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Rune Carvers in Military Campaigns

Abstract

Runic inscriptions, such as those found in the probable Varangian contexts of Hagia Sofia and Piraeus, as well as on the Black Sea island of Berezan, where the origin of the carver is less obvious, show that some of the Scandinavians in such contexts knew how to write runes. Domestic Scandinavian runestones also display traces of martial activities, as in the inscription about the carver *Ulfir*, who participated in the taking of *giald* in England. In addition, a number of objects inscribed with runes have been found in the Garrison at Birka. Previously, runestones have figured in debates regarding conflict, tribute, and political expansion within Scandinavia. One of the questions that has been addressed deals with runestones in certain parts of Scandinavia – Bornholm, Gotland and Öland – and whether they were produced by locals, or by carvers from other parts of Scandinavia. Runestone characteristics that were earlier attributed to mainland Swedish influences on Gotland and Bornholm can in fact also be dependent on chronology, or be seen as regional eastern Scandinavian features. One of my queries has been whether it is possible to reach a more profound understanding of such phenomenon by analysing carving techniques, since my results indicate that some runestones on these islands were produced by travelling and visiting carvers, and could be indicators of the status of cross-regional relationships.

Introduction

Viking Age ‘traveller stones’ – raised as mementos of warriors who had been to foreign lands – that mention war incidents are well known; one example is the famous 11th-century runestone at Gripsholm, where the rune carver poetically refers to the killing of enemies on the battle field as feeding the eagles:

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*Tóla lét reisa stein þenna at son sinn Harald,
bróður Ingvars.*

Þeir fóru drengila

fjarri at gulli

ok austarla

erni gáfu,

dóu sunnarla

á Serklandi.

Tóla had this stone raised in memory of her son
Haraldr, Ingvarr's brother.

They travelled valiantly

far for gold,

and in the east

gave (food) to the eagle.

(They) died in the south

in Serkland.

(SRD: Sö 179).

This article investigates to what extent the rune carvers themselves actually took part in conflicts and campaigns, and if there is evidence that some of them were actual members of the campaigning troops? An important part of my query is whether the methods I use for analysis of carving techniques, through 3D-scanning and statistical methods, can add useful information. I also intend to evaluate how supporting evidence, for instance archaeologically investigated sites – such as defence works, and related weapon finds – may contribute to the interpretation of the role of rune carvers in martial contexts. Some cases are quite obvious, while others are more difficult to interpret, which is evident from Late Viking runestones on Gotland and Bornholm, where earlier research has discussed them in the context of tribute taking and political expansion originating in eastern mainland Sweden. The carving techniques of these runestones have been analysed with 3D-scanning and multivariate statistics to determine the possible influence and presence of rune carvers from the Swedish mainland. The questions are how to establish their provenance, as it is quite likely that they came from areas with a very similar material culture, but also – if they were Swedish – how to interpret their presence – for instance, whether they were natives, intruders, visitors or perhaps instructors?

Materials & Methods

My methodology is twofold: initially categorising how different kinds of runic inscriptions are connected to war, or other martial contexts, and secondly through a detailed analysis of the carving techniques on runestones from Gotland and Bornholm.

I have identified four varieties of inscriptions in my categorisation: inscriptions on 'traveller stones', inscriptions by rune carvers outside Scandinavia, runic inscriptions found in various martial archaeological contexts, and runic inscriptions by carvers active within Scandinavia. Several 'traveller stones' mention martial activities, such as the taking of *giald* (i.e. taking tribute). The category that deals with rune carvers outside Scandinavia either refers to carvings found outside Scandinavia, or runic accounts of rune carvers who had been abroad (i.e. *Ulf*, see above and below). The category of runic inscriptions found in martial archaeological contexts relates to runes on weapons and other military equipment, as well as from finds in forts and other sites where warriors resided. The category dealing with rune carvers active within Scandinavia refers to those who were active outside their home regions, although still within areas that had runestone traditions. One prominent difficulty is distinguishing between local carvers and those from elsewhere. The categories are illustrated by examples, which do not represent a complete inventory. The sources are corpus publications, such as *Sveriges runinskrifter* (SRI), *Danmarks runeindskrifter* (DR), the

databases *Samnordisk runtextdatabas*, (SRD, Scandinavian Runic-text Database), *Danske Runeindskrifter* and *Runische Schriftlichkeit in den germanischen Sprachen* (RuneS), complemented by archaeological and runological literature about find circumstances, interpretations, and cultural contexts. The common Scandinavian way to quote runic inscriptions is in Old West Norse, which has been used throughout this article.

