Blake and Lloyd 2000: 36); Bede would therefore have written in Shropshire (their *Bernica* (*sic*)). They placed the landing of Hengest and Horsa in Gwent (Blake and Lloyd 2000: 59) and identified *Glæstingaburh* not with Glastonbury Abbey but with Valle Crucis (Blake and Lloyd 2000: 181). These are just a selection of bizarre identifications from their '*new map of the original Kingdom of Britain*' (Blake and Lloyd 2000: 181). Figure 1 shows the extent of their zeal for relocating place-names that are usually considered well established.

Their reconfigured toponymy is the background to their reidentification of Offa's Dyke as 'the forgotten Wall of Severus' (Blake and Lloyd 2000: 67). If Hengest and Horsa were settled in Gwent, then the story in the *Historia Brittonum* 38 that Hengest's son and nephew, Octha and Ebissa should be given *regiones quae sunt in aquilone iuxta murum qui uocatur guaul* ('the regions which are in the north, next to the wall which is called *Guaul*') (Mommsen 1898: 179) refers to north-east Wales. This *guaul* must, therefore, be either

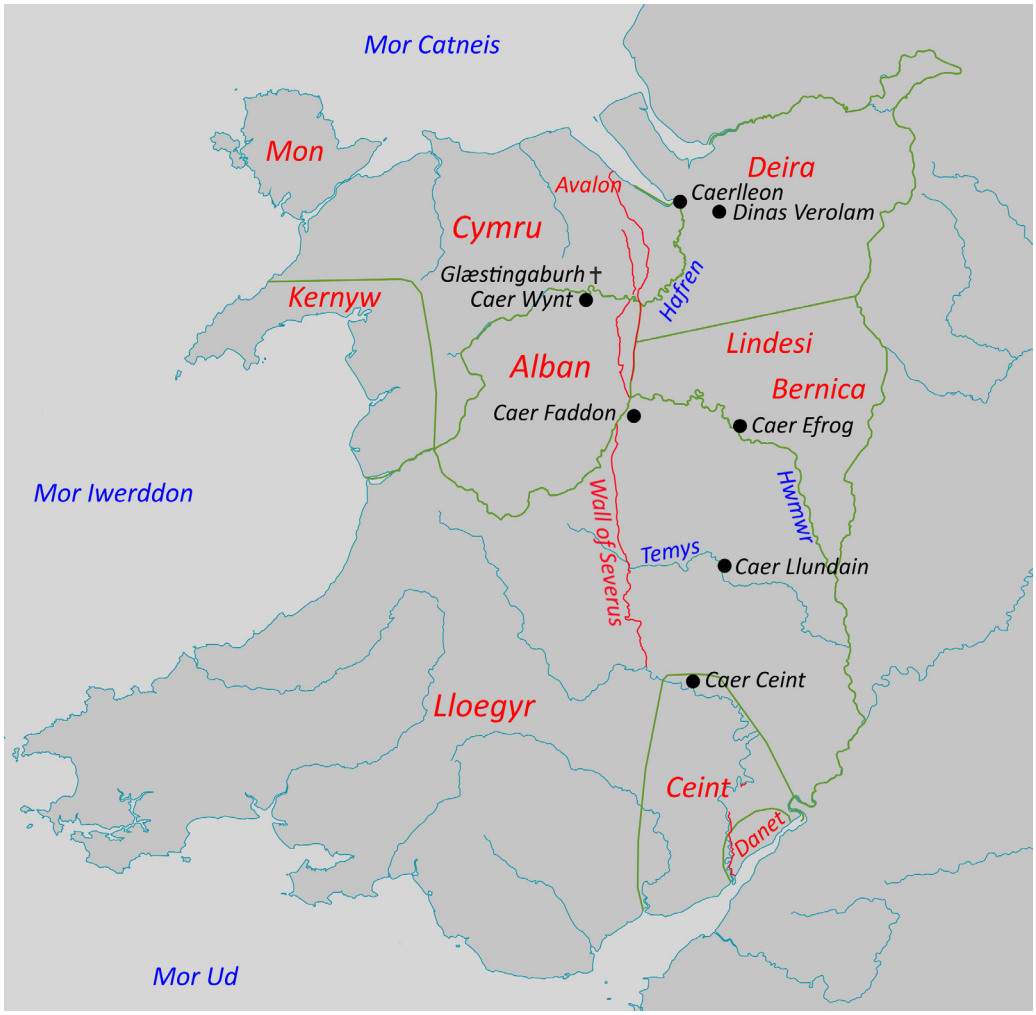

Figure 1: Blake and Lloyd's reimagined geography of *Britannia* (do not scale from this map and do not use it as reference for any ancient place-name)

Wat's Dyke or Offa's Dyke. They then identified this with the *murum et aggerem a mari usque ad mare per latitudinem britanniae, id est per CXXXII milia passuum* ('a wall and rampart from sea up to sea across the width of Britain, that is along 132 miles') of *Historia Brittonum* 23 (Mommsen 1898: 165), credited to Septimius Severus. They cited several Late Antique writers (Aurelius Victor *Liber de Caesaribus* XX.18, Eutropius *Historiae Romanae Breuiarium* VIII.19.1, 'Aelius Spartianus' (*Historia Augusta*) *Seuerus* XVIII.2, Hieronymus *Interpretatio Chronicae Eusebii ad Abraham* MMCCXXI, Paulus Orosius *Historia Aduersus Paganos* VII.17, Gildas *de Excidio et Conquestu Britanniae* 14 and 18, Cassiodorus *Chronica* DCCCXCIII, Prokopios's (the name is more usually Latinised as Procopius) Ὑπέρ τῶν Πολέμων ('About the wars') VIII.20 and Bede's *Historia Ecclesiastica* I.5 and I.12) who refer to a wall built by Severus during his campaigns in Britain.

The earliest of these texts is Aurelius Victor's *Liber de Caesaribus*, published in 360. He stated: *his maiora aggressus britanniam, quo ad ea utilis erat, pulsis hostibus muro muniuit per transuersam insulam ducto utrimque ad finem oceani* ('setting out on a greater undertaking, after expelling the enemy, he fortified Britain with a wall, insofar as it was useful to it, leading across the breadth of the island, from one shore of the Ocean to the other'). The text is not specific about where in Britain Severus built his wall, except that it ran across the width of Britannia, implying an east-west alignment (Roman maps generally placed north at the top, in the modern manner). Aurelius Victor was the earliest writer to claim that Septimius Severus built a wall in Britain, over 140 years after that emperor's death; he was vague about the details, and we do not know what his source of information might have been.

