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Down by the River:

Exploring the Logistics of Viking Encampment across Atlantic Europe

Abstract

Like any other medieval mariner, itinerant viking hosts would regularly have made their way ashore to regroup and reinforce their constituent craft and crews. Accordingly, historical and archaeological records from across Atlantic Europe attest to various waterside encampments having been established during overseas viking campaigns. The everyday practical operation of these camps remains largely underexplored, however, maintaining long-standing impressions that these were relatively dormant hideouts, principally used to intersperse bouts of conflict or to wait out the winter. Bringing together the interdisciplinary evidence for viking encampment from Ireland, England, and the Frankish realm, this study provides a more pronounced picture of the overall logistics involved in establishing and maintaining sites like these. Focusing on the themes of sustenance, security, industry, and commerce, it affirms that the encampments played host to an intricate, adaptive system of logistical (inter)relationships, which contributed to the overall sustainability of the early viking phenomenon.

Introduction

[...] if a camp has been properly constructed, soldiers spend days and nights so securely behind its rampart – even if the enemy is besieging it – that they seem to carry a walled city about with them everywhere (Reeve 2004: 25, my translation).

The above passage, emphasising the merits of military encampment, features in Vegetius' late antique treatise on Roman warfare, *Epitoma rei militaris*, a work which continued to enjoy widespread popularity into the early medieval period. As a prolific topic of textual and archaeological investigation, cause could be found to compare these Roman camps to their post-classical counterparts, such as those established by ambulant viking mariners, and to expect basic similarities in their functional organisation. In reality, however, those investigating Viking Age encampment around Atlantic Europe¹ are forced to observe matters from a much less favourable vantage point; even though medieval authorship and modern-day archaeology both acknowledge the establishment of various onshore outposts by viking

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hosts during their overseas campaigns, the everyday operational parameters of these sites remain largely underexplored.

By consolidating the evidence for viking encampment from three distinct but interconnected regions – Ireland, England, and the Frankish realm – this article will paint a more pronounced picture of the logistical operation of these sites, representing a critical but oft-forgotten aspect of their overall viability and performance. Focusing on the fundamental themes of sustenance, security, industry, and commerce, it will newly illustrate the material reality of establishing and maintaining these camps, whilst correlating them to a much broader range of activity than is traditionally ascribed to a viking way of life.

Background

Although ephemeral encampments may have already been a feature of the earliest viking activity to target the European coastlines and river basins (Downham 2017: 8; Cooijmans 2020: 109–10), contemporary chroniclers only first began to explicitly acknowledge their establishment around the mid-9th century (e.g. Nelson 1991: 56; Swanton 1996: 64). The appearance of these early camps is customarily seen to signify that some viking hosts no longer needed to return to their point of origin – be it Scandinavia or elsewhere – following a season of campaigning. Likewise, the attested presence of women and children within these encampments suggests that at least some viking hosts would have incorporated itinerant family units, further signifying an intent to remain overseas on an extended basis (McLeod 2013: 350–3; Raffield 2016: 314–6). In recent years, the organisational structure of these viking groups has been subject to intense scholarly scrutiny, with particular attention paid to their broader social dynamics and aptitude for self-sustenance and governance. For example, drawing comparisons to the private maritime enterprise of the Atlantic revolutionary era, Neil Price (2014) proposed to examine viking endeavour through the lens of ‘hydrarchy’, whereby ambulant hosts acted as adaptive polities in their own right. Ben Raffield (2016: 324–7) likewise argued that such groups may have been composed of distinct *sodalitates* (‘companies, fellowships’) or *ON lið* (‘troops, retinues’), whose collective actions were largely predicated on interpersonal bonds of trust and teamwork. When applied more explicitly to processes of viking encampment, perspectives like these raise important questions about the organisational relationships between these sites, their occupants, and the physical and socio-economic environments they interacted with.

Methodology, Evidence, and Nomenclature

In lieu of wider conceptual and geopolitical approaches to (inter)camp development, this study provides a more practical, grounded perspective on the requirements, actions, and decisions underpinning the overall sustainability of these establishments. To do so, it will reassemble and scrutinise the known material and textual evidence for viking encampment across England, Ireland, and Francia, paying particular heed to operational matters of provision, protection, and production.

Whereas preceding studies have already aggregated and assessed various aspects of viking encampment around Atlantic Europe (e.g. Downham 2010; Raffield 2013), this research has hitherto retained a predominantly English and Irish focus. Consequently, the

recorded viking encampments of the Frankish realm, whilst providing ample scope for comparative investigation, have only seldom been considered within the context of these wider discussions. This mutual dissociation is upheld by sustained imbalances in the types and amounts of evidence between the European mainland and the British-Irish Isles. In England, for example, a considerable body of pertinent archaeological evidence has been unearthed in recent decades, spearheaded by productive excavations in and around the village of Repton, Derbyshire (Biddle and Kjølbye-Biddle 2001). Survey work has likewise revealed an occupation of thousands of individuals for the camp at Torksey (Lincolnshire), whilst noting a similar – albeit unspecified – site in North Yorkshire (Hadley and Richards 2016; Williams and Hall 2020). Analogous discoveries have been made in Ireland, where the early encampment of Dublin has become more materially defined in recent years, and excavations have also taken place at other suspected sites, including Woodstown, Co. Waterford, and Linn Duachail, Co. Louth (Simpson 2010; Clinton 2013–4; Hurley 2014).