In an attempt to solve some of the questions concerning local rune carvers versus those from elsewhere, I have analysed the micro topography of the incised grooves and the carving techniques with high-resolution 3D-scanning, complemented by mathematical and statistical methods (Fig. 1 and 2). This method adds new parameters that are independent of style and runological features, which may provide information about the provenance of the carvers, and possibly where, and from whom they learnt the craft (Kitzler Åhfeldt 2002, 2019 a). While inspiration for phrasing and ornamentation may be transmitted through many different media, it is quite likely that similarities in carving technique are direct results

Figure 1. Variables for analysis. Above: variables referring to the cross section. The variables are calculated as mean values of cross sections laid out with 1 mm distance in each sample. Below: variables referring to the groove base along the cutting direction. The dotted line is the reference level, calculated as a mean flow. The variables refer both to the cross section and to the cutting sequence of the pits in the groove base, as experimental studies have shown that both these aspects need to be considered. Drawing: Laila Kitzler Åhfeldt, Swedish National Heritage Board.

Figure 2. Application of the analysis tool Groove Measure in Deskartes 3Data Expert (ver. 11.1.0.11). The variables for each sample are retrieved by 1) the application of Groove Measure and 2) entering the result into an Excel template sheet, where the variables are finally calculated. Image: Laila Kitzler Åhfeldt, Swedish National Heritage Board.

of personal relationships. An analysis may reveal if rune carvers from the Swedish mainland were involved in the production of runestones on Gotland and Bornholm.

The method that I have used was developed at the Archaeological Research Laboratory (AFL) at Stockholm University (Freij 1986, 1990; Kitzler Åhfeldt 2002), and I have modified and developed it further for a variety of applications. In subsequent studies, the method has been used to explore cooperation and mobility among rune carvers, as well as chronological and geographical similarities in stone carving traditions (e.g. Kitzler Åhfeldt 2012, 2019 a, 2019 b).

I have analysed a number of runestones using this method in order to study the personal contacts between rune carvers from Gotland and Uppland. My goal has been to ascertain whether it is possible to identify relationships between regions based on similarities in carving technique. If this is the case, it may provide valuable information for the discussion about Gotland's relationship with *Svíþjóð* (i.e. the realm of the Svear in eastern central Sweden) (Kitzler Åhfeldt 2019 a: 94). The runestones from Bornholm have also been analysed to see if the carving techniques employed there display any similarities to the techniques of any Swedish regions (Kitzler Åhfeldt 2019 b).

Results and discussion

In this section I aim to illustrate how runic inscriptions and rune carvers appear in martial contexts, as well as on Gotland and Bornholm. My initial results show that there are at least ten runic inscriptions indicating that rune carvers were taking part in war-like campaigns outside Scandinavia. My second result suggests that the rune carvers involved in the production of runestones on Gotland and Bornholm comprised both local and non-local carvers. It cannot be ascertained whether the carvers from elsewhere actually travelled to the islands, or if they had met and influenced local carvers somewhere else. Below, the categories will be discussed consecutively.

