

Signalling Intent: Beacons, Lookouts and Military Communications

John Baker and Stuart Brookes

‘And then towards midwinter they took themselves to their prepared depots, out through Hampshire into Berkshire at Reading; and they did, in their custom, ignite their beacons as they travelled; and travelled then to Wallingford and scorched it all up, and then turned along Ashdown to Cwichehm’s Barrow, and there awaited the boasted threats, because it had often been said that if they sought out Cwichehm’s Barrow they would never get to the sea’.¹

Introduction

Beacons and lookouts played a key role in the networks of local and regional communications of Anglo-Saxon England during the Viking Age (ninth to eleventh centuries). While the large fortified centres of the period are well known, the nature of interconnections between them and smaller-scale local arrangements have only recently received attention. Written evidence, place-names and landscape archaeology together allow for the reconstruction of elements of signalling and sighting systems. This contribution presents the historical evidence for beacons, discusses the context within which beacons and lookouts developed and draws upon a series of case studies to reveal local systems of communication in the landscape of Anglo-Saxon England.

Beacons and Lookouts in Written Sources

On the face of it, evidence for the use of beacons in Anglo-Saxon England may appear meagre, but David Hill and Sheila Sharp have argued convincingly that it reflects a much wider employment of this type of signalling.² Their seminal article on the topic drew together the various strands of documentary evidence in order to provide a firm basis for what they described as a ‘commonplace’ assumption that a beacon system was used by the West Saxons in their wars against the Vikings. As they showed, direct documentary evidence for the maintenance of lookout posts in Anglo-Saxon England is limited to the early eleventh-century *Rectitudines Singularum Personarum*, which lists *sæweard* or ‘sea watch’ as a duty both of thegns and of cottars,³ and a Cornish charter of the late tenth century that includes *uigiliis marinis* as one of the obligations from which the land was not exempt.⁴ Indirectly, however, the famous description of the watchman of the *Scyldingas* in *Beowulf* may reflect early medieval practice in England; the description of his approach to the new arrivals on the coast seems to echo the *Anglo-Saxon Chronicle*’s account of the first Viking marauders in Wessex, whom the local ealdorman confronted (fatally as it turns out) and directed to the nearest royal vill.⁵

These allusions are complemented by occasional reference to beacon fires and beacon systems in Anglo-Saxon England. The most explicit of these is a late tenth-century French account by Richer, of King Æthelstan’s signalling across the English Channel,⁶ but Hill and Sharp draw attention to two other sources that may point to the existence of beacon systems in Anglo-Saxon England: the setting up of a system of fire signals in Norway by King Hakon the Good, who had been fostered at the English court by King Æthelstan, from whom he may well have inherited his military strategies; and a possible allusion to the construction of ‘piles of wood’ or ‘beacons’ (*rogi*, oblique form of Medieval Latin *rogus*) in a suspect, late tenth-century charter relating to Sherborne Abbey in Dorset.⁷ Direct, vernacular reference to beacons is, however, harder to discern. Although Modern English *beacon* descends from Old English *bēacen* (Anglian *bēcun*), the generalisation of the meaning ‘a signal-fire’ seems to be

a late, perhaps Middle English development.⁸ In Old English contexts it has the more general senses ‘sign, portent’, and can denote a physical symbol, such as a banner, standard or monument; it can also denote a signal, but reference to audible signals is more clearly attested than to visible ones.⁹ The assertion that the imagery of beacons (or at any rate beacon-fires) is a significant feature of Old English poetry should therefore be treated with caution;¹⁰ but the Anglo-Saxons were familiar with the concept of lighthouses, and in the compound *bēacenstān* — which glosses Latin *farus*¹¹ — Old English *bēacen* must be a reference to a signal-fire.

One rather oblique use of the term is potentially significant. Under the year 1006, the *Anglo-Saxon Chronicle*, in describing the advance of the Vikings through Hampshire and Berkshire, claims that they kindled (*atendon*) their *here beacen* as they went.¹² Formally, *herebēacen* could be singular or plural, and it would be possible to interpret it as ‘standard’;¹³ that is, destructive fires were, metaphorically, the military standard that announced the presence of Vikings. However, Old English *herebēacen* also glosses Medieval Latin *farus* ‘lighthouse’ (i.e. light-signal for mariners), and it seems likely that this is an early instance of (*here*)*bēacen* in reference to signal-fires.¹⁴ Thus the Vikings are said to have kindled their beacons as they progressed across the country. These Anglo-Saxon references may be few, but can be placed within much wider contemporary and diachronic contexts. Beacons — individually or as elements of a system — are attested across Europe from ancient times and throughout the medieval period, and fire signals seem to have been used in Britain during the Roman and late medieval periods.¹⁵ That beacons were not a part of Anglo-Saxon life would be more surprising than that they were.

Further evidence of Anglo-Saxon beacons may be provided by onomastic sources. The element *bēacen*, *bēcun* is indeed evidenced in place-names, but pre-Conquest examples are rare and subject to the semantic uncertainties discussed above.¹⁶ A second element that might relate to beacons is Old English *ād*, which is used of a ‘funeral pyre’, but may in some place-names denote ‘a beacon’.¹⁷ Even so, another meaning, ‘a limekiln’, can be involved, and the number of secure instances of Old English *ād* in place-names is small. Much more widespread are place-names with elements such as Old English *weard* and **tōt(e)*, denoting watchmen or lookout places. These are especially widespread in southern England, but can be identified across the country (Figure 10.1).¹⁸ The presence of a beacon is not a prerequisite of lookout sites, since communication of messages can be carried out by other means; but since fire signals are attested in medieval England, it seems likely that maintenance of lookout posts and of beacons often went hand in hand.

Fig. 10.1

Hill and Sharp used evidence of this kind — specifically the occurrence in charter bounds of the compound *weardsetl* ‘watch-house’ — to show that some beacons recorded in sixteenth-century sources were on sites used for keeping watch in much earlier times.¹⁹ On that basis, they conjectured the existence of an Anglo-Saxon warning system, stretching from the Solent to the Berkshire border. They argued, convincingly, that networks of this kind are so tightly interconnected, that the removal of one beacon might cause the whole thing to become redundant; thus, the documented sixteenth-century networks might already have been quite ancient. Jake Shemming and Keith Briggs have posited an extension to this Anglo-Saxon system by exploring further place-name evidence,²⁰ and other links, as well as other possible chains of lookouts, have been identified.²¹ If signal-fires were associated with these observation points, as seems highly likely, and if the networks existed as early as the Anglo-

Saxon period, then beacons must indeed have been a very common feature of the early medieval English landscape.