Nine years later, Eutropius's *Historiae Romanorum Breviarium* supplied additional data, without appearing to derive directly from Aurelius Victor: *nouissimum bellum in britannia habuit, utque receptas prouincias omni securitate muniret, uallum per CXXXII passuum milia a mari ad mare deduxit* ('he had his last war in Britain, and so that he might fortify the recovered provinces with all security, he stretched a wall from sea to sea along 132 miles'). Here we see an absolute figure given for the length of the wall. Writing almost 160 years after the death of Severus, Eutropius was only the second writer to credit him with the construction of a wall and the first to give details of its length.

The next text to mention 'Severus's Wall' was the *Historia Augusta*. Although it claims to be the work of six separate authors writing under Diocletian or Constantine (i.e. 285×334), there is ample evidence that they are the product of a single author, writing in the reign of Theodosius I (379–395), as first proposed by Dessau (1892: 587). Computer analysis has shown that the texts cannot have been written by different individuals (Stover and Kestemont 2016: 154), while entire sections (in the lives of Marcus Aurelius and Septimius Severus) have been taken bodily from Aurelius Victor and Eutropius. The statement about Severus's Wall is found in one of these plagiarised passages: *brittanniam, quod maximum eius imperii decus est, muro per transuersam insulam ducto utrimque ad finem oceani muniuit* ('he fortified Britain with a wall stretched across the island from one shore of Ocean to the other, which was the greatest achievement of his reign'). The passage shares a large number of words with Aurelius Victor, from which it is clearly derived. This is not evidence that the author of the *Historia Augusta* knew of three walls in Britain. Having correctly described walls built by Hadrian and Antoninus Pius, a source that he plagiarised (probably Aurelius Victor) mentioned one built by Severus, and he was in no position to contradict the source.

St Jerome's translation of the *Chronicon* of Eusebius added the passage from Eutropius almost verbatim, while Orosius's *Historia adversus paganos* appears to have used both Eutropius and Jerome. Gildas knew Orosius, and although his account of the Roman walls is very complex and very muddled (Dumville 1984: 63–64; George 2009: 49), it still allows only two, one of turf and the other of stone. He misdated both to the late fourth and early fifth centuries. Bede then copied Gildas as his only source of information

for the fifth century, thus giving the two post-Roman walls (*Historia Ecclesiastica gentis Anglorum* I.12), but was also familiar with Orosius, so he gave the account of Severus's Wall. Aware of the problem he had created, he set out to correct the impression that Severus was responsible for building the stone wall: *non muro, ut quidam aestimant, sed uallo distinguendam putauit. murus etenim de lapidibus, uallum uero, quo ad repellendam uim hostium castra muniuntur, fit de cespitibus, quibus circumcises e terra uelut murus exstruitur super terram* ('he sought to distinguish it not with a wall, as some think, but with a rampart. For a wall is made with stones, but a rampart, by which forts are strengthened to repel enemy attack, is made with turves, cut from the ground, piled up above the ground like a wall').

It is likely that Bede, as a native of Jarrow, was familiar with Hadrian's Wall and the so-called vallum to its south; he probably assumed that the stone wall was built as a replacement for the earthwork vallum. Having learned from Gildas that the stone wall was a product of the fifth century and that the northern turf wall was late fourth- or early fifth-century, he concluded that the vallum must be the defensive work built by Septimius Severus. His explanation of the difference between *uallum* and *murum* is entirely his own. It suggests that he had seen not just Orosius, who wrote of a *uallum*, but also one of the earlier writers such as Eutropius or Aurelius Victor, who mentioned a *murum*, wrongly, in Bede's view. The *Historia Brittonum* (Chapter 23) used the same data as Bede, but whether the author got the information directly from Bede or from one of the earlier writers (he certainly was not using Gildas here) is not clear. The author added the detail that the wall had a British vernacular name, *guaul*, deriving from Latin *uallum* (Thomas and Bevan 1973: 1605) and suggesting that it was the term used locally to refer to the structure.

We thus have an entire history of Latin texts that are not independent witnesses to the building of a wall by Septimius Severus, but which go back to Eutropius, writing in 369. He may have rewritten the sentence in Aurelius Victor that is the first (that we know of) to claim that Severus built a wall in Britain. We do not know where Aurelius Victor got his information.

What of the figure of 132 miles? It is remarkably stable in the textual tradition, being quoted in this form from Eutropius onwards. The number cxxxii given originally by Eutropius does indeed mean 132 miles, but Latin numerals are open to corruption, and in manuscripts, u was often miscopied as ii, x as u, c as l and vice versa. If Eutropius had misread an unclear l as c in his source of information, we would be confronted with a wall lxxxii (in other words, 82) Roman miles long; Hadrian's Wall is 80 Roman miles long.

Other accounts of Severus's British campaigns

Two almost contemporary histories covering the reign of Severus have survived, by the Greek authors Cassius Dio Cocceianus and Herodian. The Ῥωμαϊκὴ Ἱστορία ('Roman History') of Dio ran as far as 229, the year in which he held his second consulship, but most of the text is lost. Portions of it survive only as an Ἐπιτομή τής Δίωνος τοῦ Νικαίας

('Summary of Dio of Nicaea') made by the Byzantine scholar Ioannes Xiphilinos in the eleventh century. Xiphilinos's summary is, unfortunately, the only version to survive of Dio's account of Severus's British wars. However, from Xiphilinos (Ἐπιτομή 321) we learn that Severus campaigned against the Καληδόνιοι (*Caledonii*) and the Μαιάται (*Maiatae*), the latter of whom lived πρὸς αὐτῷ τῷ διατειχίσμτι, ὃ τὴν νῆσον διχῇ τέμενει ('near the fortification, which cuts the island in two'). Herodian, whose τῆς μετὰ Μάρκον Βασιλείας Ἱστορία ('History from the Emperor Marcus'), written c. 238, also located Severus's campaigns in northern Britain. He mentioned (III.14.10) that they took place ὑπερβάνῖος δὲ τοῦ στρατοῦ τὰ προβεβλημένα ῥεύματά τε καὶ χώμαῖα τῆς Ῥωμαίων ἀρχῆς ('the army having crossed the defending rivers and also banks on the limit of Roman power'). This description of χώμαῖα, 'banks', is an apparent reference to the two existing defensive barriers. He does not mention the construction of any new earthworks or walls. A later, less careful writer may have mistaken Dio (whose actual words we do not have) or Herodian as saying that Severus had built one or other of the walls he is said to have crossed.