‘Traveller stones’

Currently c. 170 ‘traveller stones’ are known, out of total of c. 2,500 rune stones. The inscriptions on these ‘traveller stones’ mention a range of remote locations, such as *Serkland* (usually Muslim countries in general); Jerusalem; *Langbardaland* (Italy), and Greece (Byzantium) but also locations within Scandinavia, e.g. *Haithabu*, and Gotland (Jansson 1987: 38–91; Larsson 1990; Jesch 2001; Zilmer 2006). Some inscriptions only mention the general directions east or west, and a few even mention that the deceased travelled both in the east and in the west. Most of the ‘traveller stones’ are found in central Sweden, but there are examples in other places as well, such as on Gotland. It may be presumed that many of the journeys described on the stones involved war-like activities, such as raids, plunder, and the taking of tributes, although trade and even pilgrimage cannot be excluded. Several activities are mentioned in the inscriptions, such as commanding forces (U 112b and Sö 338), earning wealth (U 209), taking shares of gold (e.g. Sö 166, and Sö 163), and visiting Jerusalem (U 136) (Källström 2016: 173–5, 182). The most well-known ‘traveller stones’ are the c. 25 runestones that relate to *Ingvar Vittfarne*, which are mostly found in Swedish Svealand (Larsson 1983; 1990) (Fig. 3) but also include a stone from Medelpad, further north (SRD: M 4; Åhlén 2006). Supposedly they commemorate members of a failed and fatal expedition to the Caspian Sea, which according to the Icelandic saga *Yngvars saga víðförla* (Pálsson and Edwards 1989; Strid 1997) took place in the period AD 1036–1041/42 (Larsson 1983: 95; Shepard 1984–5). A recent research contribution argues that the expedition has been wrongly dated, and proposes a more likely dating to be AD 1020, by comparing Master Adam of Bremen’s account with the Icelandic Annals and Heimskringla (Krakow 2021).

In addition to the inscriptions that contain explicit references to travel, Marco Bianchi proposes that there may be a direct correlation between cipher runes and foreign travel, arguing that a higher proficiency in runes seems to be associated both with higher social status, and travel (Bianchi 2010: 160–1, 163). One example is visible on the runestone at Spånga, in the parish of Råby-Rönö in Södermanland (Sö 164), where a ‘traveller stone’ is incised with both cipher runes and a ship. It is, however, likely that other runestones with cipher runes may be associated to foreign travels, as well.

Rune Carvers that travelled abroad

Besides the runestone inscriptions that mention travel, there is also runic evidence of rune carvers who travelled themselves. One is *Ulfir* in Borresta, who went to England several

Figure 3. Ingvar stones (in blue) and other ‘traveller stones’ (in red) in central Sweden. Based on data from Larsson 1990 and SRD. Map: Laila Kitzler Åhfeldt, Swedish National Heritage Board.

times, and made several runestones after coming back (Gustavson 1991: 160–3). When he died, his sons raised a couple of stones in his honour, including the inscriptions:

*Karsi ok [...] þeir létu reisa stei[n] þenna eptir Ulf, fôður sinn. Guð hjalpi hans [...] ok Guðs móðir.
En Ulfr hefir á Englandi þrjú gjald tekit. Þat var fyrsta þat’s Tosti ga[l]t. Þá [galt] Þorketill. Þá galt Knútr.*

Karsi and [...] they had this stone raised in memory of *Ulfr*, their father. May God help his [...] and God’s mother.

And *Ulfr* has taken three payments in England. That was the first that Tosti paid. Then Þorketill paid. Then Knútr paid. (U 343–4; Fig. 4).