Physical Characteristics of Anglo-Saxon Beacons

If the existence of beacons in Anglo-Saxon England is beyond serious doubt, the written sources provide very little insight into their physical appearance. That they necessitated the existence of heaps of firewood seems obvious; both Medieval Latin *rogus* and Old English *ād* (which are paired in an OE gloss) have a range of meanings that encompasses this sense. Old English *ād* also had the sense ‘funeral pyre’, as indeed did classical Latin *rogus*.²² Rune Forsberg also noted the compound *ādfīnig* in a Hampshire charter, which he took to refer to a place where firewood for a beacon was stored.²³

The apparent use of bonfires for signalling in early sources should make us mindful to the types of messages being conveyed.²⁴ Bonfire beacons were a relatively simple signalling medium, relying on the visibility of smoke during daylight and of fire-light during the darkness of night to convey pre-determined messages. Their effectiveness was very much dependent on clear visibility, and it is likely that they fell out of use in poor winter weather conditions. This was certainly the case in the sixteenth century when beacons were continuously manned only from March to October.²⁵ There was also little flexibility in the message to be transmitted, and the adequate response needed to be unambiguous, with the likely rejoinder to an early warning being simply to bring out numbers of armed civilians or troops, whilst simultaneously readying civilians for flight. In the sixteenth century, sources suggest that individual beacons may have comprised triple fires at key points on the coastline, double fires at points just inland, and single fires at points further inland.²⁶ No such evidence is so far forthcoming for the early Middle Ages, and it may be that signals had to be reinforced by messengers.²⁷ Bonfires may also have served a further role in controlling the movement of unauthorised persons or those with a nefarious intent abroad at night.²⁸ Beacon use of this kind is a way of policing a territory, perhaps controlling routes and the populations moving along them. In both instances the siting of the beacon has to relate to routeways in order to see and be seen.

One theme recurrent in the sources is the notion that beacon signals were transmitted by setting fire to buildings. This is a feature of the Æthelstan episode recounted by Richer (*tuguriorum incendio presentiam suam iis qui in altero litore errant ostendebant* ‘they made their presence known to those who were on the other shore by burning huts’ and *domus aliquot succensae* ‘some houses were set on fire’), and is an implicit aspect of the imagery of the *Chronicle* entry for 1006. Galbert of Bruges’s account of Robert the Frisian’s arrival in Flanders in 1071 has him announcing his presence by setting fire to a house in Kapelle (*domum incenderent* ‘they set fire to a house’).²⁹ Hill and Sharp explain Richer’s account of the burning of hovels as a mistaken reference to the remains of Charlemagne’s wooden lighthouse at Boulogne.³⁰ The use of *herebēacen* to gloss *farus* may lend weight to this, in the light of the *Chronicle* entry for 1006, but Richer’s is clearly not an isolated example. Either former lighthouses, in such disrepair that they resembled houses or hovels, dotted the English and Frankish coasts, or these accounts reflect some other reality or perception of beacons. It is worth noting a scene in the Bayeux Tapestry, after William’s arrival in England but before the battle of Hastings, which shows the burning of a house, under the caption *hic domus incenditur* ‘here a house is set on fire’.³¹ Gale R. Owen-Crocker argues persuasively that this is one of several scenes influenced directly or indirectly by Roman sculpture.³² Nevertheless, it is worth considering what action the scene is intended to convey in the light of the examples discussed above. The image depicts a woman and child fleeing from the flaming building, and an obvious interpretation is that this represents the ravaging of Sussex by

Norman troops, except for two curious features. First, according to the Latin explanation, only a single house was set on fire — this seems a rather lacklustre ravaging. Second, those responsible are apparently unarmed. An alternative explanation, that the house was somehow obstructing the progress of the Norman army, seems unsustainable — it is hard to see how a single house could be so problematic and noteworthy, and its charred remains might anyway present a continuing obstacle. The position of this episode within the tapestry is also noteworthy. In the previous scene, William receives intelligence relating to Harold's movements; in the following one the Normans start to march towards battle. What the scene might depict, then, is the use of a beacon signal to rally forces ready for the advance.

Of course, reference to the burning of houses might be no more than a trope, but it is worth considering the practical merits of such a method of signalling. On top of the obvious display of authority tied up in the burning of a house, there could have been more than one reason why domestic dwellings were expressly set alight to send signals. First, at times when the obligation to maintain a beacon system had ceased to be enforced, it may be that potentates did indeed make use of existing buildings when the situation was urgent enough. In other words, even though systems of watch and signalling have existed at times of intense military threat, they perhaps fell out of use during prolonged periods of relative peace. Alternatively, it is possible that setting fire to houses was a way of using a predetermined system to challenge the English to battle. A similar tactic seems to have been employed by the Viking *here* 'army' of 1006 on its way through Berkshire, as earlier noted. The effectiveness of the tactic depends to some extent on the degree to which watchmen could pinpoint the location of established beacons. An experienced watchman might have been able to tell the difference between a genuine beacon and a burning house, since the two would be in different places on the horizon. In that case, *ad hoc* signalling of the kind described by Richer and by Galbert of Bruges might have been better served by *ad hoc* beacons; use of a more established beacon site might, after all, have risked setting off a national alarm. A third possibility, related to the second, also presents itself: attackers could have used fires as a way of throwing English defensive measures into confusion. Accounts of beacon use in 1545 suggest that many false alarms, raised by wrongly identifying ships in the Channel, by stubble burning, or by malicious hoaxers, often kept bands of men out all night, causing considerable irritation.³³ Duke William may have preferred to fight tired rather than well-rested militia.

Archaeological Evidence for Beacons and Lookouts

Few beacons have been positively identified through excavation, but given the ephemeral archaeological trace a bonfire might leave, this is perhaps unsurprising. One particularly important example was discovered at Yatesbury in Wiltshire in 1994.³⁴ Yatesbury village sits partially within an enclosure which originated in the late Roman period and which was apparently maintained at intervals until the mid-eighteenth century. Andrew Reynolds equates this enclosure with the Old English *burh-geat* — a structure of particular significance, as it is mentioned as one of the thegnly attributes in the eleventh-century compilation known as the *Gepyncðo*.³⁵ Of particular interest was a mound situated on the western side of the enclosure circuit which was shown through excavation to be originally a turf-built barrow of early Bronze-Age date, subsequently remodelled (Figure 10.2). The summit of the mound had been flattened and then subjected to intense burning, the evidence for which was a fire-reddened soil which extended to a depth of up to 0.3m. A ditch had also been cut into the lower part of the mound, the basal fill of which contained a large, unabraded sherd of late Anglo-Saxon oxidised, stamped pottery. The ditch was then filled with two distinct layers of charcoal-rich and burnt soils separated by a layer of cleaner soil, indicating

that two major episodes of burning, or at least clearance of burnt debris from the mound, had taken place.