Prokopios and the Wall of Brittia

We still have to consider the rather bizarre account of Prokopios. He wrote several histories of the wars conducted by Justinian, which were eventually combined into a single book, Ὑπέρ τῶν Πολέμων ('About the wars'). He wrote (VIII.20.5):

> *Ἐν ταύτῃ δὴ τῇ Βριττίᾳ νήσῳ, τεῖχος ἐδείμαντο μακρὸν οἱ πάλαι ἄνθρωποι, δίχα τέμνον αὐτῆς πολλὴν τινα μοῖραν· ὅτι ἡ γῆ καὶ ὁ ἀνὴρ καὶ τἆλλα πάντα, οὐχ' ὁμοίως ἑφ' ἑκάτερά ἐστι. τὰ μὲν γὰρ τοῦ τείχους πρὸς ἀνίσχοντα ἥλιον, εὐεξία τε ἀέρων ἐστὶ ξυμμιταβαλλομένη ταῖς ὥραις, θέρους μὲν μετρίως ἀλεεινὴ, ψυχεινὴ δὲ χειμῶνος: καὶ ἄνθρωποι μὲν πολλοὶ ᾤκηνται κατὰ ταὐτὰ βιοτεύοντες τοῖς ἄλλοις ἀνθρώποις, τά τε δένδρα καρποῖς 'ἐν ἐπιτηδείῳ γινομένοις ὡραίοις' ἀνθεῖ, τά τε λήϊα τῶν ἄλλων οὐδὲν καταδεέστερον τέθηλεν: ἀλλὰ καὶ ὕδασιν ἡ χώρα ἐναβρυνομένη διαρκῶς φαίνεται. πρὸς δύοντα δὲ πᾶν τοὐναντίον, ὥστε ἀμέλει ἀνθρώπῳ μὲν οὐδὲ ἡμιώριον δυνατόν ἐστιν ἐνταῦθα βιῶναι, ἔχις δὲ καὶ ὄφεις ἀνάριθμοι καὶ ἄλλων θηρίων παντοδαπὰ γένη διακεκλήρωται τὸν χῶρον ἐκεῖνον. καί, τὸ δὴ παραλογώτατον, οἱ ἐπιχώριοι λέγουσιν ὡς, εἴ τις ἄνθρωπος τὸ τεῖχος ἀμείψας ἐπὶ θάτερα ἴοι, εὐθυωρὸν θνήσκει, τὸ λοιμῶδες τῶν ἐκείνῃ ἀέρων ὡς ἥκιστα φέρων, τοῖς τε θηρίοις ἐνθαδε ἰοῦσιν ὁ θάνατος εὐθὺς ὑπαντιάζων ἐκδέχεται.* ('In this same island of *Brittia*, the men of old built a great wall, cutting in two a large part of it; for the soil and the men and everything else is not alike on either side. For on the side of the wall towards the rising sun, there is temperate air and well-ordered seasons; in winter, the cold is not too extreme and in summer it is

> moderately warm, and many men dwell there, living in the same way as other men, and the trees bear good fruit at the right season, crops grow in abundance and the land is watered by many springs. Everything is the opposite of this on the side facing the setting sun, so that it is impossible for a man to live there for half an hour. The land is infested with serpents, vipers and other venomous animals, and the air is so foul that people say that if a man crosses the wall, he will die straight away.')

It is difficult to know what to make of this, although it is clearly not sober history and resembles folklore. Prokopios was evidently very poorly informed about Britain, as there is nowhere a wall that separates part of the island with good air from a region with bad air, whether it be Hadrian's Wall, the Antonine Wall or Offa's Dyke. He continued with a story that he disbelieved, about the souls of the dead being taken to the other side of the wall by boat. Blake and Lloyd (2000: 141–144) suggested that this 'Land of the Dead' referred to concentrations of Bronze Age burial mounds on the Clwydian and Berwyn Mountains and identified it with '*Ynys Afallach*/Avalon' and the Welsh underworld, *Annwn*. Like the rest of their geographical speculation, this is fantasy: the apparent concentration of barrows in upland areas is a result of the lack of the ploughing that has destroyed them at lower altitudes, particularly in recent centuries.

Monuments in context

The two acknowledged Roman walls – those of Hadrian and Antoninus Pius – are well-known monuments that have been studied extensively and intensively for several centuries (Breeze and Dobson 2000: xiii). Consequently, they are understood in great detail, and a vast amount of archaeological evidence has been assembled not just about the walls but about their supporting infrastructure and general context. If the earthwork we know as Offa's Dyke is in fact of early third-century date, we would expect it to exhibit many, if not all, the features of these two walls, especially the Antonine, which is an earthwork embankment. On the other hand, if Offa's Dyke is early medieval, then it ought to display features consistent with other early medieval earthworks, such as West and East Wansdyke (Malim 2020).

The Antonine Wall consists of a turf rampart at least 3m and perhaps as much as 3.7m high; this was laid on a stone base usually 4.3m wide (Breeze and Dobson 2000: 96). In this respect, it resembled other linear frontier works (such as the German and North African *limites*). To the north of the wall, at a usual distance of 6.1m, lay a ditch 12.2m wide and 4m deep in the eastern sector and averaging 8.4m wide and as little as 1.8m deep in the western. On top of the wall stood a wooden palisade and walkway. Immediately south of the wall ran a road about 5.5m wide; this was an innovation, as Hadrian's Wall was served by the existing Stanegate, some distance to the south. The wall was built in segments by detachments from the three legions serving in the province, who recorded their work on highly decorative distance slabs (e.g. RIB 2139,

2173, 2184, 2185, 2186, 3507 (Collingwood and Wright 1995: 657 ff; Tomlin *et al.* 2009: 450–451)). Numerous temporary camps housing the troops involved in the building work have been located. Finally, some nineteen forts were placed at intervals along the wall, at an average distance of about 3.25km (although this varies considerably). The forts themselves vary in size but contain the usual range of buildings (headquarters buildings, commandants' residences, barracks, stores, granaries, stables and so on). With one exception (Cadder), the forts faced north, towards hostile territory. Fortlets and beacon platforms have also been recognised on the wall.

What we have in the Antonine Wall is a complex and integrated system. There is a great deal of archaeological evidence for its construction in the form of temporary camps and building inscriptions, then of its garrison. We do not have to rely on the fourth-century *Historia Augusta* to tell us that it was built under Antoninus Pius, as the distance slabs record the name of the emperor.

How does Offa's Dyke compare? If, as Blake and Lloyd asserted, it was built by the emperor Septimius Severus, who was in Britain from 208 until he died in 211, it ought to show many similarities with the Antonine Wall, built almost seventy years earlier. It ought also to show some innovations based on the experience of that wall. In any case, they failed to draw any comparisons between the two monuments.