Whereas paltry physical evidence for viking encampment has thus far been uncovered across the erstwhile Frankish territories, mainland Europe has – on the whole – produced more numerous and detailed (near-)contemporary descriptions of these establishments than survive from Britain or Ireland, and is therefore no less meaningful to the study of these sites. To illustrate, wider documentary accounts attest to over 100 instances of 9th-century viking encampment, almost half of which are located on the Continent (Fig. 1). Although many such sites are only mentioned in passing, and may not have been occupied for long, some do reappear, suggesting an intermittent or continuous occupation over the course of months or even years (Cooijmans 2020: 151). Despite these detailed accounts, the textual corpus should not be construed as a comprehensive record, as additional camps may well have been undetected, disregarded, or set out in sources since lost. This notion is demonstrated by several archaeologically attested and suspected sites across Atlantic Europe which do not feature in the documentary record. The occupation of Woodstown, for instance, is not explicitly remarked upon by any surviving Irish annals, despite seemingly having been of great regional significance (Simpson 2010: 79–80). The recently discovered site near York is likewise absent from contemporary accounts, whilst presumed viking outposts on the Continent, including at Péran (Brittany), Taillebourg (Aquitaine), and at Wieringen and Zutphen (Netherlands), are also postulated on the sole basis of archaeological finds (Dumont et al. 2014: 48–9; Cooijmans 2020: 149; Hadley et al. 2020: 3).

All in all, the diffuse and lacunar nature of the source material underscores the need for interregional, interdisciplinary approaches to determine the inner workings of these encampment sites. Although this broader analytical focus discourages an itemised camp-by-camp deliberation for each of the regions in question, individual instances of encampment will nonetheless be used throughout this article to illustrate common denominators in their organisation. In doing so, its focus will predominantly be on the inceptive, ‘pre-urban’ manifestation of such sites (i.e. 9th/early 10th-century), regardless of any subsequent shifts to permanence – all the while acknowledging that distinctions between the two phases may not always be readily apparent (Williams 2015: 93).

Authors across Atlantic Europe first began to explicitly acknowledge and articulate individual instances of viking encampment during the 840s and 850s. As expected, these novel establishments received different labels by the different peoples bearing witness to them, as contemporary chroniclers scoured their respective lexicons for suitable nomenclatures. In

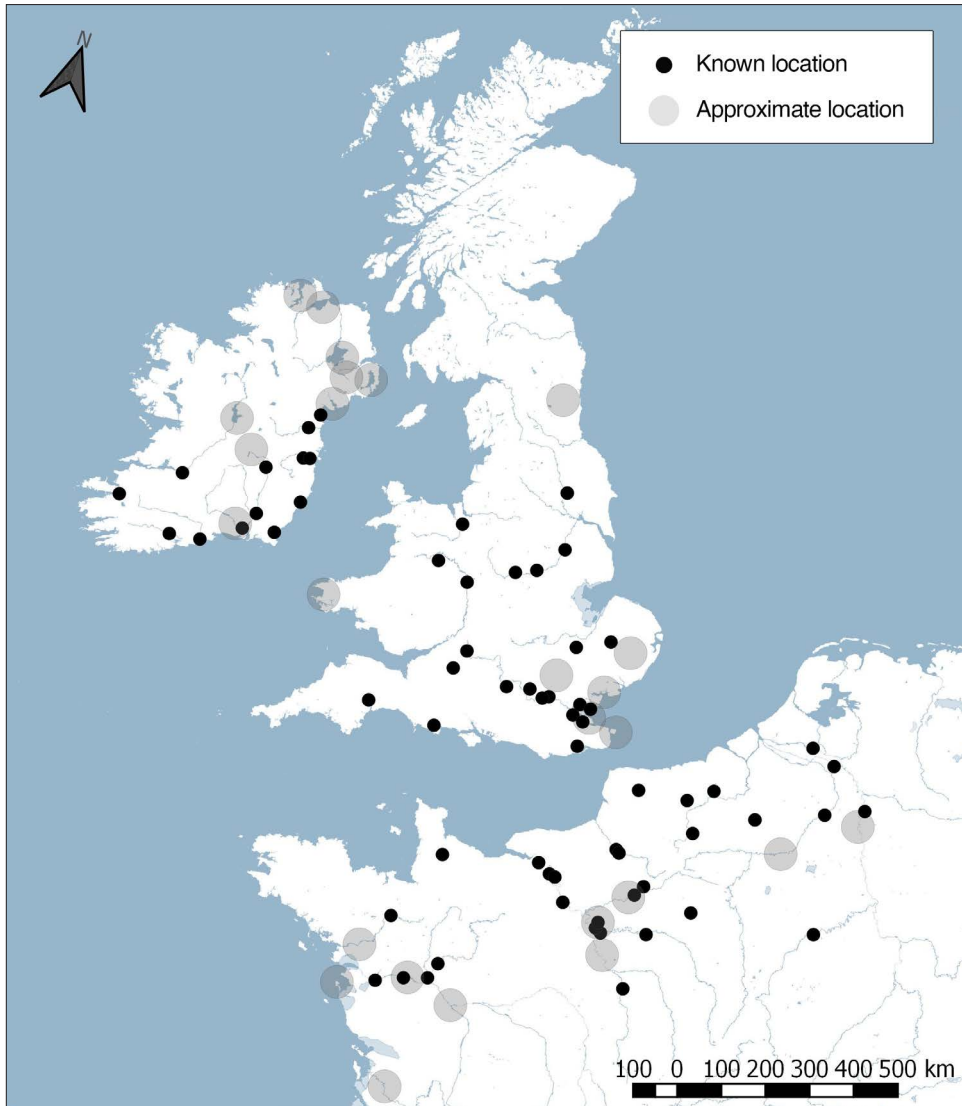


Figure 1. Locations of 9th-century viking encampment, as derived from the documentary record. Base map by AWMC (CC BY 4.0). Irish data from Downham 2010: 95, 114–25 (with kind permission). English data from Swanton 1996; Smyth 2002. Frankish data from Coijmans 2020: 147–8.

Ireland, OI *dúnad* and *dún*, both pre-existing terms of fortification, were employed alongside the (presumably) newly minted term *longphort* ('ship-place'), which likewise came to denote a broader array of encampment sites by the later 10th century (Downham 2010: 97). In England, the ambiguous OE word *wintersetl* ('seat for the winter') was regularly invoked, and featured next to more overtly defensive terms like *geweorc*, *fæsten*, and *byrig* (Lavelle

2010: 234n92; Stein 2014: 20). At the same time, a more varied vocabulary was used on the Continent, where established Latin terms of entrenchment like *castrum*, *firmitas*, and *munitionis* appeared alongside broader designations such as *station* ('abode'), *receptaculum* ('refuge'), and even *diversorium*, a term ordinarily applied to lodging places for passing travellers (Cooijmans 2020: 142, 193n143).