Fig. 10.2

The Yatesbury beacon mound is an important find for several reasons. It demonstrates that almost any place imbued with a viewshed (the area visible from a fixed vantage point) over the surrounding landscape could serve as a beacon. There was very little evidence for the physical construction of the monument, as its principal built character was in origin a prehistoric mound. Whilst this may appear a somewhat makeshift arrangement, it does nevertheless tally well with the similar *ad hoc* beacon lighting encountered in the written sources.

This is not to say that *some* beacons, particularly those which, unlike Yatesbury, passed into local toponymy, were not maintained, or periodically re-used, over a longer time-scale. This continuation of use is one of the implications of Hill and Sharp's observation that the *weard setl* 'watch house' of the Highclere and Burghclere Anglo-Saxon charters, which must have been used as a lookout in the tenth century or earlier, also served as an Armada beacon in the sixteenth century, and indeed later came to be called Beacon Hill.³⁶ Similar instances are relatively easy to identify. Tothill Terrace, by Minster-in-Thamet in Kent,³⁷ which contains Old English **tōt(e)* or Middle English *tot(e)* 'lookout', is believed to have been part of a late fourteenth-century beacon system overlooking the Wantsum Channel — an important waterway leading into the Thames estuary — built by Edward II and Edward III for the protection of the south coast.³⁸ It also appears as the beacon of *Mynster* on William Lambarde's map of the beacons of Kent, dating to 1585 (Figure 10.3).

Fig. 10.3

Archaeological evidence for this process of continual reuse may be provided by a beacon at Wardhill, the highest point of Shapinsay in the Orkney Islands. Excavated in 1999, the beacon first took the form of a low earthen platform, possibly originally of Viking origin.³⁹ This mound was superseded by a horseshoe-shaped stone structure of indeterminate date which perhaps served as a wind screen and allowed for better control of the fire; evidence for which was provided by layers of intense burning within the structure.⁴⁰

Given that the essential qualities of signalling systems — visibility and elevation — remain the same throughout time, it is probable that many beacons first recorded in the medieval period have more ancient origins. These same qualities must, however, not lead to unqualified assumptions. For example, for reasons outlined by John Baker,⁴¹ it is likely that the Bronze-Age univallate (single rampart) fort of Ivinghoe Beacon in Buckinghamshire was a pre-Conquest lookout commanding the high ground over an intersection of the Icknield Way and Watling Street.⁴² By contrast, there are no real grounds for believing that similar reuse of a Neolithic and Bronze Age barrow at Beacon Hill in Grimsby, north-east Lincolnshire, indicates the same kind of time-depth. The mound certainly seems to have been used as a beacon from 1377, but partial excavation of the barrow in 1935 appears to indicate its use in the Anglo-Saxon period only as a site of secondary burial.⁴³ By a similar token, Glastonbury Tor in Somerset has topographical characteristics well suited to use as a beacon site; but the structural evidence from the excavated summit is probably too inconclusive for assumptions of that kind.⁴⁴ It is important, therefore, not to prejudge the archaeological evidence on topographical grounds.

In some respects the archaeological evidence for Anglo-Saxon sighting systems is even more meagre than that for signalling, although these do leave a greater imprint on the built environment. One of the more remarkable architectural survivals in Kent is the lower 12.5m of a Roman lighthouse, or *pharos*, which stands at the highest point within what is now Dover Castle (Figure 10.4). It originally stood twice as high, and together with a second lighthouse on the western heights of Dover served to guide ships into port.⁴⁵ Immediately to the east the *pharos* adjoins a large cruciform church of St Mary-in-Castro, built *c.* 1000. The *pharos* was not quarried to build the church, and their proximity cannot have been accidental. There is antiquarian evidence for an internal balcony and above-ground doorway at the west end of the church,⁴⁶ which aligned with a post-Roman doorway cut into the east wall of the *pharos*, suggesting the two were linked by an above-ground walkway.⁴⁷ Since the church already had a substantial tower, the *pharos* must have been curated for reasons beyond those of practicality.

Fig. 10.4

One explanation for this building is the strategic location of the church and *pharos* within the probable site of an Anglo-Saxon fortified *burh*.⁴⁸ However, it seems never to have played a part in the system of coastal defences as portrayed in William Lambarde's sixteenth-century map. Despite its superb view over the Channel, the *pharos* was intervisible neither with known Anglo-Saxon beacon sites nor with those known from sixteenth-century maps.⁴⁹ Possibly, it served as a western tower or 'westwork' for St Mary-in-Castro.⁵⁰ Alternatively, the *pharos* may have continued its original function in signalling to sea traffic. It may even be possible that the *pharos* was used to communicate with the Tour d'Odre north-west of Boulogne — another Roman *pharos*, rebuilt on the orders of Charlemagne in 810.⁵¹

Whilst St Mary-in-Castro is a unique survival of the Anglo-Saxon built environment, the inclusion in later beacon systems of sites likely — on documentary, onomastic or architectural grounds — to have had pre-Conquest churches highlights the possibility that many ecclesiastical structures had a similar signalling function.⁵² Certainly, the construction of beacons was one of the specified military responsibilities of Sherborne Abbey in 998, but it is uncertain whether these structures can be linked to actual ecclesiastical buildings.⁵³ The late tenth-/early eleventh-century tower-form church of Wickham (Berkshire) does, however, provide a potential example (Figure 10.5). Before its rebuilding in 1845, the tower of St Swithun's is described as having had a flat roof with a coping forming a parapet.⁵⁴ As soot was also found on its internal walls at this level, the roof structure was interpreted as the base for a beacon. Topographical considerations strengthen this interpretation. Wickham is located at the highest point of Welford parish, adjacent to the intersection of Ermine Way and Margary 53, only 13km south of Icknield Way. It was intervisible with Inkpen Beacon to the south, as well as three further beacon place-names less than 10km away to the north, the closest of which — Warrendown Row (*weardan dune*) in Leckhampstead parish — is named in a charter of 943.⁵⁵ The evidence therefore raises questions about the potential role of ecclesiastical and secular towers in civil defence. Certainly both were situated physically at the heart of local communities, and in the case of secular towers, are likely to have been linked also to systems of military mobilisation.

Fig. 10.5

At Yatesbury, the association of the beacon mound with a putative thegnly enclosure makes the link between systems of civil defence and lordly power explicit. Henry of Huntingdon's account of an attack on Balsham (Cambridgeshire) in 1010, which is discussed in more detail

below, gives the church tower a central place in the narrative, and has been interpreted by Michael Shapland as a reference to part of a beacon system.⁵⁶ Finally, Lambarde's map includes four beacons at places with names specifically indicating the presence of a church in Anglo-Saxon times.⁵⁷

In the evidence set out here, then, we can perceive a practical use of natural and built environment. The common thread is the use of elevated positions and especially structures, whether prehistoric artificial mounds or secular and ecclesiastical towers. Significantly, it is the relationship between these structures from which greater insights can be drawn.