The earthwork construction of Offa's Dyke varies considerably along its length (Ray and Bapty 2016: 165 ff) and, unlike the Hadrianic and Antonine frontiers, it is not demonstrably continuous. There are many original gaps, including along a 5km stretch where the River Severn marks the boundary. Fox's idea that there was one of 96km where the River Wye formed the frontier was shown to be wrong by Noble (1983: 10 ff). Although Hill and Worthington (2003 *passim*) challenged this, Ray and Bapty (2016: 50–54) follow Noble in seeing the banks in this area as part of Offa's scheme. In its monumental form, the earthwork stands at least 7.3m high. At Llanfynydd, at the northernmost end of Offa's Dyke, the ditch was found to be at least 4m wide and 1.5m deep; there was no gap between it and the base of the bank. Hill and Worthington (2003: 101) concluded that the ditch was 7m wide and 2m deep, 'with few exceptions'. In places, the combined width of the bank and ditch is 20m. There is no evidence for a continuous palisade on top the Dyke. Although there seems to have been a stone wall in places and timber fencing in others, while some sections of Wat's Dyke appear to have had a timber frontage to the rampart (as at Sychdyn, near Mold (Hill 1991: 145)), these were in place to minimise the risk of the bank slipping into the ditch. Both Dykes lack the infrastructure seen at the Antonine Wall: there is no military road, no garrison stationed in forts attached to the Dyke, no temporary camps to house the builders (Hill and Worthington 2003: 123), no building inscriptions. Although New Radnor, Old Mills Moat, Buttington and Nantcribba Gaer have occasionally been claimed as Offan forts, this is unlikely (Musson and Spurgeon 1988: 108; Ray and Bapty 2016: 247). Moreover, the Antonine Wall is full of Roman artefacts recovered during excavations: Offa's Dyke

has only scraps of abraded Roman material culture within its structure. Blake and Lloyd (2000: 65) wrote about the 'Roman artefacts… found within the Dyke' as if they date its construction. The concept of the *terminus post quem* ought to tell us that the Dyke is of Roman or later date. This principle states that any archaeological deposit must be as old as, or older than, the youngest object it contains. The inclusion of Roman finds within Offa's Dyke is entirely possible – indeed, perhaps even to be expected – because of residuality, the tendency for old objects to occur in deposits of much more recent date.

The most devastating argument against regarding Offa's Dyke as a Roman defensive work is that of context (Figure 2). What possible function could it have performed? To the east of the Dyke, the Midlands of England were part of a prosperous civil province of the Roman Empire, although at its northern end lay an area in Cheshire dominated by the military. To its west lay further areas under civilian rule (notably in the south) as well as areas under military control (predominantly in mid and north Wales); it was every bit as much part of the province as the area to the east. Linear defensive works elsewhere in the Empire marked the boundary between civilised, Roman life and *barbaricum*, the uncivilised world outside, which might, at best, be home to a few outpost forts. Third-century Wales can in no way be thought of as anything other than part of *Britannia*.

The Dyke is wholly unrelated to the pattern of early third-century military sites in the region. Forts and fortresses close to it include Chester in the north (undergoing considerable refurbishment early in the third century) and Caerleon in the south as well as auxiliary forts, such as those at Castell Collen, Caersŵs and Forden Gaer. The road system shows no sign of being aware of the Dyke. Moreover, the only dating evidence from stratigraphy proves it to be later than Roman occupation at Ffrith; how much later cannot be determined on archaeological grounds alone.

There is, moreover, an early medieval context for the Dyke. Apart from Wat's Dyke, which marks a slightly different boundary in the north and continues to the Dee Estuary, there are numerous post-Roman earthworks across Britain (Grigg 2018: 38–42). The majority of them are to be found in eastern England, and most are short structures lying across significant routes. One possibly relevant earthwork, though, is the Wansdyke, an earthwork boundary south of the Thames, defending the area to its south. The traditional view is that Wansdyke seems to have been built in the fifth or sixth century to protect the British kingdoms of the southwest against attack from the Thames Valley, where Saxon kingdoms had been established (Worthington 1999: 467). A later, seventh- to eighth-century date has also been proposed (Reynolds and Langlands 2006: 35–36; Eagles and Allen 2018: 99).

Unlike the Roman linear frontiers, these dykes were not provided with garrisons, but often appear to be more like boundaries imposed by a militarily dominant power. They were not located to defend the areas behind them but to act as lines of demarcation, unlike most early medieval dykes, which were short and designed to make raiding