Present-day scholarship is no less divided in its word choice: whereas labels like 'raiding base', 'stronghold', or 'fortification' are commonly and interchangeably applied, their emphasis on the militant characteristics of these sites runs the risk of downplaying or disregarding the wider socio-economic roles they may have fulfilled. By the same token, the term 'overwintering camps' – often used to describe viking encampments in England – carries a mostly monofunctional connotation of dormancy. Lastly, the established tendency to use *longphort* as shorthand for viking encampments in Ireland further complicates matters, as the term not only covers later, non-viking sites under its umbrella, but seems to reinforce an often-arbitrary demarcation between these regional camps and their counterparts elsewhere. All in all, this varied vocabulary serves to illustrate an ongoing ambiguity as to how these sites should be identified and qualified. Although this article makes no attempt to settle this particular matter, it strives – wherever possible – to employ neutral and inclusive terminology like 'encampment' and 'base' (and their variant forms).

Logistics

As research on viking encampment continues to contend with a dearth of available data, it grapples with long-standing popular impressions that these were relatively static sites, whose occupants would simply have waited out the winter behind their walls with their peers and plunder. This notion, however, disregards the priorities and needs of any ambulant armed force spending an extended period of time in a single location. In fact, to maintain a minimum standard of security and well-being, even the smallest stationary company would have relied on its members to build and maintain a protected and functional space, to acquire resources and intelligence, and to interact with a surrounding populace – all of which would have applied to encamped viking hosts.

Sustenance

As not a single viking force, no matter what size, would have been able to pursue its interests without steady sources of sustenance, the success of any associated encampments would have depended – above all – on how well their occupants were able to keep themselves nourished over longer periods, especially during the winter or when under siege. To sedentary hosts, the threat of starvation would have been very real, as demonstrated by vikings encamped on the Severn estuary in the early 900s who were 'very short of food, and many men perished with hunger' (Swanton 1996: 98). To prevent this, entrenched viking forces seem to have actively accumulated their food stocks using one or multiple methods. The most elementary of these would have been to hunt, trap, fish, and/or forage wild foods. Evidence for line fishing, for example, has been recovered from sites like Torksey and Linn Duachaill, whilst marine protein consumption was determined for all individuals whose remains were carbon-dated at Repton (Kelly 2015: 83; Hadley and Richards 2016: 61; Jarman et al. 2018: 192). The *Annals of Ulster* likewise reference a 'great slaughter of por-

poises [...] by foreigners' off the east coast of Ireland in 828, conceivably part of a whaling expedition from a local encampment (Mac Airt and Mac Niocaill 1983: 285; Downham 2010: 104). Furthermore, vikings based along the Seine during the 880s are noted to have hunted boar and deer in the surrounding Neustrian forests (Dass 2007: 62). Even though wildlife would have represented an accessible source of dietary energy, the nutritional needs of more sizeable encampments would eventually risk overwhelming local availability, stifling opportunities for resources to replenish themselves. In this scenario, ever longer distances would have to be traversed to obtain the same amount of game, (shell)fish, and/or wild edibles, which, in turn, would have expended more energy, and require even more food to replenish. These diminishing returns suggest vikings diversified their means of acquisition as much as possible, thereby preventing overreliance on any single method and mitigating the possibility of a dwindling food supply.

In order to more reliably fill their larders, vikings may have adopted agricultural practices in and around the confines of their camps. Accordingly, a number of analogous ploughshares have been recovered from both Torksey and Foremark (Jarman 2019: 24; Fig. 2), whilst the proposed site at Péran (Brittany) has produced various tilling implements, including a pitchfork and narrow-blade hoe or pickaxe, the latter of which has been typologically likened to tools found in Scandinavia. The charred remains of cereal grains have likewise been found throughout this site (Nicolardot and Guigon 1991: 136–7). In addition, animal husbandry (and slaughtering) is attested in encampment contexts, as bovine, ovine, and porcine remains have all been identified in Dublin, Woodstown, and Linn Duachaill, with similar finds made at the site near York (Simpson 2005: 44; Clinton 2013–4: 128; Randolph-Quinney 2014: 342; Hall 2020: 73–4). Asser, in his biography of King Alfred, also noted cattle outside a viking camp in England in 878, whilst 'countless bulls, young sows, and short-headed sheep' were recorded among the force based outside Paris in 886 (Smyth 2002: 27; Dass 2007: 63). Poultry is likewise suggested to have been present at such sites (Mac Airt and Mac Niocaill 1983: 321). Cared for by the encamped, animals like these – producing meat, milk, eggs, wool, hides, skins, and feathers – would themselves have needed to be fed, sheltered, and, if possible, put out to pasture. Although grazing alone may have met part of the nutritional requirements for herds and flocks, dry fodders like barley or oats may have been supplemented to retain optimum health, especially in winter (Bachrach 1993: 718). Hence, the availability of arable and pasturelands may have been a determining factor in selecting encampment locations; in Ireland, 9th-century camps seem to have been exclusively established near lands fit for cultivating crops and livestock (Downham 2010: 105), and the same traits may have been sought out in England and Francia. With early medieval grazing requirements at an average of 1.5–2 ha per cow and up to 1.66 ha per sheep, some of these sites may have relied on wider agricultural hinterlands to sustain crops and animals alike (Pearson 1997: 16; Kelly and Maas 1999: 140). Others – including Linn Duachaill (c. 65 ha), Torksey (c. 55 ha), and the riverine camp near York (c. 31 ha) – may instead have been sizeable enough to accommodate this activity within their own perimeters, depending on stock size.