The Communications Environment

Understanding how beacons operated depends largely on our ability to establish the systems to which they belonged. All beacons must belong to a system of some kind — even activation of a single beacon links signalling personnel with both a source of information (intelligence obtained in person or through surveillance) and the recipient of the signal (such as a military post or the general population). In the absence of detailed accounts of working beacon systems from the early medieval period, it is principally through careful analysis of the landscape that the extent and nature of signalling systems can be suggested. The evidence for systems is largely circumstantial, but nonetheless compelling, and can derive from an analysis of the relationship of one beacon or lookout to another, using, for instance, lines of intervisibility to assess their potential connectedness; an examination of the specific relationship between individual lookouts and local infrastructure, where viewsheds can facilitate an assessment of the viability of a signalling system and consideration of the socio-political context — or how beacon sites relate to territorial boundaries, defensive structures and thoroughfares.

This approach was applied by Barrie Cox, who noted the potentially telling arrangement of place-names indicative of lookouts and strongholds around the boundaries of Lindsey and Rutland,⁵⁸ while Graham Gower noted the proximity of lookout place-names to an important routeway from London to Chichester.⁵⁹ Following these leads, analyses of lookout intervisibility, location relative to frontiers and sites of strategic value and proximity to routeways, have suggested the existence of a number of beacon systems relating to defensive strategies of the late Anglo-Saxon period.⁶⁰ These can apparently be of vastly different scales, from the possible pairing of a single observation point with a known stronghold, through chains of lookouts along important roads, to national early-warning systems.⁶¹ One example of a sighting system can similarly be linked to a wider defensive landscape. Several possible beacon sites have been recognised lying in close association with Offa's Dyke — the great linear earthwork, probably built in the late eighth century, separating Mercia from Wales.⁶² Lookout place-names such as The Tutt in Hewelsfield parish, Gloucestershire,⁶³ and perhaps Totnor, near Brockhampton in Herefordshire,⁶⁴ lie directly behind Offa's Dyke (from the English perspective), and acted presumably for the benefit of settlements lying immediately along the frontier. Just 2.5km to the west of a significant kink of Offa's Dyke lies Worsell Wood in Radnorshire. Though the absence of early forms makes any firm interpretation impossible,⁶⁵ the name might conceivably derive from the Old English *weard-setl* 'watch-house' — an apt description of the prominent knoll on which Worsell Wood lies, which overlooks both the ridge-top approach to England along Hergest Ridge, and the gap between there and Bradnor Hill, through which a tributary of the river Arrow flows and an important routeway passes. Worsell Wood would be the only clear case of a forward-facing beacon associated with Offa's Dyke, that is to say one whose likely function was to forewarn of an approaching threat from Wales.

Potentially the most instructive analysis (in terms of Anglo-Saxon England) is provided by Michael Shapland,⁶⁶ who suggests that an episode in Henry of Huntingdon's *Chronicle* may effectively describe use of a church tower as part of a signalling system. The *Chronicle* recounts for the year 1010 that the Danes attacked Balsham in Cambridgeshire, where: 'one man, worthy of widespread renown, climbed the steps of the church tower which still stands there, and strengthened both by the place and by his prowess, defended himself, one against the whole army'.⁶⁷ Shapland shows that Henry of Huntingdon's account of events at Balsham can be fleshed out through landscape evidence. Balsham lies close to the strategically important crossing of Wool Street Roman road (part of the so-called Via Devana) and the Icknield Way, on the line of the linear earthwork known as Fleam Dyke, which also guards this crossing.⁶⁸ Whilst the Anglo-Saxon church is now gone, the planform of Balsham reveals the existence of a probable former manorial enclosure, in which it was originally sited. Further components of the defensive landscape can be reconstructed. On Fleam Dyke is an early medieval mound which was the location of Mutlow, probably once the meeting-place of a group of three Domesday hundreds,⁶⁹ a site which bears strong similarities to a class of military mustering sites known as 'hanging promontories'.⁷⁰ Intervisible with Mutlow and Balsham, and overlooking the main Viking approach from Thetford along Watling Street, is Wadloo, a place-name containing Old English *weard* 'watch'.⁷¹ Given this arrangement Shapland concludes that a system may have existed, whereby the beacon warned the lord at Balsham of impending danger.⁷² He then assembled the *fyrð* at the hundred meeting-place within sight of his tower, to which he could turn for refuge.⁷³ If Shapland's interpretation is correct, this is a rare documentary insight into the workings of a lookout and beacon system.

Significantly, the strategic purpose of Balsham would seem to be concerned with movement along the Icknield Way, a long-distance routeway known to have been exploited by the Vikings on several occasions before 1010.⁷⁴ Other beacon systems appear similarly to have been reactive responses to well-used vectors of attack. What is striking about the evidence assembled by Hill and Sharp, on the other hand, is that most of it relates to coastal activity.⁷⁵ This may well be connected with the date of the sources, several of which belong to the last century of Anglo-Saxon rule. By that time, naval activity was a significant part of the more proactive Anglo-Saxon defensive arrangements,⁷⁶ but the *Chronicle*'s account of 1006 seems to place the imagery of beacons very much in an inland context. Perhaps influenced by the role of that early modern beacon system, Hill and Sharp nevertheless seem to have interpreted even inland beacons as elements of a coastal system of defence — their role explicitly to convey the message of an approaching fleet from the sea to the West Saxon heartland and beyond.⁷⁷

A series of studies has shown that strategically important roads might be deemed worthy of surveillance in their own right, and that surveillance sites can be linked specifically to nodal points on overland routeways.⁷⁸ These observations apply also to coastal regions; in fact, viewshed analysis suggests that lookout points were at least as interested in movement on land as at sea.⁷⁹ The Balsham example is important in demonstrating first that beacons had a close association with major routeways, and second, that individual beacons were intervisible with other signalling sites and monuments.

Reynolds' study of the Yatesbury landscape serves as another important case-study to put these two characteristics into context (Figure 10.6).⁸⁰ Excavations on the Yatesbury enclosure revealed evidence for a route, partially preserved in Ordnance Survey maps as Barrow Way/Yatesbury Lane leading south and eastwards to Avebury, where it forms the High Street of the regular and planned late Anglo-Saxon settlement on the western side of the great neolithic henge monument. From Avebury the route continues, through the Avebury henge,

exiting it by its eastern entrance before rising onto the high downland, crossing the Great Ridgeway and then turning to the southeast in the direction of Marlborough. This route is named as a ‘herepath’ (OE *herepæð* ‘army road’) in the bounds of an authentic charter of 939 for East Overton,⁸¹ and appears to be a military route linking together the various military institutions across the Marlborough Downs: the thegnly enclosure of Yatesbury and the two strongholds (OE *byrg*) of Avebury and Marlborough.