There are also a number of instances when rune carvers – assumed to be members of warrior groups – made inscriptions outside Scandinavia. The paramount examples are three separate inscriptions found on a marble lion that originally stood in the harbour in Piraeus but now stands in Venice, and is inscribed with runes and elaborate runic ornamentation (SRD: By NT 1984:32; Fig. 5). Thorgunn Snædal has made several careful on-site examinations of these carvings, and through a new reading and interpretation she argues that they were made by skilful carvers, who were probably members of the Varangian guard (Snædal 2016: 189, 192, 194). The inscription, which is probably the oldest, from AD 1020–30s (Snædal 2016: 197), was carved by mercenaries commemorating a member of their troop, who died before he was able to claim his share of their loot. The inscription explicitly mentions that *Svear* were responsible for the rune carving, and interestingly it deals with *giald* (Snædal 2016: 194), similar to the runestone raised after *Ulfir*, mentioned above. This theme, along with descriptions of other warlike activities, is also seen on several other Scandinavian runestones (e.g. Källström 2016: 173–5). The second inscription on the lion is difficult to date but was possibly made in the 11th century or early 12th century, and reads: *DrængiaR/drængir rist(u) ristu runiR/runir [...]*, ‘Young men/warriors carved the runes’ (Snædal 2016: 202). The third, and supposedly youngest inscription, AD 1070–100, reads: *Ásmundr risti (rún)ar þessar þeir Æskell/Áskell (?) [...] Þórleifr(?) [...] ok [...]*, ‘Ásmund carved these runes, they, Eskil (?) [...] Torlev and [...]’ (Snædal 2016: 205). The inscriptions and ornamentation suggest that the carvers came from Swedish Upland, or Gotland. Some characteristics may also indicate the presence of Norwegians, i.e. implying that their group contained a mixture of Scandinavians (Snædal 2016: 197, 201, 203). The inscriptions on the Piraeus Lion are sometimes referred to as scribbles or doodles, which might possibly apply to the shortest one (Snædal 2016: 202) but not to the other two, which are well made without haste. These type of stone incisions are not created in mere moments, and studies have shown that the runes need to be cut in successive time consuming stages (Kitzler Åhfeldt 2002: 36).

Another Scandinavian runestone carver, *Grane*, went to Berezan, an island in the Black Sea, and made a runic monument there (SRD: UA Fv1914:47; Arne 1907: 204, 1914; Fig. 6). He may have been a member of the very same family that is known to have made the runic inscriptions at Häggesled in Västergötland (Vg 21, Vg 22), since those runestones are very similar to the one on Berezan (Svårdström 1958: 39; Ljung 2015: 159). Ture J. Arne suggests that *Karl* and *Grane* were on their way to, or back from, Greece when *Karl* died (Arne 1914: 48). Some medieval artefacts, indicating that this was a seasonal settlement, have been found on the island but Fedir Androshchuk calls attention to the fact that the island was earlier a peninsula and that parts of the land may now be submerged (Androshchuk 2013: 124). The runestone is of a monument type usually found in churchyards, which indicates that there may have been a church on the island (Androshchuk 2013: 124). This assumption gets further support through the research of Cecilia Ljung, where she discusses this particular stone in her studies of the term *hvalf* – a term referring to churchyard monuments – which is part of its inscription (Ljung 2015: 157–8, 165–6).

In contrast to the Piraeus Lion, the runic inscriptions in Hagia Sofia can be regarded more as ‘tags’ (i.e. name graffiti, or doodles) made by Scandinavians, who probably were members of the imperial Varangian guard (Svårdström 1970; Larsson 1989; Mel’nikova 2016: 101, 108). The inscription that was first discovered, situated in the southern gallery, begins

Figure 4. U 344 Yttergårde, Orkesta parish. Photo: Bengt A. Lundberg 1985, Swedish National Heritage Board. CC BY-SA 4.0

with **alftan** or **hlftan**, both interpreted as the very common male name *Halfdan* (Svärdström 1970: 248). Another inscription, reading **ari:k** (the male name *Are*, ‘eagle’; Larsson 1989: 12), or **arni** (the male name *Arne*), can be found in the northern gallery (Knirk 1999: 26), which is also where a third runic inscription was found, reading: *Arinbárðr reist rúnar þessar*, ‘*Arinbárðr* carved these runes’ (Mel’nikova 2016: 102–5). Larsson argues that this gallery was mainly reserved for women and the imperial family but that an exception may have been made for bodyguards (Larsson 1989: 13–4). It is also worth noting that there are different names in different parts of the cathedral, implying that the runes were not inscribed by one single person during one single event but rather by several people, on separate occasions.