Food provisions were likewise acquired through belligerence, and various examples exist of agricultural assets being appropriated by regionally based vikings. In early 881, for example, one such host captured cattle and horses around Artois and the Somme before returning to its encampment (Rau 1969: 299). A few years later, another force, aiming to



Figure 2. Analogous iron ploughshares recovered from Torksey (left) and Foremark (right). Left: North Lincolnshire Museum, NLM-F10454 (CC BY 2.0). Right: Catrine Jarman, reproduced with kind permission.

overwinter in the Hesbaye, similarly ‘gather[ed] crops of various kinds together’ (Reuter 1992: 97). By the early 890s, the apparent prevalence of these proceedings even prompted English forces to adopt a scorched earth policy when besieging vikings at Chester, cutting off access to local crops and cattle (Swanton 1996: 88). In spite of such countermeasures, ambulant vikings were often seen to have purposely commandeered monastic, urban, or otherwise pre-existing centres of wealth and population for their encampment needs. As nuclei for their encompassing economic networks, locales like these would have presented their new occupants with already accumulated stockpiles of sustenance, alleviating the need to acquire these elsewhere (McLeod 2006: 144–5). In 865, for example, a viking host temporarily based at the monastery of St Denis emptied the complex of its contents before abandoning it (Nelson 1991: 128). Two decades later, analogous forces anchored at the abbey of St Germain-des-Prés likewise helped themselves to its local grain supplies, ‘fill[ing] a cart with sheaves and dr[iving] it across the fields’ (Dass 2007: 69).

On occasion, vikings also seem to have secured their sustenance as part of mixed tributes, provided as appeasements to avoid or alleviate injury to regional communities and assets. The *Annals of Ulster*, for example, note the taking of a cattle-tribute from Holmpatrick in 798, whilst subsequent payments by Frankish and Breton rulers during the 860s included large amounts of flour, livestock, wine, and/or cider (Mac Airt and Mac Niocaill 1983: 253; Nelson 1991: 112, 130, 164; MacLean 2009: 172). From a logistical perspective, cargoes as cumbersome as these would have been impractical to carry long-distance (further explored below), and may instead have been earmarked to support regional encampments (Downham 2010: 96; Cooijmans 2020: 110). In accordance, as part of a tribute payment in 994, King Æthelred II is seen to have directly provisioned a viking force at its outpost in Southampton (Swanton 1996: 128–9). On a more local level, this type of extortion may have been equally commonplace, as farmers inhabiting the immediate rural hinterlands of viking camps may have been compelled to surrender their produce to sustain said sites (Simpson 2012: 109; Hadley and Richards 2016: 61).

Finally, resident vikings may have obtained their food and fodder by exchanging other types of moveable wealth for it. As well as hosting some of these interactions at their own encampments (see below), victuals could have been obtained through benign interactions with encountered merchants, other viking hosts, or at nearby ports and markets. An annalistic reference to vikings attempting to procure wine for their camp at Pîtres in 865, for example, might be interpreted as an act of amicable trade rather than antagonism (Nelson 1991: 127).

Having been procured using any of the above methods, most raw foods would have required further on-site processing and preparation, both for immediate consumption and longer-term storage in the event of supply loss. Accordingly, on a practical level, grains would have to be ground; meat and fish would have to be dried, smoked, or salted; and dairy would have to be curdled or churned. Although not abundant, archaeological evidence for the production of food in viking encampments – beyond the slaughtering of livestock – does survive. A pair of querns (saddle and rotary), for example, have been unearthed at Woodstown, whilst a cooking area was identified among several 9th-century dwellings at Temple Bar West in Dublin (Simpson 2010: 84; Carey 2014: 318–9). Across the Irish Sea, at the riverine site near York, excavations have also produced a number of pot boilers, a rotary quern, and various clay fragments thought to represent an oven lining (Hall 2020: 69–74; Rogers 2020a: 49). Furthermore, on the Continent, the proposed site at Péran has disclosed a flat-handle pan, a hooked basin containing grains, and a pair of iron-sheeted cauldrons, which bear resemblance to a cooking pot recovered from the viking boat burial on Groix (Nicolardot and Guigon 1991: 141–3). Textual references to vikings preparing and consuming food likewise exist: during the siege of Paris (885–6), for instance, the attackers are suggested to have feasted on boar meat served with wine, whilst those encamped at St Germain-des-Prés used a local *coquina* (‘kitchen’) to slaughter animals (Dass 2007: 35, 62–3).

As reliant as the occupants of viking encampments were on upholding food security, even more pressing would be their near-continual need for potable water. Whereas any person in attendance would have already required at least two litres per day to function (excluding the amount consumed through food), the presence of larger livestock – especially horses and cattle at 15–30 litres per animal per day – would have exponentially increased overall demand (Roth 1999: 119). As a result, a hypothetical host of 100 people caring for 20 cows and ten horses would have required between c. 650 and 1,100 litres per day to remain able-bodied, with additional water expected for (food) production and (personal) hygiene. As running out would render any resident viking force inoperative within days, secure and unobstructed access to a source of water would have been indispensable. For most viking encampments, this prerequisite would have been satisfied by an adjacent river, providing a ready supply of (tolerably) clean water. For camps in coastal and landlocked locations, however, alternative methods, such as digging wells and capturing rainwater, may instead have been pursued. In accordance, a nine-metre deep well has been identified within the enclosure at Péran, whose stone-lined walls and perforated bottom slab underline its function as a water supply (Nicolardot and Guigon 1991: 136–8). The monk Abbo, in referencing the encampment at St Germain-des-Prés in 887, likewise noted that vikings sought to draw water from the church’s well to bake bread (Dass 2007: 83–5).