Fig. 10.6

Importantly, although Yatesbury and Avebury were linked by a *herepæð*, they are not intervisible, thereby rendering any signal from the beacon at Yatesbury only locally visible without further relays. Silbury Hill provides the link between the two places, with the top of the hill just visible from the summit of the beacon mound at Yatesbury. Fragmentary archaeological evidence for a fortification — and in all likelihood also a beacon — has been identified from the summit of Silbury Hill, including the remains of a timber palisade and associated finds of early eleventh-century date.⁸² Silbury Hill, in turn, is intervisible with Avebury, as well as Totterdown (OE *tōt-ærn-dūn* ‘look-out house hill’) on the high downland between Avebury and Marlborough, a short distance north of the *herepæð* route linking the two.⁸³

A number of comparable signalling systems of beacon chains have now been identified existing between major strongholds of the late Anglo-Saxon period, including that between the Isle of Wight, Winchester (via the beacon on Farley Mount) and the mustering point of Cuckhamsley,⁸⁴ between Chichester and London;⁸⁵ between Wallingford and the stronghold of *Wigingamere*⁸⁶ and linking together the Burghal Hidage strongholds of the Thames valley.⁸⁷ Taken as a whole, these suggest that dense networks of signalling existed which tied together specific military hardpoints in the late Anglo-Saxon landscape; but several observations are worth further comment. First, unlike the regular distribution of burghal forts, which appear to have been governed in part by issues of accessibility, the seemingly haphazard location of these beacons is determined primarily by intervisibility. Second, the pattern of beacons can be divided into two main types: the more common form — of which the Yatesbury system is an example — which involved short relays of less than 10km between lookouts lying alongside the principal routeways; and a second type, such as that identified by Hill and Sharp, which utilised much longer relays, roughly 40km apart, to link together two distant points.⁸⁸ It seems likely that the latter provides evidence for widespread warning systems, and was related to the mobilisation of a shire-level response. By contrast, the former suggests a concern with territorial control and the penetration, at a very localised level, of military structures. Whilst these two systems of signalling are not mutually exclusive, the relationship between the localised system, routeways, and burghal strongholds strongly suggests this form of beacon system was a development of the late ninth to eleventh centuries.

The existence of the systems outlined in the foregoing discussion is crucial to any attempts to provide chronological context for lookouts preserved principally by onomastic evidence. The question of dating is an important one: while contemporary sources make clear that beacons were used in Anglo-Saxon England and early medieval Europe, many of the place-names relating to lookouts are first recorded at a much later date, by which time other well-documented episodes of beacon use had taken place. Such dates only provide a *terminus ante quem* for the lookouts they describe — the names themselves may have been in existence for hundreds of years before first being written down. The element *ād*, for instance, seems to have become obsolete at a relatively early date, with the latest attestations dating to the early

thirteenth century.⁸⁹ The late recording of a place-name in which it occurs might therefore belie a much earlier period of coining, although, of course, the individual case might denote a limekiln rather than a beacon.

As Hill and Sharp demonstrated, context is everything. If some elements of a beacon system can be shown to have existed since the Anglo-Saxon period, there is a good chance that the rest of the network did too, already dotting the landscape, especially when those early-recorded lookouts are key to the efficient working of the whole system. This, for example, seems to be the case with a group of intervisible lookout sites along the Icknield Way, in the vicinity of Luton: Totternhoe, Warden Hill, Ward's Hurst and Worley Wood (Figure 10.7). Totternhoe, the earliest recorded of the names, is also the only lookout site to be intervisible with all the others, some of which would otherwise be entirely isolated. In other words, if this is a lookout system, it is Totternhoe that makes it so.⁹⁰ In northern Wiltshire and Berkshire, on the other hand, a suggested system of communication seems to include lookouts at strongholds used during the late Anglo-Saxon period, again suggesting a pre-Conquest date for the system as a whole.⁹¹

Fig. 10.7

Conclusion

There is sufficient evidence to be confident that beacons were used in Anglo-Saxon England, but their physical characteristics and their relationship to contemporary social organisation and infrastructure are less clearly understood. Partially, our understanding is hampered by the general lack of good archaeological evidence, but more significantly, understanding how signalling and sighting systems were designed to work can only proceed with very detailed landscape reconstruction. Perhaps more than any other element of the built environment, beacons cannot be seen in isolation — not only were they typically one element in a wider network of signals, but their function also required a link to systems of mobilisation, movement and military defence.

¹ *Anglo-Saxon Chronicle*, trans. and ed. M.J. Swanton, *The Anglo-Saxon Chronicle* (London: J.M. Dent and Sons, 1996), Version E, 1006.

² D. Hill and S. Sharp, 'An Anglo-Saxon Beacon System', in A.R. Rumble and A.D. Mills (eds), *Names, Places and People: An Onomastic Miscellany for John McNeal Dodgson* (Stamford: Paul Watkins, 1997), pp. 157-65.

³ *Rect. 1 and 3.4*, ed. F. Liebermann, *Die Gesetze der Angelsachsen*, Band 1 (Halle a. S.: Niemayer, 1903, reprinted 1960), pp. 444, 446.

⁴ S 832; Anglo-Saxon charters are annotated with reference to the numbering outlined in P. Sawyer, *Anglo-Saxon Charters: An Annotated List and Bibliography*, Guides and Handbooks 8 (London: Royal Historical Society, 1968). <http://www.esawyer.org.uk> [accessed 12 August 2014].

⁵ *Anglo-Saxon Chronicle*, Version A, 789.

⁶ Richer, *Histoire* §3, trans. and ed. R. Latouche, *Richer: Histoire de France (888–995)* (Paris: H. Champion, 1930), pp. 130-31.

⁷ S 895.

⁸ H. Kurath *et al.*, *Middle English Dictionary* (Ann Arbor: University of Michigan, 1956–2001), s. *bēken*; *Oxford English Dictionary Online* (Oxford: Oxford University Press, 2012), s. *beacon*, sense 3. <http://www.oed.com/> [accessed 12 August 2014].

⁹ A. Cameron, A.C. Amos, A.D. Healey *et al.* (eds), *Dictionary of Old English: A to G Online* (Toronto: Dictionary of Old English Project, 2007), s. *bēacen*.

¹⁰ Hill and Sharp, 'An Anglo-Saxon Beacon System', p. 157.