Rune finds in martial archaeological contexts

Runes, which are generally associated to the highest societal stratum, were used on various objects in martial contexts, although runes on Viking Age weapons are rare (Gustavson 2001: 37–8). Actually, runes on weapons are more common in bog finds containing Roman

Figure 5. The Piraeus Lion, now in Venice. Unknown photographer, Swedish National Heritage Board. CC BY-SA 4.0

Figure 6. The runestone in Berezan. Photo: Pål-Nils Nilsson, Swedish National Heritage Board. CC BY-SA 4.0

Iron Age war booty (e.g. Ilkjær 1990; Rau 2015), and in the Merovingian area, where such inscriptions appear on weapons and military equipment finds in graves (e.g. Düwel 1994; Martin 2004; *RuneS*). Only c. 20 weapons, dating from the period AD c. 700–1300, with younger *fupark* runes have been found, out of a total of more than 5,000 runic inscriptions, although half of those are found on reused stone-age weapons, such as Neolithic axes. In Viking Age and medieval contexts, these are often regarded as amulets, an argument that finds support in an 11th-century written source, which states that stone axes were perceived as having magical properties, but also because stone axes have been found in Viking Age and medieval post-holes (Snædal, Stoklund and Åhlén 1988: 244; Carelli 1997: 402, 413). In spite of Viking Age axe finds numbering in the thousands, no weapon axes with a runic inscription have been found (Düwel 1981: 161). However, there are a few miniature axes, i.e. amulets, with runic inscriptions.

Among the few Viking Age weapons that do have runic inscriptions, is a beautiful lance head found at Svenskens on Gotland (G 225), which has inlays with Jelling Style silver ornamentation, and is dated to the 10th century (Rydh 1952: 31; Androshchuk and Källström 2020). Another find from Gotland is a Carolingian sword hilt made of bone (G 353), which has been interpreted as part of a local elite context, associated with organised military expeditions (Androshchuk 2014: 244).

Besides runic inscriptions found outside Scandinavia, runes are also found on objects in martial archaeological contexts associated to defence structures and weapon finds in Scandinavia. One extraordinary location, which has revealed a number of finds with runic

Figure 7. Runic objects in the Birka Garrison: a) Metal plates with runes. Photo: Bengt A. Lundberg 2001, Swedish National Heritage Board. b) bone with runes (SRD: U NOR2001;24). Photo: Bengt A Lundberg 2000, Swedish National Heritage Board. c) Fragment of bone handle with runes (SRD: U ANF1937;179; Inventory number SHM 21064:289 in the Swedish History Museum). Drawing: Holger Arbman 1934. Swedish History Museum. d) Fragment of bone handle with runes (U ANF1937;178B in SRD; Inventory number SHM 21064:183 in the Swedish History Museum). Drawing: Holger Arbman 1934. Swedish History Museum.

inscriptions, is the Garrison at Birka. The Garrison was attacked and burned in the late 970s, and after that it was abandoned. The site is notable for its abundance of weapon finds, including spears, shields, and arrowheads that hail from various phases of its history: e.g. the construction phase, the inhabited phase, and from the time of the final attack (Holmquist Olausson 2001: 13; Hedenstierna-Jonson 2006: 51–8, 64, 69; Holmquist 2016). The finds that have runic inscriptions include two fragments of shafts/handles (Sw. *hornskäft*, SRD: U ANF1937;178B and U ANF1937;179; Fig. 7 c–d) excavated in 1934 (Arbman 1934; Nordén 1937: 178–9), a bone found in the year 2000 (SRD: U NOR2001;24; Gustavson 2001: 35, 37 Fig. 1, 2009: 122; Fig. 7 b), and two metal plates inscribed with runes tied together by a copper thread (often referred to as an amulet, see below) (SRD: U NOR2002;26 and U NOR2002;28; Gustavson 2009: 123–4; Pereswetoff-Morath 2019: 220 Fig. 31; Fig. 7 a). Helmer Gustavson interprets these runes as part of a context where warriors had adapted to writing runes for personal use (Gustavson 2001, 2009). In the same archaeological context there are other traces associated to writing, such as styli and wax tablet fragments, which contribute to the view of the Birka warriors as ‘early adaptors’, using a new invention, such as writing for reasons relevant to themselves (Hedenstierna-Jonson 2010: 176). As seen on the Piraeus Lion, matters relating to the taking of *giald* may have been one of these highly relevant reasons.