Security

In order to effectively safeguard personnel and property from a potentially hostile environment, viking encampments seem to have been erected in locations which were either fortified or fortifiable, be it by virtue of natural features in the land- or seascape, artificial defences, or a combination of both. Whilst prioritising the security and defensibility of such sites, their occupants-to-be appear to have cautiously assessed the overall effort required to optimise said qualities. Accordingly, three distinct tiers of fortification are apparent: above all, the use of natural defences, requiring few to no added measures, seems to have been preferred, as vikings used various islands, peninsulas, promontories, wetlands, and other topographic features to their advantage. Secondly, vikings are seen to have appropriated pre-existing (infra)structures for their encampment needs. Perhaps the best-known example of such reuse is found at Repton, where a sojourning force actively incorporated the church of St Wystan into its enclosing defences, in effect repurposing the building as a protective gatehouse (Jarman et al. 2018: 185). Similar conditions seem to have presented themselves when a viking host occupied and fortified the abbey of St Germain-des-Prés (Dass 2007: 67), whilst monastic settlements in Ireland, including those at Dublin and Linn Duachail, are likewise speculated to have been used in this manner (Simpson 2005: 16; 2012: 108; Clinton 2013–4: 124). Although commonly targeted, centres of worship were not the only sites to be repurposed as such: along the Waal, for example, vikings captured the Carolingian palace of Nijmegen (880–1), whose ‘great size and wonderful fortifications provided [them] with a very secure refuge’, whilst the *civitas* of Angers, on the Loire, was similarly seized in 873 ‘because of its very strong fortifications and [...] where it was sited’ (MacLean 2009: 168, 184). In England, previously fortified sites like Nottingham (867–8) and Exeter (876) are thought to have fulfilled similar roles (Raffield 2013: 21). Lastly, and seemingly only when natural or prior artificial defences were absent or inadequate, did vikings deem it necessary to build anew or augment the fortifications of their encampments. This may have been the case at Woodstown and the riverine site near York, for example, where sizeable earthworks seem to have been established to protect their landward approaches (Russell 2014: 28–32; Williams 2015: 99). Across the Frankish kingdoms, viking bases were likewise noted to have been augmented in this manner, including those at Asselt (881–2) and Louvain (891) (Reuter 1992: 104, 121; MacLean 2009: 211). As intimated by these three tiers of fortification, vikings aimed for an optimal ratio of security (maximum) to energy expenditure (minimum) when selecting their encampment locations.

In cases where tailor-made fortifications are attested, these often seem to have taken the form of outlying trenches, earthen banks, and/or palisaded fences. All three elements appear to have been present at Woodstown, for instance, which was enclosed by multiple ditches, whose removed soil was piled up along their inner edge to form an embankment. This would have effectively turned the inner slope of the ditch and outward face of the rampart into a continuous wall, which, in turn, is suggested to have been topped by a timber palisade (Russell 2014: 28–31). Similar earthworks – combining outer fosse and inner bank – are attested at the sites of Linn Duachail and Dunrally (Kelly and Maas 1999: 138; Clinton 2013–4: 127), whilst a ditch, subsequent earthen bank, and successive series of fences are also associated with the proposed early encampment phase of Dublin at South Great George’s Street (Simpson 2010: 76–7). Across the Irish Sea, at Repton, an analogous trench, whose excavated material is presumed to have produced an adjacent, interior rampart, has

likewise been demonstrated (Biddle and Kjølbye-Biddle 2001: 57–8). Contemporary records concur with these findings: a host arriving at Reading in 871, for example, constructed a ‘defensive earthwork’ between the rivers Thames and Kennet – presumably a linear ditch and bank (Smyth 2002: 17–8). Similar accounts are found on the Continent, where Abbo – a self-professed eyewitness – identified ramparts being raised on the right bank of the Seine in 885, declaring that ‘[t]he Danes assembled [so] that they might set up their encampment, / fashioning stakes, gathering stones and earth to pile in one heap’ (Dass 2007: 37). A few years later, vikings ensconced at Louvain were also described as having ‘fortified their position with a pile of wood and earth in the usual way’ (MacLean 2009: 211). These latter accounts, in particular, support the notion that such embankments – apart from using the upcast from adjacent ditches – may have been further strengthened using timber, stone, gravel, turf, or other local materials. In addition to being lined with palisades, these ramparts could conceivably have been equipped with rudimentary walkways and parapets, allowing encampments and their immediate environments to be more effectively guarded, defended, and communicated across. Traces of entranceways have also been identified at sites like Woodstown (Russell 2014: 31), whilst corresponding gates were noted for the enclosure at Asselt (Reuter 1992: 92–3).

In characterising the construction of bespoke defences for viking bases, Continental authors customarily relied on verbs like *(circum)saepire* and *circumdare*, both of which signify processes of encircling or surrounding, and thereby suggest a (semi-)circular configuration of otherwise indeterminate proportions (Cooijmans 2020: 143). On one occasion, in Louvain (891), local fortifications were noted as being absent from the waterfront side(s) of



Figure 3. Excavation work carried out at the western perimeter of the proposed encampment at Péran in 1985 (looking south). Photo from Nicolardot 1985, reproduced with kind permission.

the enclosure, as the annalist described their occupants to consider the river itself ‘a wall to their rear’ (Reuter 1992: 122). As such, there is reason to assume that fortifications in Francia were often analogous in their design to some of their counterparts attested around the British-Irish Isles, with particular regard to the alleged ‘D-shaped’ defences around sites like Repton, Woodstown, and Dunrally. This being said, morphological similarities like these should not be taken as proof positive for any standardised typology of encampment, as both the manner and measure of viking fortification seem to have been contingent, first and foremost, on local environmental factors. Indeed, as pointed out, any dedicated defences would have been wholly avoided in lieu of natural or otherwise pre-existing fortifications. Whenever a custom barrier did have to be built, however, a (semi-)circular shape would be an obvious choice, not as a matter of typological consistency, but to optimise resource usage and tactical potential, offering defenders a uniform field of fire without significant blind spots.