¹¹ A.D. Healey (ed), *Dictionary of Old English Web Corpus* (2011). <http://www.doe.utoronto.ca/pages/pub/web-corpus.html> [accessed 12 August 2014].

¹² *Anglo-Saxon Chronicle*, Version C; Version E gives *beacna*, and D reads *here beacna*.

¹³ T.N. Toller (ed.), *An Anglo-Saxon Dictionary Based on the Manuscript Collections of the Late Joseph Bosworth* (Oxford: Clarendon Press, 1898).

-
- ¹⁴ R. Forsberg, 'On Old English *ād* in English Place-Names', *Namn och Bygd* 58 (1970), pp. 66-69. For glosses of *farus*, see Healey, *Dictionary of Old English Web Corpus*.
- ¹⁵ H.T. White, 'The Beacon System in Hampshire', *Papers and Proceedings of the Hampshire Field Club and Archaeological Society* 10 (1931), pp. 252-78; H.T. White, 'The Beacon System in Kent', *Archaeologia Cantiana* 46 (1934), pp. 77-79; P. Russell, 'Fire Beacons in Devon', *Report and Transactions of the Devonshire Association for the Advancement of Science, Literature and Art* 87 (1955), pp. 250-302; P. Ottaway, *Romans on the Yorkshire Coast* (York: York Archaeological Trust and English Heritage, 1996); J.F. Verbruggen, *The Art of Warfare in Western Europe During the Middle Ages, from the Eighth Century to 1340*, 2nd edn, trans. R.W. Southern (Woodbridge: Boydell Press, 1997), p. 326; J. Baker and S. Brookes, *Beyond the Burghal Hidage: Anglo-Saxon Civil Defence in the Viking Age* (Leiden: Brill, 2013), pp. 179-99.
- ¹⁶ A.H. Smith, *English Place-Name Elements* (Cambridge: Cambridge University Press, 1956), vol. 1, p. 21; D. Parsons, T. Styles and C. Hough, *The Vocabulary of English Place-Names: A-BOX* (Nottingham: Centre for English Name Studies, 1997), p. 68.
- ¹⁷ Forsberg, 'On Old English *ād*'; Parsons *et al.*, *Vocabulary*, pp. 5-6.
- ¹⁸ Baker and Brookes, *Beyond the Burghal Hidage*, pp. 184-89.
- ¹⁹ Hill and Sharp, 'An Anglo-Saxon Beacon System', pp. 161-64. A slightly different version of this beacon chain, derived from sixteenth-century evidence, is suggested by P.C. Beauchamp, 'Appendix IV: The Beacons that Summoned Oxfordshire in 1545', in P.C. Beauchamp (ed.), *The Oxfordshire Muster Rolls 1539, 1542, 1569*, Oxfordshire Record Society 60 (Oxford: Oxfordshire Record Society, 1996), pp. xxxvi-xxxvii.
- ²⁰ J. Shemming and K. Briggs, 'Anglo-Saxon Communication Networks'. http://keithbriggs.info/AS_networks.html [accessed: 17 May 2008].
- ²¹ For example, B. Cox, 'The Pattern of Old English *burh* in Early Lindsey', *Anglo-Saxon England* 23 (1994), pp. 35-56; B. Cox, *The Place-Names of Rutland* (Nottingham: English Place-Name Society, 1994); G. Gower, 'The Place-Name "Totterdown" and the Early History of Tooting', *Journal of the Wandsworth Historical Society* 65 (1992), pp. 1-6; G. Gower, 'A Suggested Anglo-Saxon Signalling System between Chichester and London', *London Archaeologist* 10.3 (2002), pp. 59-63; M.G. Shapland, 'Towers of Strength: the Role of Churches in the Defence of the Late Anglo-Saxon Landscape' (Unpublished BA dissertation: University College London, 2005); J. Baker, 'Warriors and Watchmen: Place-Names and Anglo-Saxon Civil Defence', *Medieval Archaeology* 55 (2011), pp. 258-67; Baker and Brookes, *Beyond the Burghal Hidage*, pp. 189-99, 259-62, 312-27, 358-69.
- ²² Cameron *et al.*, *Dictionary of Old English*, s. *ād*; R.E. Latham, *Revised Medieval Latin Word-List from British and Irish Sources* (London: Oxford University Press, 1965), s. *rogus*; C.T. Lewis and C. Short, *A Latin Dictionary* (Oxford: Clarendon Press, 2002), s. *rogus*, 'a funeral pile'.
- ²³ S 412; Forsberg, 'On Old English *ād*', pp. 44-51, 73.
- ²⁴ S. Brookes, 'Mapping Anglo-Saxon Civil Defence', in J. Baker, S. Brookes and A. Reynolds (eds), *Landscapes of Defence in Early Medieval Europe* (Turnhout: Brepols, 2013), pp. 39-64.
- ²⁵ Beauchamp, 'The Beacons that Summoned Oxfordshire in 1545', p. xxxvi.
- ²⁶ Beauchamp, 'The Beacons that Summoned Oxfordshire in 1545', p. xxxvi.
- ²⁷ Use of spies and scouts is discussed by Baker and Brookes, *Beyond the Burghal Hidage*, pp. 179-80, and seems to be depicted in the Bayeux Tapestry. In a scene shortly after Harold's accession, he appears to receive news from a messenger (D.M. Wilson, *The Bayeux Tapestry* (London: Thames and Hudson, 1985), pl. 33). Between this and the following scene the upper border shows a man obviously gazing out at a distance, perhaps indicating his role as a spy gathering intelligence. This watchman appears to be signalling the news of Harold's accession to the Normans in some way. What appears below him is a ship urgently sailing across to Normandy and then a messenger giving William and Odo the news. The authors are very grateful to Gale R. Owen-Crocker for drawing our attention to these scenes.
- ²⁸ P. Southern, 'Signals versus Illumination on Roman Frontiers', *Britannia* 21(1990), pp. 233-42.
- ²⁹ Ed. J. Rider, *Galbertus Notarius Brugensis: De Multro, Traditione, et Occisione Gloriosi Karoli Comitis Flandriarum* (Turnhout: Brepols, 1994), p. 121; Verbruggen, *The Art of Warfare in Western Europe*, p. 326.
- ³⁰ Hill and Sharp, 'An Anglo-Saxon Beacon System', p. 160.
- ³¹ Wilson, *The Bayeux Tapestry*, pl. 50.
- ³² The possibility of a compositional borrowing from Roman art was pointed out to the authors by Gale R. Owen-Crocker (personal communication), and the grounds for her interpretation are outlined in G.R. Owen-Crocker, 'Stylistic Variation and Roman Influence on the Bayeux Tapestry', in G.R. Owen-Crocker, *The Bayeux Tapestry: Collected Papers* (Farnham: Ashgate, 2012), pp. 30-31, viewed online at http://peregrinations.kenyon.edu/vol2_3/current/fb4.pdf [accessed 10 April 2014].
- ³³ Beauchamp, 'The Beacons that Summoned Oxfordshire in 1545', p. xxxvi.
- ³⁴ A. Reynolds, 'Avebury, Yatesbury and the Archaeology of Communications', *Papers from the Institute of Archaeology* 6 (1995), pp. 21-30; A. Reynolds and S. Brookes, 'Anglo-Saxon Civil Defence in the Localities: A