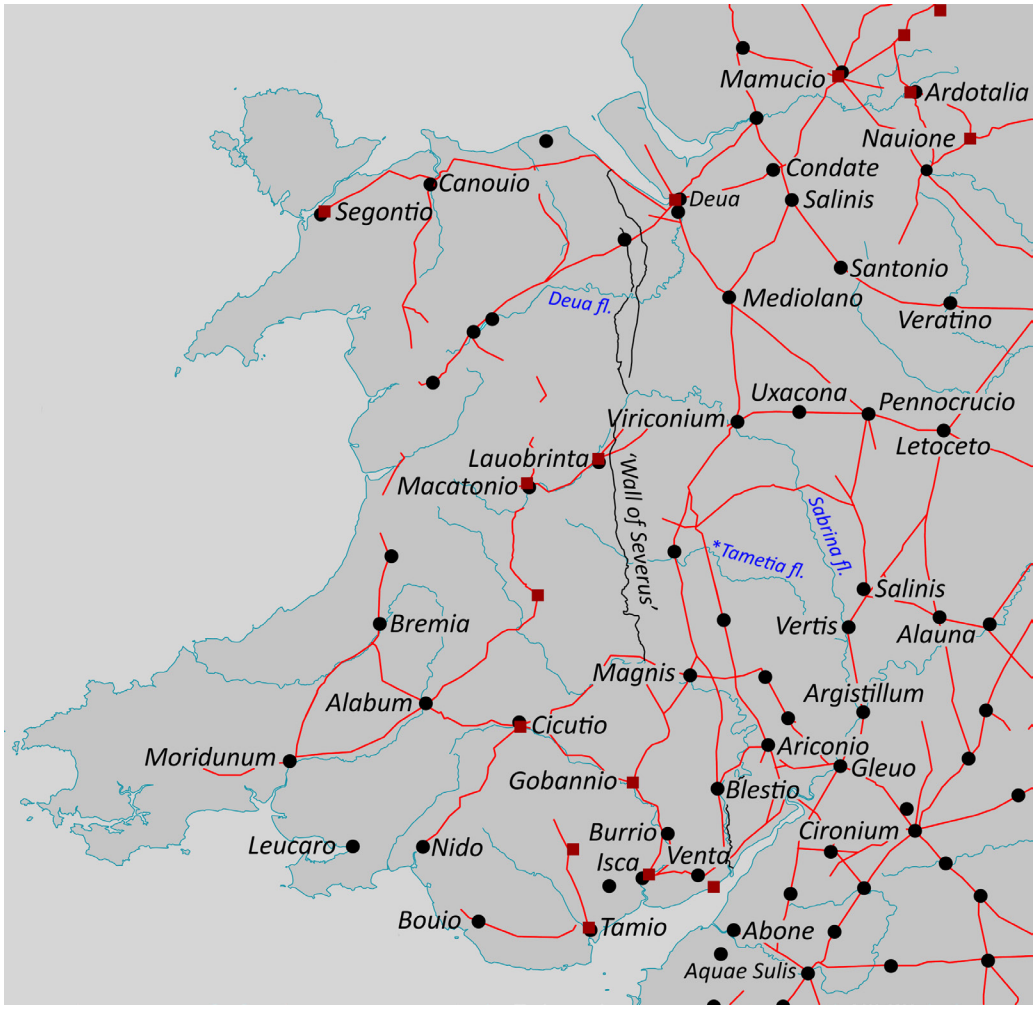

Figure 2: Offa's Dyke superimposed on a third-century Roman context

more difficult (Grigg 2018: 137). The tradition of earthwork barriers was a long one in Anglo-Saxon England, and it provides a useful context for location the construction of Offa's Dyke in the late eighth century as one of the last and undoubtedly the greatest of these structures (Hill and Worthington 2003: 100). Thousands of men were needed to build the Dyke (Ray and Bapty 2016: 215), proof that the kingdom of Mercia was highly organised and under robust central control. The ninth-century history of Mercia, with the destruction of its bureaucracy and ecclesiastical structure by Viking armies, means that its place in the history of Britain has often been undervalued. To regard its people as barbarians incapable of such works (as did Blake and Lloyd) not only ignores their long tradition of dyke building but also shows a woeful ignorance of the political sophistication of Mercia (Halsall 2013: 301). Offa regarded Charlemagne as an equal (even if Charlemagne did not reciprocate the compliment); this was more than self-flattery.

A prehistoric Offa's Dyke?

Ancient hydraulic engineering

Many pseudoarchaeological claims are so outrageous that they can appear to be jokes or even taunts aimed at established scholars. That, unfortunately, is not the case with the proposal that Offa's Dyke is a prehistoric canal (Landgon 2014). The evidence marshalled for the hypothesis is remarkably thin: the use of the word *dyke* to mean an earthwork that is not a watercourse (Langdon 2014: 97), Eutropius's *Breuiarium* (already discussed) and the statement that 'archaeologists are now finding Neolithic flints inside the ditch of the dyke' (Langdon 2014: 120). Supposedly, both Offa's Dyke and Wansdyke 'were constructed in a time when superficial deposits were formed by the flooding after the last ice age… all these 'dykes' actually link high groundwater levels together', creating a 'canal between two water courses' (Langdon 2014: 325).

The argument proceeds mainly by assertion and a misunderstanding of how prehistoric lithics can make their way into a ditch in the landscape. There is no discussion of countervailing data, just criticism of '[t]raditional archaeologists' who apparently 'maintain that these ditches were built, not for water but or [sic] some kind of 'ceremonial' purpose' (Langdon 2014: loc. 324). These unnamed 'traditional archaeologists' are a straw man whose works the present author has never encountered in the archaeological literature about earthwork dykes. As a pseudoarchaeological argument, it is typical, though: present something so outrageously outlandish that no one could believe it as a way to undermine the credibility of those '[t]raditional archaeologists' who are said without evidence to use it.

(Ley) Lines on the land

It was inevitable that an earthwork that traverses the landscape in lines that are frequently straight should be co-opted into the system of ley lines. Although usually said to have first been identified by Alfred Watkins in the 1920s (Watkins 1922), he can only be credited with their name. Instead, the idea of straight lines in the landscape originating as prehistoric trackways can be laid at the door of Joseph Houghton Spencer. His overlooked paper 'Ancient trackways in England' proposed that 'a central line of long distance signals, with more frequent posts to the right and left connecting the natural harbours at the mouths of the Wey, Axe, Otter, Exe, Teign, Parret, Brue, Avon, Medway, Thames, and Humber' existed across England (Spencer 1889: 98). However, Spencer recognised that the 'direct signal-line stations, though no doubt connected with each other by trackways, would not always afford the best lines for the principal roadways', a constraining factor that did not trouble Watkins.

It is unlikely that Watkins drew inspiration from Spencer's paper: he does not mention it in any of his published works. The Woolhope Club, the antiquarian and natural history society of which he was a prominent member, did not subscribe to *The Antiquary*, so he will not have seen the paper in the club's library. Although the two ideas are so close in

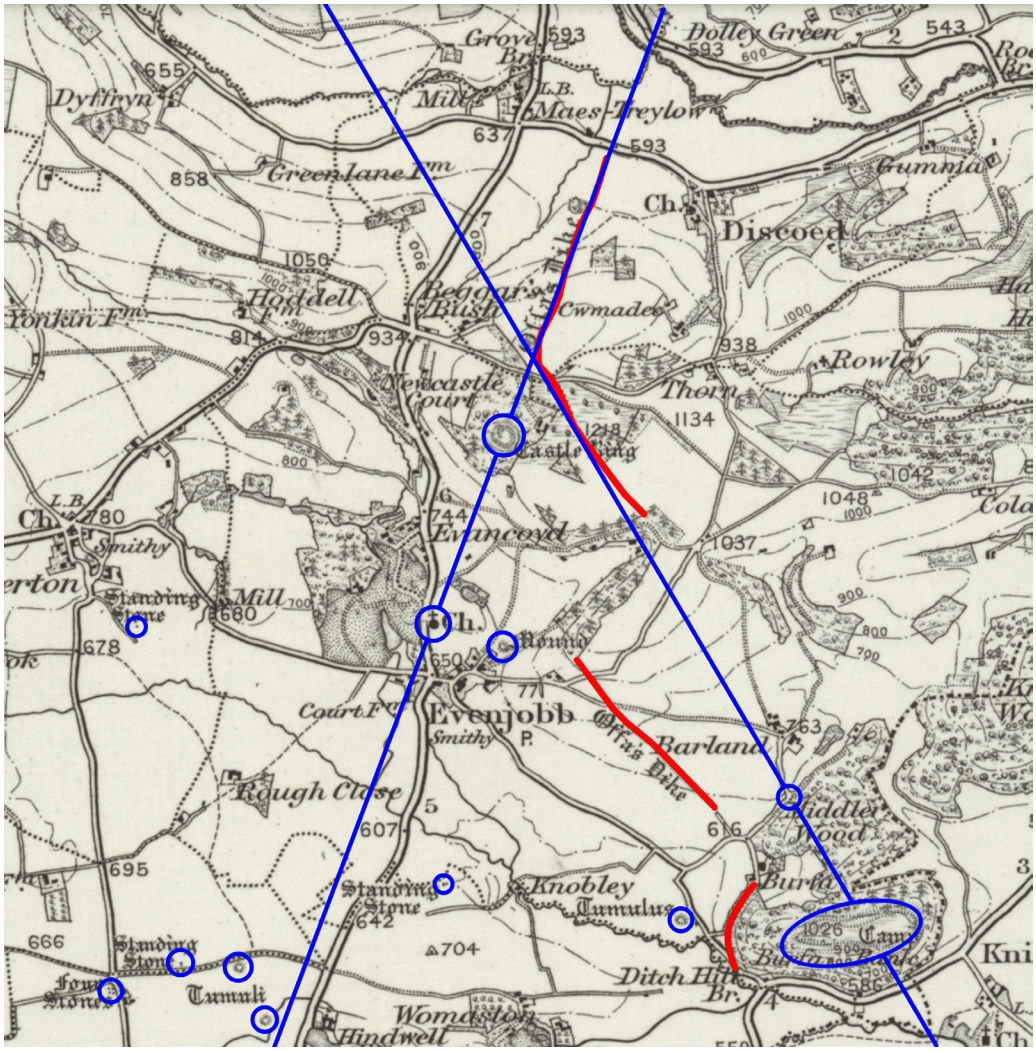

Figure 3: Offa's Dyke 'following' two ley lines; Offa's Dyke is shown in red; blue rings highlight sites considered marker points for leys (after Watkins 1925, fig. 21, redrawn on the Ordnance Survey One Inch Map 1885–1900)