None of the inscriptions from the Birka Garrison have been fully interpreted – largely due to damage to the objects – but it is noteworthy that runic inscriptions are found on a

variety of objects: an amulet, a tool shaft, and a piece of bone, thus potentially covering several societal expressions: religion and/or magic; tools; as well as short messages or doo-dles, possibly inscribed as mere entertainment. In this context, the Earl's Bu on the Orkney Mainland displays several similarities. Through a new careful examination of bones with runic inscriptions from this prominent site, Andrea Freund concludes that its rune carvings were not the result of one singular occasion but of repeated activity (Freund 2020: 106, 110–1). The Earl's Bu was a high status settlement, displayed both by its place-name and through traces of conspicuous consumption (Freund 2020: 81), which suggests that at least the jarl's retinue must have been present on the site. The runic inscriptions in nearby Maeshowe also deserve attention, as the inscriptions are believed to have been made by crusaders in the 12th century, who called themselves 'Jerusalem-travellers' (Barnes 1994: 40, 117, 189; Freund 2020: 124).

On the Baltic island of Öland, medieval metal plates with runes (amulets, see above) have been found in castles and fortifications, such as Eketorp (SRD: Öl ATA326-1087-2007; Pereswetoff-Morath 2019: 239–41), Gråborg (Erlandsson 2015: 70, Fig. 7), and Borgholm (Gustavson 2007: 204–5). Some of these fortifications display strong military characteristics (e.g. Eketorp III), while others seem more associated to trade (e.g. Gråborg) (Stibéus 2015: 43). Castles and fortifications could also have other, non-military functions, for instance as structures used for negotiations, administration, or symbolic purposes (Stibéus 2015: 16, 71).

Rune carvers within Scandinavia

It is beyond doubt that it was Scandinavians who made the runic inscriptions in Piraeus, Berezan, and Hagia Sofia. In addition, runic inscriptions have been found on a variety of objects in martial archaeological contexts. However, one remaining issue has been to establish whether the rune carvers working within the traditional Scandinavian runestone area were local or not; especially since some of the ornamentations and/or inscriptions indicate that they may have been outsiders. The stones they made are usually not classified as 'traveller stones' but in a sense they probably should be. Given political factions and animosities within Scandinavia, such rune carvers may have found themselves as part of military campaigns within the cultural sphere of the traditional runestone area but it has proven difficult to establish their provenance. A similar query has been raised regarding war related Roman Iron Age weapon deposits in Denmark, where it has proved difficult to distinguish the weapons of the attackers from those of the defenders, since both groups most likely came from related areas not far away from the deposits (Ilkjær 1991: 278, 280; Grimm and Pesch 2015: 16–17).

The famous runestone at Karlevi on Öland exemplifies this; since it was raised for a Danish sea-lord, who was buried on Öland and commemorated with a stanza in the West-Norse poetic metre *dróttkvætt* (Öl 1; Andrén 2007: 297; Fig. 8). The unique occurrence of a *dróttkvætt* stanza on a runestone provides clear evidence for the presence of a skald (Jacobsen & Moltke 1942: 473; Jesch 2001: 2, 6). This stone is also remarkable due to an undated Latin inscription on the reverse. Due to its location on the border between Danes and Swedes, Öland would always have been contested, and it has not been established whether Öland should be regarded as part of a Danish power sphere in this late 10th-century

Figure 8. Öl 1 Karlevi. Photo: Bengt A. Lundberg, Swedish National Heritage Board. CC BY-SA 4.0

context (Zachrisson 2020: 108, 122). If that were the case it would have been dangerously exposed because of its proximity to the Swedish mainland and one of the main sailing routes.

Another example of travelling rune carvers in Scandinavia is the carver from Uppland, who made a runestone in Simris in *Skåne*, on which the commemorative inscription explicitly states that the deceased came from *Svíþjóð* (SRD: DR 344; Fig. 9). Its ornamentation is similar to what is usually attributed to the carver *Fot* and his associates, such as the carver *Torgöt Fotsarve* (*Danske Runeindskrifter*), and belongs to a style group called Pr 4, a late 11th-century style mainly found in central Sweden, as well as on Öland and Gotland, according to the style-chronology of Anne-Sofie Gräslund (2006; Fig. 10).