- Case Study of the Avebury Region', in A.J. Reynolds and L. Webster (eds), *The Northern World in the Early Middle Ages: Studies in Honour of James Graham-Campbell* (Turnhout: Brepols, 2013), pp. 561-606.
- ³⁵ A. Reynolds, *Life and Landscape in Later Anglo-Saxon England* (Stroud: Tempus, 1999), p. 93; A. Williams, 'A Bell-House and a Burh-Geat: Lordly Residences in England Before the Norman Conquest', in C. Harper-Bill and R. Harvey (eds), *Medieval Knighthood IV: Papers from the Fifth Strawberry Hill Conference, 1990* (Woodbridge: Boydell Press, 1992), pp. 221-40; J. Baker, 'The Language of Anglo-Saxon Defence', in J. Baker, S. Brookes and A. Reynolds (eds), *Landscapes of Defence in the Viking Age: Anglo-Saxon England and Comparative Perspectives* (Turnhout: Brepols, 2013), pp. 65-90.
- ³⁶ Hill and Sharp, 'An Anglo-Saxon Beacon System', pp. 161-62.
- ³⁷ *Tattle Street 1710*: J.K. Wallenberg, *The Place-Names of Kent* (Uppsala: A.-B. Lundequistska Bokhandeln, 1934), p. 79; P. Cullen, 'The Place-Names of the Lathes of St Augustine and Shipway, Kent' (Unpublished PhD thesis: University of Sussex, 1997), p. 533.
- ³⁸ White, 'The Beacon System in Kent', p. 79; Baker and Brookes, *Beyond the Burghal Hidage*, p. 364.
- ³⁹ J. Bradley and M. Gaimster, 'Medieval Britain and Ireland in 1999', *Medieval Archaeology* 44 (2000), p. 338.
- ⁴⁰ Bradley and Gaimster, 'Medieval Britain and Ireland in 1999', p. 338. In this instance, the place-name itself may preserve a tradition of lookouts. The first edition Ordnance Survey 1:2500 (1882) shows Ward Hill and a house nearby called Warthill. The first element of these names may well derive from ON *varða*, *varði*, the basic meaning of which is 'a cairn, a heap of stones', which Smith suggested was probably used as a lookout place (A.H. Smith, *English Place-Name Elements, Part I: A-ŪW*, English Place-Name Society 25 (Cambridge: Cambridge University Press, 1956), p. 229).
- ⁴¹ Baker, 'Warriors and Watchmen', p. 263.
- ⁴² A long-distance 'Ridgeway' and Roman road, respectively. For discussion of roads, see Chapter 2 of this volume.
- ⁴³ C.F.C. Hawkes, 'The Exhibition', *The Archaeological Journal* 103 (1947), pp. 89-90; A. Meaney, *A Gazetteer of Early Anglo-Saxon Burial Sites* (London: Allen and Unwin, 1964), p. 153.
- ⁴⁴ Although several scholars have believed that it was once a beacon, including W. Johnson, *Byways in British Archaeology* (Cambridge: Cambridge University Press, 1912) p. 131; P. Rahtz, 'Glastonbury Tor', in G. Ashe (ed.), *The Quest for Arthur's Britain* (London: Pall Mall Press, 1968), pp. 147-48; P. Rahtz, 'Excavations on Glastonbury Tor, Somerset, 1964-66', *The Archaeological Journal* (1970), pp. 11, 21; P. Rahtz and L. Watts, *Glastonbury Myth and Archaeology* (Stroud: Tempus, 1993), pp. 30-31, 67-78, 71-78.
- ⁴⁵ K. Booth, 'The Roman *Pharos* at Dover Castle', *English Heritage Historical Review* 2 (2007), pp. 5-17.
- ⁴⁶ G.G. Scott, 'The Church on the Castle Hill, Dover', *Archaeologia Cantiana* 5 (1864), pp. 1-18.
- ⁴⁷ Booth, 'The Roman *Pharos* at Dover Castle', p. 12.
- ⁴⁸ T. Tatton-Brown, 'The Churches of Canterbury Diocese in the 11th Century', in J. Blair (ed.), *Minsters and Parish Churches: The Local Church in Transition 950-1200* (Oxford: Oxford University Committee for Archaeology, 1988), p. 110; J. Coad, *Dover Castle* (London: Batsford, 1995), pp. 15-20.
- ⁴⁹ Baker and Brookes, *Beyond the Burghal Hidage*, p. 376.
- ⁵⁰ See M. Biddle and B. Kjølbbye-Biddle, 'Old Minster, St Swithun's Day 1093', in J. Crook (ed.), *Winchester Cathedral: Nine Hundred Years 1093-1993* (Chichester: Dean and Chapter of Winchester Cathedral in association with Phillimore, 1993), pp. 13-20. We are grateful to Michael Shapland for suggesting this idea.
- ⁵¹ *Annales regni Francorum*, 811, ed. F. Kurze, *Annales regni Francorum (741-829)* (Hannover: Impensis Bibliopolii Hahniani, 1895). At a line-of-sight distance of only 48.2km, the two *pharos* are likely to have been intervisible with towers of at least 10m height at Dover and 30m at Bolougne.
- ⁵² Baker and Brookes, *Beyond the Burghal Hidage*, pp. 266-67; later medieval examples of this practice are listed by Johnson, *Byways*, pp. 127-31.
- ⁵³ S 895; S. Keynes, 'King Æthelred's Charter for Sherborne Abbey, 998', in K. Barker, D.A. Hinton and A. Hunt (eds), *St Wulfsgie and Sherborne: Essays to Celebrate the Millennium of the Benedictine Abbey 998-1998* (Oxford: Oxbow, 2005), p. 12
- ⁵⁴ S. Batson, *Terrier and Inventory of Church Possessions in the Parish of Welford, Berkshire* (Newbury: G.J. Cosburn, 1892), pp. 41-42; M.G. Shapland, 'Buildings of Secular and Religious Lordship: Anglo-Saxon Tower-nave Churches' (Unpublished PhD thesis: University College London, 2012), pp. 717-38.
- ⁵⁵ S 491.
- ⁵⁶ Trans. and ed. D. E. Greenway, *Historia Anglorum: The History of the English People* (Oxford: Oxford Medieval Texts, 1996), pp. 348-49; Shapland, 'Buildings of Secular and Religious Lordship', pp. 190-93.
- ⁵⁷ Baker and Brookes, *Beyond the Burghal Hidage*, pp. 366-67.
- ⁵⁸ Cox, *The Place-Names of Rutland*, pp. xxxiii-xxxvii; B. Cox, 'Yarboroughs in Lindsey', *Journal of the English Place-Name Society* 28 (1995-96), pp. 53-55.
- ⁵⁹ Gower, 'A Suggested Anglo-Saxon Signalling System', pp. 59-62.
- ⁶⁰ See note 21.