conception, there is little cause to accuse Alfred Watkins of plagiarism: his 'old straight track' crossed hills, valleys and rivers without regard to topography. Watkins (1925: 20) identified two stretches of Offa's Dyke in the Vale of Radnor as parts of leys (Figure 3); it is notable how few of the supposed 'marker points' are incorporated into the lines and how poorly Offa's Dyke follows them. At Mellington Park, he considered the outwork (Fox 1995: 103) standing higher than the Dyke to be 'a sighting mound on an earlier track, which the dyke here follows'. Further south, by Tack Wood in the Clun Forest (Fox 1955: 130), the Dyke turns through a 'right angle' (at 'Hergan Corner'). According to Watkins (1925: 21), this incorporates 'two leys crossing at a sighting mound, and the dyke appropriating in its winding course fragments of both leys and tracks, and therefore turning on the mound'.

A great deal of Late Victorian and early twentieth-century antiquarian speculation encompassed the identification of ancient trackways. They could be of any age – prehistoric, Roman or medieval – and were more often than not indeterminately 'ancient'; they could also be of any character, including military ways, saltways, trade routes and so on. The speculations of Watkins and, before him, Spencer, while wrong and unscientific (Williamson and Bellamy 1983), were simply an extension of this approach to ancient routes. A cautious approach to the study of pre-modern tracks has never really been at the forefront of archaeological research: some of the worst 'research' has been carried out on Roman roads. An excellent example of this approach, the dense network of Roman roads in the south-east Midlands identified by a group calling itself The Viatores (1964), while well-intentioned, was a triumph of enthusiasm over rigour (Simco 1984: 78–79).

(Un)scientific dating

The so-called 'Radiocarbon Revolution' (Renfrew 1973) offered archaeologists working without an historically anchored chronology the chance to assign approximate dates to prehistoric sites. As the accuracy of dating techniques has improved, so its use in historical archaeology has become more viable. It has been long considered best practice to quote the laboratory code, the Conventional Radiocarbon Age (or CRA) in years BP with its standard deviation and the curve used in any calibration (Millard 2014: 556–557). It should also be borne in mind that a radiocarbon age, even after calibration, is not a 'date' but a statistical approximation to the age of a sample. The reliability of a determined age is dependent on the number of atoms of radioactive C^{14} calculated against the number of atoms of stable C^{12}. This is based on the weight of the sample to be tested and either the evidence of radioactive decay (measured by an instrument such as a Geiger counter, known as beta counting) or by spectroscopic analysis of charged carbon ions in a particle accelerator (known as Accelerator Mass Spectrometry or AMS dating).

Whichever technique is used – and AMS dating is the preferred technique because its accuracy is greater – the results assess the age of the sample based on how far its proportion of C^{14} has declined from the assumed starting point of 1 in 670,000,000,000 atoms. In older samples, there are fewer C^{14} atoms to start with, so there is an age limit beyond which assessment becomes impractical; fortunately, for monuments such as Offa's Dyke, they are well within the range of countability. The length of time available for beta counting will also affect the accuracy of the results. An assessment of the reliability is given as a margin of error accompanying the age Before Present, expressed as a standard deviation. One standard deviation either side of the determined age, which is a sampling mean, gives a 68% probability that the real age falls within that range; two standard deviations provide a 95% probability; three give a 99.7% probability. For most uses, an age expressed as a range within two standard deviations is likely to be correct most of the time.

There are further complications. The CRA uses the determination of the half-life of C^{14} made by Willard Libby in the late 1940s (Millard 2014: 555). At 5568 years, it is about 3% lower than the currently accepted standard of 5730 years; however, it is a convention that the CRA is given using the Libby half-life, allowing comparisons to be made between all the radiocarbon determinations carried out since the technique was first developed. A more serious cause for confusion is that Libby's assumption that the proportion of radioactive C^{14} in the environment has remained constant; by the 1960s, it was realised that this is not the case. The ratio of C^{14} to C^{12} has varied considerably over time, for a variety of reasons. Factors include the strength of the cosmic rays bombarding the atmosphere that create C^{14} in the first place. Once this was recognised as an issue with understanding the age of dated materials, a technique was developed to calibrate the determination against changes in the proportion of the two isotopes (Renfrew 1973: 77–85). Calibration curves are based principally on wood samples dated by dendrochronology; in this way, a consistent pattern has emerged, showing periods when there has been more C^{14} in the atmosphere and periods when there is less. The assessment of radiocarbon ages from these independently dated samples is also subject to a margin of error, so the margin of error for calibrated dates is necessarily wider than for the original determination. Several different calibrations curves have been produced over the years, including some for specific materials and specific parts of the world, so it is always necessary to indicate which curve has been used (Millard 2014: 557).

The next issue is to understand the nature of the sample being dated (Aitken 1990: 87–92). The radiocarbon determination gives the date at which the organism from which the carbon derived ceased to absorb more atmospheric carbon. If it is part of a timber, it will date the year in which a specific growth ring ceased to form; if a grain, it will indicate the year of the growing season for that crop; if an animal, it will date its death. Problems can occur where radiocarbon determinations are made on timber, as there is a tendency for structural timbers to be reused, while those in a hearth can also have seen prior use.

Finally, the truism that 'a single date is no date' must be recognised: the potential for the reuse of old materials, sample contamination, laboratory error, and so on is not negligible. For this reason, a single date is next to useless. It is good practice to date several samples, preferably from different parts of a well-stratified sequence or different materials within a single phase in the stratigraphic sequence. The application of Bayesian statistics allows a sequence of dates to be modelled using knowledge of prior probabilities so that a determination made on a sample stratigraphically earlier than another can be tweaked. This technique was used on the Optically Stimulated Luminescence dates obtained from soil samples at Gobowen (Malim and Hayes 2008: 174).