Besides establishing earthworks – which would have necessitated a considerable commitment of labour, equipment, and natural resources – additional or alternative measures may have been taken to ensure the well-being of any stationary viking force. Whilst sentries could be posted around the immediate perimeters, scouts or patrols may have been dispatched further afield to provide intelligence on potential incoming threats. In addition, the inherent vulnerability of a concentrated community in a single, set location may have led larger viking forces to occupy subsidiary camps spread across a wider area. Established at some distance, these ‘satellite’ sites may have acted as reconnaissance and supply posts to a central base, whilst furnishing further control over a region’s economic landscape. This diffuse encampment pattern may have existed around the Repton site, for example, as suggested by its proximity to a potential second camp at Foremark and the cemetery of Heath Wood, which are both presumed to be concurrent establishments (Hadley and Richards 2018: 8; Jarman 2019: 24–5). On the Continent, a similar dispersal may have occurred in 861, when a viking force, in anticipation of winter, ‘split up [...] into groups allocated to various ports, from the sea-coast right up to Paris’ (Nelson 1991: 96).

As in other military camps, stores of food would also have needed to be secured against theft, spoilage, and pests, whilst broader protection would have been required for any non-combatants, foragers, crops, and pastured animals. Whereas local livestock would, in optimal conditions, be allowed to graze and exercise, the risks posed by enemy action and predators would have required careful monitoring of any herds and flocks positioned outside the fortifications. Even within the ramparts, these animals would have to be attended, as livestock could easily panic, interfere, and/or cause injury during a local besiegement or other upheaval (Bachrach 1993: 730). In coastal and riverside camps, the security and seaworthiness of any moored or beached ships would likewise have been crucially important, as these vessels would have allowed vikings to rapidly decamp in an emergency. The existence of this exit strategy is demonstrated by Charles the Bald’s investment of viking-controlled Angers in 873, during which part of the attacking army

[...] tried to divert the river from its course so that [...] they could attack the Northmen’s ships. This filled the Northmen with such dread and fear that [...] they promised Charles a huge amount of money if he would raise the siege and allow them free passage [...] (MacLean 2009: 169).

Following the above considerations, it is worth affirming that some viking encampments, especially those erected in transit, may not have had any distinct, durable defences at all, as

their ephemeral lifespans – perhaps as brief as a single night – would preclude any sizeable investment of energy and resources. In these instances, hosts may have been content to set up rudimentary perimeters and/or shelter in existing structures, leaving no distinct archaeological footprint. This may have been the case at Prüm, for example, where, in 882, a viking host was noted to have encamped for just three days before moving on (MacLean 2009: 185). In Ireland, a comparable camp was seemingly established at Emly (Co. Tipperary) in 968, lasting only two days (Downham 2010: 94).

Industry

Beyond the groundwork of feeding and protecting themselves, communities in and around viking camps seem to have engaged in a wide range of industrial activity, which, as well as craft production and maintenance, would have included the construction of shelters and other structures, the installation of local infrastructure, and the extraction and transportation of raw materials.

Beyond the construction of enclosing defences (discussed above), any durable viking encampment would have required suitable sleeping arrangements for its occupants, facilitating rest and recuperation whilst limiting exposure to inclement weather. By and large, this accommodation is assumed to have taken the form of tents – made of fabric or other material – which would have been portable, reusable, and readily pitched and disassembled. Such shelters may have been prefabricated and moved between camps, as alluded to by the various tent poles found in the Oseberg and Gokstad ship burials (Nicolaysen 1882: 41, 58; Brøgger et al. 1917: 67, 73). The establishment of *tentoria* by vikings outside Paris (885–6) was likewise mentioned by Abbo, albeit initially in reference to protective leather mantlets rather than living spaces, and later in a figurative sense, declaring that vikings drowning in the Seine ‘set up their tents in the realm of the dead’ (Dass 2007: 39–41, 75). Æthelweard, in his Latin chronicle, noted vikings setting up *attegiae* in Gloucester (877), referring either to tents or to more robust (albeit unspecified) ‘huts’ (Swanton 1996: 75n8). Structures of the latter type also seem to have been constructed by vikings along the Loire around the early 850s, as portrayed by Adrevald of Fleury:

The Northmen meanwhile made an anchorage for their ships and a refuge from all dangers on an island below the monastery of St Florent[-le-Vieil], putting up huts in a sort of village [...] to rest their bodies from their labours for a time, ready to serve on campaign (Coupland 1995: 196).

More durable housing is likewise attested in the archaeological record. In Dublin, at Temple Bar West, several sunken-featured buildings have been dated to between the late eighth and late ninth centuries, and are, as such, speculated to have accommodated the inhabitants of the earliest encampment phase (Kelly 2015: 89–90). From the mid-9th century onwards, these structures seem to have been superseded by residences of Wallace’s Type I, an ostensibly Scandinavian-derived architectural design also identified elsewhere around Ireland (Hurley 2010: 158; Boyd 2015: 327–35).

Alongside quartering, viking camps seem to have hosted facilities of varying form and function, erected, for example, to store (perishable) goods, to stable livestock, to detain captives, and to manufacture and maintain tools and other items. Whereas the use of tents, as before, may have provided some protection for these operations, more substantial, bespoke building efforts have likewise been attested for several encampments. The desire to safeguard provisions in a secure, weatherproof environment is evident at Péran, for

instance, where the remains of a lean-to timber granary were found inside (and against) the rampart of the proposed viking camp (Nicolardot and Guigon 1991: 136–7). Produce and other perishables may also have been deposited underground to preserve them, as may have occurred in the riverine camp near York, where a sizeable stone-lined pit (c. 3.5 m wide, 1 m deep) has been interpreted as a storage space (Hall 2020: 72). Livestock would likewise have required shelter, as vikings encamped outside Paris (886) were noted to have ‘turned the sacred hall of St Germain into a stable’ (Dass 2007: 63). Various 9th-century animal pens were also attested in Dublin, whilst abundant manure found at Perán suggests the local presence of a stable, byre, or sty (Nicolardot and Guigon 1991: 136; Simpson 2012: 109). Within these encampments, specific spaces assigned to the incarcerated – whether hostages, enslaved people, or insubordinates – are more difficult to affirm. By employing similes, Abbo seemed to insinuate that those captured by vikings were often left exposed: ‘Soon to endure life in their camps – without food – death behind / Double ditches, like coals that no one wants to cover and keep.’ (Dass 2007: 87). This notion is in keeping with Ben Raffield’s suggestion (2019: 696) that the aforementioned animal pens in Dublin may also have served to temporarily house captives. Both perceptions, however, are at odds with Adrevald’s account, which states that vikings used huts to house prisoners near St Florent-le-Vieil (Coupland 1995: 196). Indoor venues of craft production have also been identified, as seen at Woodstown, where a sub-rectangular structure, whose ground plan was laid bare during excavations, seems to have served an industrial purpose (Hurley 2014: 349–50; Fig. 4). Likewise, production waste from the western cell of the sunken mausoleum at Repton has