-
- ⁶¹ For discussion of roads, see Chapter 2 of this volume.
- ⁶² See Chapter 8 of this volume for a discussion of these great dykes.
- ⁶³ A. H. Smith, *The Place-Names of Gloucestershire Part III* (Cambridge: Cambridge University Press, 1964), p. 234.
- ⁶⁴ A.T. Bannister, *The Place-Names of Herefordshire, their Origin and Development* (Cambridge: Cambridge University Press, 1916), pp. 186, 225.
- ⁶⁵ It is so named on the Ordnance Survey (first edition County Series 1:10560, 1889-91, <http://digimap.edina.ac.uk/ancientroam/historic> [accessed 8 November 2013]), and is recorded as *Worsel Wood* on the Ordnance Survey Unions map of 1830 (http://visionofbritain.org.uk/iipmooviewer/iipmooviewer_new.html?map=os_unions_1830s_1840_sw/Radnor_1830_1840 [accessed 8 November 2013]). The authors would like to thank Emily Penniford for providing information relating to this place-name.
- ⁶⁶ Shapland, 'Buildings of Secular and Religious Lordship', pp. 190-93.
- ⁶⁷ Greenway, *Historia Anglorum*, pp. 348-49.
- ⁶⁸ See discussion of Cambridgeshire dykes in Chapter 8 of this volume.
- ⁶⁹ O.S. Anderson, *The English Hundred-Names* (Lund: Lunds Universitets, 1934), p. 100; A. Meaney, 'Gazetteer of Hundred and Wapentake Meeting-Places of the Cambridgeshire Region,' *Proceedings of the Cambridge Antiquarian Society* 82 (1993), p. 83.
- ⁷⁰ J. Baker and S. Brookes, 'Monumentalising the Political Landscape: A Special Class of Anglo-Saxon Assembly-sites', *Antiquaries Journal* 94 (2013), pp. 1-16.
- ⁷¹ *Ward(e)lou(h)(e)feld* in c.250, P.H. Reaney, *Place-Names of Cambridgeshire* (London: Cambridge University Press/English Place-Name Society, 1943), pp. 122-23.
- ⁷² It is possible that this was carried out by local officials. In a recent survey of some 800 personal names listed in the 1279 hundred rolls of Ewelme hundred — at the southern Oxfordshire end of the Chilterns beacon chain — appeared individuals with the bynames 'Wardein' (at Latchford), 'Weyte' (watchman) at Berrick Salome and Totere ('watchman, lookout') at Warborough; S. Mileson and S. Brookes (forthcoming).
- ⁷³ Shapland, 'Buildings of Secular and Religious Lordship', p. 193.
- ⁷⁴ E.g. AD 870, 875, 1006, cf. discussion of the Icknield Way in Baker and Brookes, *Beyond the Burghal Hidage*, pp. 140-52.
- ⁷⁵ Hill and Sharp, 'An Anglo-Saxon Beacon System'.
- ⁷⁶ N. Hooper, 'Some Observations on the Navy in Late Anglo-Saxon England', in C. Harper-Bill, C.J. Holdsworth and J.L. Nelson (eds), *Studies in Medieval History Presented to R. Allen Brown* (London: Boydell Press, 1989), pp. 203-14; R. Lavelle, *Alfred's Wars: Sources and Interpretations of Anglo-Saxon Warfare in the Viking Age* (Woodbridge: Boydell Press, 2010), pp. 141-76; Baker and Brookes, *Beyond the Burghal Hidage*, pp. 403-06.
- ⁷⁷ Hill and Sharp, 'An Anglo-Saxon Beacon System', pp. 163-64.
- ⁷⁸ Gower, 'A Suggested Anglo-Saxon Signalling System', p. 59; Baker, 'Warriors and Watchmen', pp. 263-64; Baker and Brookes, *Beyond the Burghal Hidage*, pp. 193-97.
- ⁷⁹ J. Baker and S. Brookes, 'Overseeing the Sea: Some West Saxon Responses to Waterborne Threats in the South-East', in S. Klein, S. Lewis and B. Shipper (eds.), *The Maritime World of the Anglo-Saxons* (forthcoming).
- ⁸⁰ Reynolds, 'Avebury, Yatesbury and the Archaeology of Communications'; J. Pollard and A. Reynolds, *Avebury: The Biography of a Landscape* (Stroud: Tempus, 2002; reprinted 2012), pp. 224-26; Reynolds and Brookes, 'Anglo-Saxon Civil Defence in the Localities'; Baker and Brookes, *Beyond the Burghal Hidage*, pp. 215-67.
- ⁸¹ S 449. For discussion of 'herepaths', see Chapter 2 of this volume.
- ⁸² Pollard and Reynolds, *Avebury*, pp. 226-28; Reynolds and Brookes, 'Anglo-Saxon Civil Defence in the Localities', pp. 584-86.
- ⁸³ J.E.B. Gover, A. Mawer and F.M. Stenton, *The Place-Names of Wiltshire*, English Place-Name Society 16 (Cambridge: Cambridge University Press, 1939), p. 296; M. Gelling, *Signposts to the Past*, 3rd edn (Chichester: Phillimore, 1997), p. 147.
- ⁸⁴ Hill and Sharp, 'An Anglo-Saxon Beacon System', pp. 159, fig. 11, and 162-64.
- ⁸⁵ Gower, 'A Suggested Anglo-Saxon Signalling System'.
- ⁸⁶ Baker, 'Warriors and Watchmen', p. 264.
- ⁸⁷ Baker and Brookes, *Beyond the Burghal Hidage*, pp. 312-33.
- ⁸⁸ Brookes, 'Mapping Anglo-Saxon Civil Defence', pp. 46-47.
- ⁸⁹ Kurath *et al.*, *Middle English Dictionary*, s. v.; *Oxford English Dictionary Online*, s. v.
- ⁹⁰ Baker, 'Warriors and Watchmen', p. 263.
- ⁹¹ Baker and Brookes, *Beyond the Burghal Hidage*, pp. 269-333.