Much of the preceding discussion may appear to be teaching a grandmother to suck eggs (from an archaeologist's perspective), but it is necessary to reiterate in this context. This is because archaeologists still sometimes throw around radiocarbon determinations without giving much thought to the processes involved in their acquisition. This in turn is circulated in the media and popular syntheses, with calibrated date ranges quoted

(or, worse, single years), which are then taken up by the public as if they represent historical dates: they do not. There are statistical approximations of age and should never be treated otherwise. When misused by pseudoarchaeologists, they implicitly carry an authority they cannot bear. With this in mind, let us reflect again on the current state-of-play regarding Offa's Dyke and Wat's Dyke.

Offa's Dyke: Chirk

Excavation of a section of Offa's Dyke at Chirk damaged by unauthorised landscaping yielded four samples from deposits at the base of the bank that were submitted for radiocarbon dating (Grant 2014a: 15). The dates have been quoted widely in the media, always in the form 'between 430 and 652', without quoting the uncalibrated determination. These have not previously been made available but are in the final grey literature report on the excavation (Grant 2014b), which has hitherto been embargoed from public consultation. According to Belford (2017: 69), this means that 'the bank was built after AD 430 at the very earliest', although this would be better expressed as a 95% probability that the Dyke post-dates AD 430, which does not entirely rule out an earlier date.

Four samples were submitted for radiocarbon analysis: three samples of hazel 'charcoal' and one of alder 'charcoal' (Grant 2014a: 16). They derived from contexts (08), a basal deposit within the bank (SUERC-51224), (17), a bank deposit (SUERC-51225), (16), another bank deposit (SUERC-51226), and (15), the alder from a bank deposit stratified above (16) and (17) (SUERC-51230). All therefore represent material incorporated during the construction of the bank whose primary source is unknown. Although it may well have been vegetation cleared to permit construction of the Dyke, it is also possible that it derived from pre-dyke occupation or clearance.

Three of the dates (SUERC-51225, SUERC 51226 and SUERC-51230) give consistent ages of 1466 ± 35 BP, 1474 ± 35 BP and 1499 ± 35 BP. These were calibrated by the Oxford Radiocarbon Accelerator Unit program OxCal4 to cal. AD 541–651, 475–458 and cal. AD 536–652, and 430–493 and cal. AD 530–653 at 2σ. These calibrations give a 95% probability that the 'charcoal' (more likely carbonised wood not deliberately manufactured as charcoal) originated in plants growing between the mid-fifth to mid-seventh centuries, probably later in that range. The outlier, SUERC-51224, gave a radiocarbon age of 1092 ± 35 BP, calibrated to cal. AD 887–1019.

The interpretation of these dates is not quite as simple as the stories promoted by the media would suggest. The three mid-fifth to mid-seventh century samples do not date the bank directly: they indicate the age of burnt wood samples incorporated into it. They demonstrate that the construction of this section of Offa's Dyke is post-Roman, allowing us to rule out an attribution to Septimius Severus. That they are all of consistent date is significant and might be used to support a sixth- to seventh-century date for the construction of this section. Such dating would be a legitimate interpretation, with one *caveat*: we do not know the age of the wood when it was incorporated into the Dyke.

It is possible that the material derives from an earlier collection of burnt wood (such as a hearth) pre-dating the construction of the Dyke. However, the close correlation between the dates makes this argument a case of special pleading.

The fourth date is puzzling, though. From a secure basal context, its late ninth- to early eleventh-century date makes little sense in terms of what we believe about Offa's Dyke. It is worth noting that a calibration at 3σ level (cal. AD 774–1030, calculated with CALIB 7.1 (Stuiver *et al*. 2020)) begins within the reign of Offa. Again, this is special pleading. Nevertheless, as a single date, it cannot be used to sustain a post-Offa dating for the monument, unless this section was rebuilt during the period of the Viking wars, an arguably unlikely scenario.

Wat's Dyke: Maes-y-Clawdd

Both Nurse (1999) and Blake and Lloyd (2000: 302) interpreted a date of 1571 ± 69 BP (sample UN-4158), cal. AD 483 ± 68 (CalPal Online), from a hearth beneath Wat's Dyke at Maes-y-Clawdd as indicating a precise construction date for the Dyke, '[d]ating analysis at Queen's University, Belfast, of charcoal and burnt clay samples centres puts the dyke's construction at around AD 446'. This single date was taken from Hannaford's (1998: 12–14) publication of the entire dating certificate supplied by Queen's University Belfast; a more careful reading would have shown that the certificate gives a calibrated date at 2σ of cal. AD 268–274 and 340–630.

There are two obvious problems here: it is a single date, and it derives from a feature pre-dating the construction of Wat's Dyke. In archaeological terms, it is a *terminus post quem*, informing us that there is a 95% likelihood that this section of the Dyke was built after AD 268. There is also a 95% chance that the wood consumed by the fire in the hearth was alive between the third and seventh centuries AD. Dates from carbonised wood have long been recognised as among the least informative for establishing chronology (Aitken 1990: 90 f.). The radiocarbon date is irrelevant to the construction and date of Wat's Dyke and merely tells us that a fire that burned before the bank was constructed used fuel that is 95% likely to have been growing between AD 268 and 630.

Less critical writers have taken Nurse's (1999) popular reporting of the date as 'around AD 446' and built elaborate hypotheses around it. In Professor Jim Storr's (2016: 178) view, 'Cunedda may have built Wat's Dyke. Cunedda gave his name to Gwynedd'. Storr's assertions are 'not even wrong', to use a phrase attributed to Wolfgang Pauli: Cunedda is a legendary figure whose association with Gwynedd has been challenged (Koch 2013: 64 ff) and whose Brittonic name *Cunodagos* does not underlie Gwynedd (Brittonic *Ueneda)*. He is inconsistent, though, as he subsequently informs us that 'seems to have responded' to a threat from Gwynedd following the conquest of Cheshire 'by digging a major earthwork, now known as Wat's Dyke' (Storr 2016: 193). Storr, whose historical framework appears to have been taken wholesale from John Morris's (1973) much criticised *The Age of Arthur* (Storr 2016: 267), is keen to date all earthwork dykes to the early medieval period. He excoriates

archaeologists who believe some of them to have been built in prehistory while dismissing evidence that they were (Storr 2016: 266; Grigg 2018: 36–37).

Wat's Dyke: Gobowen

The use of Optically Stimulated Luminescence (OSL) dating on a section of Wat's Dyke investigated at Gobowen (Shropshire) in 2006 has brought a new technique to bear on the problem. Two dates, in particular, have been key in suggesting a date for the Dyke. They are X2839, from the soil beneath the bank, which was dated 1110 ± 130 years before testing in 2007, and X2833, from a ditch silt at a depth of 2.1m, of 1110 ± 105 (Malim and Hayes 2008: 165). The excavator quotes these as giving historical dates of AD 767×1027 and AD 792×1002 respectively, prompting him to suggest an early ninth-century construction, perhaps as the work of Cenwulf (King of Mercia 796–821).