Figure 4. Pre-excavation view of the sub-rectangular structure from Woodstown. Photo courtesy of Ian Russell (ACSU), reproduced with kind permission.

led scholars to suggest its repurposing as a makeshift workshop (Biddle and Kjølbye-Biddle 2001: 72).

Reasonable assumptions could be made that viking encampments – in a best-case scenario – were situated on level, elevated, and well-drained land, minimising risks of flooding and erosion. Whilst spatial planning may have optimised these conditions, similar measures may have allocated specific types of activities to distinct areas within and around these sites. Processes of craft production or waste disposal, for example, may have been deliberately sequestered from living spaces, thereby diminishing risks of accidental injury or illness. This segregation of activities has been suggested for camps like Woodstown and Torksey, and may have been instituted to uphold basic standards of sanitation and safety (Hurley 2014: 351–2; Hadley and Richards 2016: 58). Further evidence for such structured layouts is found in the presence of thoroughfares, including the stone road(s) identified at Temple Bar West in Dublin (Simpson 2010: 52). Outside Paris, the presence of *semitae* and *viae* (‘paths’) around the viking encampment of 886 is likewise affirmed by Regino’s near-contemporary *Chronicle* (MacLean 2009: 195).

In recent decades, substantial evidence for craftworking and manufacturing has been uncovered at sites like Woodstown, Dublin, and Torksey, strengthening suspicions that these activities were commonplace in viking encampment contexts across Atlantic Europe. Associated metallurgical processes seem to have included the smelting, casting, and forging of iron, lead, silver, gold, and copper alloys – demonstrated by finds of various hearths, cupels, crucibles, hand tools, detritus, and end products (e.g. Hurley 2014: 352–4; Hadley and Richards 2016: 51–3; Williams and Hall 2020: 82–7). The latter included assorted instruments, fittings, fixings, armaments, ornaments, bullion, and (imitation) coinage. As well as being archaeologically attested, this metalworking is present in the documentary record: Abbo, for example, noted the forging and restoring of arrows and shields by vikings based outside Paris in 885 (Dass 2007: 41). Local carpentry is likewise identified, as authors alluded to the construction and repair of ships, siege weapons, and wooden defences (e.g. Nelson 1991: 98, 131; Dass 2007: 37–9; MacLean 2009: 168). In the material evidence, this craftsmanship is marked by the presence of axe heads and adzes, whilst spoon bits and punches point to finer woodworking activities (Hadley and Richards 2016: 53–4; Rogers 2020b). Furthermore, the recovery of (clench) nails and roves from multiple encampment locations indicate the on-site repair and/or scrapping of ships of varying size (e.g. Clinton 2013–4: 131). Finds of carding combs, spindle whorls, needles, and awls also suggest the production and mending of textiles and leather, including tents, sails, garments, and footwear (e.g. Nicolardot and Guigon 1991: 137; Hadley and Richards 2016: 54). Lastly, various items of stone, lignite, glass, and amber may have been fashioned within these sites (Hurley 2014: 354).

Whilst many of the abovementioned activities may have been carried out by craftspeople otherwise engaged as combatants within a resident viking force, encampments may also have hosted a variety of occupational artisans. Whereas some of these producers may have belonged to a campbound entourage of non-belligerent dependents, others may have been locally hired or otherwise engaged as temporary or longer-term contractors, as is known to have been the case in Roman camps (Kolbeck 2018: 4). Continental potters, for example, are speculated to have accompanied viking forces to England during the 9th century, where some may have plied their craft around Torksey (Perry 2016: 106). Nevertheless, not all

on-site industry would have required specialist skills, and general labour may have been shared by communities as a whole, including the shoeing, harnessing, and stabling of horses; the rearing and tending of other livestock; the preparation of meals; the beaching, mooring, careening, (un)loading, and launching of ships; the digging of latrines; as well as the general conveyance of goods and removal of waste. Such manual tasks may likewise have been imposed as a form of involuntary servitude, carried out by captives taken locally or further afield.

To facilitate local processes of construction and handicraft, a steady flow of raw materials would have needed to make its way into the encampments. Although these prerequisites may have been appropriated or acquired commercially, naturally occurring resources like timber, clay, stone, and metal may have been directly extracted from a local hinterland. As such, viking encampments may have been purposely established within easy reach of such resources. The bases at Dunrally and Woodstown, for example, were situated near extensive woodlands, providing a steady source of timber, firewood, and resin (Kelly and Maas 1999: 140; O’Carroll 2014: 359–60). Along the Trent, local forests would have likewise been available to those encamped at sites like Torksey (Stein 2014: 217), whilst the arboreal hinterlands of rivers like the Seine, Scheldt, and Loire would have granted similar benefits; vikings positioned outside Paris in 885, for instance, are noted to have used wood from local forests for their on-site craft production (Dass 2007: 43). Quarries, clay deposits, and mines may have held similar appeal, although no direct evidence for their exploitation by vikings is currently forthcoming.

The requirement to regularly transfer goods and supplies to, from, and between camps in potentially hostile surroundings would have presented a considerable logistical challenge. Although vikings are identified as having moved their matériel overland by cart or wagon, presumably using draught animals (e.g. Sot 2002: 196; Dass 2007: 57), their use of ships would have constituted a much more energy-efficient alternative, especially when transporting larger loads over longer distances (Bachrach and Bachrach 2017: 164–5). Nevertheless, the vulnerable and cumbersome nature of both carts and cargo vessels would have made any accompanying supply train a liability to an active, advancing viking force. Accordingly, rather than having large reserves to hand at all times, ambulant hosts like these may have been periodically resupplied from regional base camps or intermediary outposts (McLeod 2006: 153). Likewise, even when fully decamped, expeditionary viking forces are unlikely to have carried their accumulated assets with them. Instead, suitable sites for successive encampment may have been scouted beforehand, enabling detachments to escort any non-combatants and stockpiles there and prepare the camp(s) for a returning host. Considering the inherent predicaments of transporting bulk goods by cart and animals by ship (Bachrach 1985: 511, 521n18), such operations may have involved parallel convoys moving overland and overwater, supporting one another en route.

Commerce

As viking encampments were established across Atlantic Europe, contemporary authors often characterised them as ‘other’ spaces, locked in purportedly parasitic bonds with their host environments, whose wealth and resources they consumed but did not replenish. Nonetheless, evidence exists to suggest that these camps were not as wholly detrimental to their surroundings as proclaimed. Not only could they have attracted the services of local

craftspeople, there are grounds to assume that they also acted as venues of amicable economic interaction. Various weights and balance fragments found in sites like Woodstown, Torksey, and the riverine site near York, for example, point to an active (inter)local exchange of goods and/or services, as does the presence of hacksilver and gold (Hurley 2014: 353; Hadley and Richards 2016: 39; Williams and Hall 2020: 83). Within these same camps, various types of coins found by themselves – rather than in hoards – are marked as stray losses, suggesting their active circulation within and around these sites (Williams 2015: 102–3). Textual evidence for this commercial activity also survives: in 873, for instance, vikings beleaguered by Charles the Bald at Angers were ‘allowed to stay [...] on an island in the Loire, and to hold a market there’ (Nelson 1991: 185). Likewise, in 882, Frankish troops reportedly entered the viking camp at Asselt with the expectation to be able to trade (Reuter 1992: 92).

These observations affirm that at least some external parties considered viking encampments to be approachable and permeable spaces, whose local economic activities they actively sought to partake in. Whilst presumably providing opportunities for appropriated wealth to return to regional circulation (Williams 2020: 94–5), these transactions would have offered vikings yet another avenue to obtain the resources for their sustained subsistence and security. To promote these camps as (occasional) staging posts of commercial endeavour, deliberate efforts may have been made to undercut domestic prices for sought-after merchandise, including precious metalwork or enslaved people (Downham 2010: 105; Raffield 2019: 697). Apart from appealing to visiting merchants, these activities may have attracted the more entrenched economic services of so-called sutlers, occupational vendors known to have accompanied and supplied other armed forces during this period, such as the ‘traders and shield-sellers’ following a Frankish army in 876 (Nelson 1991: 197). In much the same way, as intermediaries between viking hosts and domestic markets, these dedicated tradespeople may have supplied armaments and other ordnance to viking encampments. Whilst presumably a profitable enterprise, transactions like these seem to be among those explicitly banned by Charles the Bald in his *Edict of Pitres* (864), which prohibited – on penalty of death – any weapons, mail tunics, or horses to be made available to vikings (Cooijmans 2020: 160). The need for this targeted legislation implies not only that exchanges between Frankish merchants and vikings remained a widespread concern well into the latter half of the 9th century, it also raises suspicions that some of this activity may have occurred within the encampments themselves, beyond the conventional gaze and grasp of political and commercial scrutiny.

Conclusion

Having considered the assorted evidence for viking encampment across Atlantic Europe, it is invariably apparent that these sites were by no means dormant or devoid of logistical intricacy. Instead, many seem to have harboured lively, diverse communities, whose self-sufficiency and self-determination would have been contingent on the commitment and collective contributions of its individual members. More than mere defensive enclosures, sites like these assumed the roles of command posts, armouries, treasuries, granaries, prisons, workshops, markets, harbours, and homes – whose complex, choreographed operation would have required an amount of forethought, discipline, communication, and administrative acuity not traditionally ascribed to active viking hosts. Occupied by dozens, hundreds, or even thousands

of people, the logistical management of any viking encampment would have been an onerous process, compounded by the looming spectres of hunger, illness, and enemy attack.

Despite their common denominators, it should be reiterated that no two viking encampments would have been identical. The logistical requirements and dynamics of each site would have hinged on a broad range of variables, including location, size, longevity, number of occupants, resource availability, and correlation to other camps. That is not to say, however, that viking groups could not have shared their perceptions of best practice with one another over time, allowing encampments to be established on the basis of collective expertise, experience, and expectations.

Beyond the purview of this particular study, additional avenues of research on the operation of viking camps present themselves. Attention might be drawn, for example, to the longer-term logistical requirements and impacts of such sites, especially where these would have surpassed their transitory character and evolved into more permanent (proto-)urban centres, as in Dublin and elsewhere (Kelly 2015: 92). Likewise, broader comparative studies of pre-modern military encampment, both within and beyond the bounds of Atlantic Europe, might yield invaluable insights into the functional properties of these camps. Needless to say, any such research would substantially benefit from a continued archaeological focus on these encampment sites, especially in the erstwhile Frankish territories, furnishing a more balanced material perspective on their establishment and development.

Even without such investigations, however, the regular recurrence of these camps across western Europe strongly speaks to their success as infrastructural footholds, whose influence would have extended well beyond their own boundaries to procure provisions and engage a surrounding populace of artisans, merchants, and other suppliers. As such, by underpinning an intricate – albeit largely implicit – apparatus of logistical (inter)relationships, the encampments played their part to secure the overall sustainability of the early viking phenomenon.

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Note

- ¹ 'Atlantic Europe' here denotes the westernmost European mainland between southern Scandinavia and northern Iberia, as well as the British-Irish Isles.

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