OSL is a relatively new technique, which counts electrons trapped within the crystalline matrix of certain minerals, especially quartz (Jacobs and Roberts 2007: 211). The energy of sunlight is sufficient to release trapped electrons so that the quartz crystals within a soil exposed to it will lose them. Once the deposit is buried, they begin to accumulate again. Unlike radiocarbon, which relies on organic materials incorporated into the soil, OSL dates are useful for dating the formation of an archaeological deposit, with certain caveats. Soil that remains exposed to light or that is re-exposed (for instance, during ditch cleaning) will yield a date that indicates the time of its burial, not formation. It is a handy technique for dating topsoil buried beneath an earthwork bank.

Because OSL dating's margins of error are based on standard deviations from a mean, like radiocarbon dates, determination X2839 (1110 ± 130 years before 2007) has a 68% chance of falling between AD 767 and 1027; this increases to 95% if we take the range as AD 637 to 1157. Similarly, determination X2833 (1110 ± 105 before 2007) has a 68% chance of falling between AD 792 and 1002, increasing to 95% in the range AD 687 to 1107. Dating construction to the reign of Cenwulf thus falls within the 68% probability range; so does a date late in the reign of Offa. Furthermore, X2833 was derived from a secondary ditch fill (the excavator's Phase 6.2) and the Bayesian analysis of the series of dates from the ditch published as figure 26 (Malim and Hayes 2008: 174) pushes the mean back to about 780. The analysis means that there is a greater than 50% chance that this deposit was buried before the end of Offa's reign, a very different conclusion from that promoted in the report and subsequently in the media.

Analysis of the dating

Scientific dating of archaeological materials, be they organic remains or buried soils, brings with it the cachet of rigorous technical expertise. Samples are treated in laboratories, subjected to precise measurement and a certificate issued to the commissioning archaeologist. To that extent, they avoid entanglement in the theoretical preconceptions of the excavator. However, too few archaeologists and even fewer

non-archaeologists understand that scientific dates are not like historical dates: they are statistical statements involving distribution about a mean. Always supplied with a standard deviation or 'margin of error', this 'margin' should not be read as covering the range of possible historical dates. One standard deviation either side of the mean encompasses only a 68% probability.

This constraint is too often overlooked. Press releases from those who commissioned the laboratory work are generally framed around a date range suggested by the scientific date without explaining potential pitfalls. At worst, uncritical writers and the media quote the mean as if it is an approximation to an historical date and use it to construct elaborate hypotheses.

None of the scientific dates for the dykes of the Anglo-Welsh borderlands is robust enough to necessitate 'rewriting history', despite the hyperbole of headline writers. Indeed, the available dates can be used to support the consensus views that Wat's Dyke is probably late seventh or early eighth-century in origin and that Offa of Mercia was responsible for the Dyke that bears his name. They could also be used as ammunition to undertake a redating of the monuments, but they would require further evidence to do so.

Conclusions

Archaeology has not settled the dating of the dykes to a precision that satisfies historians or the general public. Although it has revealed details of their construction and their broad relative dates, new evidence continues to fuel speculation, some of it unwarranted and much of it inconclusive. The pitfalls of scientific dating are rarely expressed in these claims, which are often trumpeted loudly in press releases, hardly an ideal medium for expressing the caution they require. Bold statements are generally the most effective means of gaining the attention of the media and, increasingly, are expressed in terms of 'rewriting history'. The discoveries rarely match the hyperbole and, all too often, the damage has been done: dubious assertions have been spread widely and entered the public understanding of the past. The overall effect is to create doubt about the accuracy of previously accepted narratives, even if the details of the new claims are not remembered.

Keith Nurse's (1999) redating of Wat's Dyke attracted a flurry of interest in the wake of his publication, and its long-term effect has mainly been in the public realm. Historic Environment Records have adopted it, as have those responsible for interpretive signage. The impact of the more recently publicised conflicting dates suggested by radiocarbon determinations and optically stimulated luminescence has yet to be seen. The suggestion that Offa's Dyke may have incorporated existing earthworks was more widely disseminated in the national press (and even picked up by some European sources). The implication that some of these might have been as early as the fifth to seventh centuries led to press comments that the monument would have to be renamed. The suggestion that it was not an entirely new construction of Offa is not original (Feryok 2001: 184; Belford 2017: 65) but the case for unitary construction remains strong

(Ray and Bapty 2016: 334 ff). The likelihood of a single period of building makes the ninth- to eleventh-century date from Chirk all the more curious and likely to be an error.

Pseudoarchaeology tends to start with an explanation and then casts about for evidence. Blake and Lloyd (2000: 302) had already hypothesised that Offa's Dyke was the construction attributed to Septimius Severus by Late Antique writers and the radiocarbon date from Maes-y-Clawdd was included only '[a]s this book was nearing completion'. To them, it was confirmation that 'this evidence… establishes beyond doubt that the location of the Otherworld was to the west of the wall – and so Avalon and the Land of the dead return home'.

Blake and Lloyd's work had a limited impact (although, at the time of writing, Wikipedia cites it as an authority for Wat's Dyke).[1] By the time they published their second book, *Pendragon*, they had drawn back from their identification of Offa's Dyke as the 'Wall of Severus'. Here, they refer to their earlier hypothesis as '*an alternative view*' (Blake and Lloyd 2002: 281) and the fifth-century date for Wat's Dyke has vanished completely. Wikipedia maintains a page for the 'Wall of Severus',[2] without reaching any firm conclusions. Along the way, it wrongly cites the present author as claiming that '[a]rchaeological evidence has been discovered showing parts of Offa's Dyke, on the England-Wales border, is at least as old as the mid-5th century'.

The dykes of the Anglo-Welsh borderlands are famous and conspicuous monuments whose extent and function are still areas of lively debate (Tyler 2011: 151). However, they have suffered from a lack of interest outside a small group of dedicated specialists (Fox 1955; Noble 1983; Hill and Worthington 2003; Ray and Bapty 2016) whose work remains largely unknown by the general public. A recent major assessment of the archaeology of early medieval Britain mentions Offa's Dyke only in passing (Carver 2019: 551), and this is not an isolated case; it would be unthinkable for accounts of Roman Britain to gloss over the construction of Hadrian's Wall in this way. Grigg's (2018) reassessment of early medieval dykes as a whole marks the first step towards a fuller appreciation of their date, form and function, but much more remains to be done. Thankfully, the pseudoarchaeological community has not so far widely adopted them as monuments to be misrepresented. Nevertheless, archaeologists and historians must work to promote reliable and accurate information about these monuments, including expressions of caution and uncertainty, in the face of potential fringe and extremist narratives about them.

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Keith J. Fitzpatrick-Matthews, Museum Curator and Heritage Access Officer, North Hertfordshire Museum

Email: keith.fitzpatrick-matthews@north-herts.gov.uk