It is fairly evident that the runestones in Karlevi and Simris were not made by locals, although the reasons for the presence of non-local rune carvers – whether peaceful or not – are unknown. These two runestones can also exemplify the difficulties involved with establishing the origin of rune carvers in general. The complicated and long-running debates regarding the possible Swedish origin of the rune carvers of runestones on Gotland, Bornholm and in Haithabu (see e.g. Jacobsen & Moltke 1942: 16) could probably benefit from novel considerations. In earlier research, the possible presence of mainland Swedish rune carvers has been discussed from the perspective of Swedish expansion and possible related tribute taking, whereas recent research seeks other explanations, see below (e.g. Lerche 1997: 69; Højgaard Holm 2014; Imer 2015; Kitzler Åhfeldt and Imer 2019).

Figure 9. SRD: DR 344 Simris. The Swedish runestone in Skåne in Denmark, mentioning Svíþjóð. Photo: Bengt A. Lundberg, Swedish National Heritage Board. CC BY-SA 4.0

Figure 10. The runestones in style group Pr 4, according to the style groups of Anne-Sofie Gräslund (2006), based on data in SRD. Map: Laila Kitzler Åhfeldt, Swedish National Heritage Board.

Due to the similarities to runestones from eastern mainland Sweden, it has been suggested that the runestones on Gotland and Bornholm may have been produced by Swedish rune carvers. In the case of Bornholm, these similarities include the sponsor phrasing ‘had the stone raised’ (i.e. with an auxiliary verb); naming traditions within families; a frequent use of prayers; particular rune shapes; and the ornamental style (Olsen 1906: 30–1; Moltke 1934: 19, 1976: 269; Kristensen 1935: 155–6). The runestones on Gotland feature runic animals similar to those of central Sweden, and some influences from runic Swedish (Snædal 2002: 230, 240). This may have been politically significant, given the strife and competition between intra-Scandinavian factions that are known from other sources. There are however, two issues with such comparisons: firstly, since it is difficult to establish whether features pointing to influences from another region can be attributed to a rune carver from elsewhere, or if they can be explained by other factors. Secondly, even if it is established that the rune carvers were outsiders, it would still not explain the reasons for their presence – which may have been perfectly amicable.

Rune carvers as locals or visitors? The cases from Gotland and Bornholm

Gotland

According to the Guta Saga, a treaty between Swedes and Gotlanders was agreed upon in AD c. 1030. It has, however, been suggested that this source, probably dating from the 13th century (Hallencrutz 1981: 90; Holmbäck & Wessén 1943: lxxi), describes the negotiating position of the Gotlanders in a far more voluntary and advantageous way than was actually the case. The runic inscriptions, contemporary to the events, certainly seem to describe animosities, and two inscriptions specify the conflicts involved:

Ólafir[?]/Óblauðr[?]/Upphlaupr[?] lét gera kuml, likhús/liknhús ok brú at son sinn Björn, var drepinn á Gotlandi. Þý lét fjör sitt, flyðu gengir; þeir [...] vildu ekki halda. Guð hjalpi anda hans.

Ólafir[?]/Óblauðr[?]/Upphlaupr[?] had the monument and sarcophagus/hospice and bridge made in memory of his son Björn, [who] was killed on Gotland. Because his followers fled, he lost his life; they [...] would not hold. May God help his spirit.

(Sö 174).

Followed by:

Skúli ok Folki láta reisa þenna stein eptir bróður sinn Húsbjörn/Ásbjörn. Hann var sjúkr úti, þá þeir gjald tóku á Gotlandi.

Skúli and Folki have raised this stone in memory of their brother Húsbjörn/Ásbjörn. He was sick abroad when they took payment on Gotland.

(U 614).

Nonetheless, monuments from Gotland were evidently a source of inspiration in eastern central Sweden, and were even imported, as witnessed by a now lost Gotlandic runestone previously recorded from Uppland, where a part of the inscription read: [...] *þeir færðu stein þenna af Gotlandi*, '[...] they brought this stone from Gotland' (U 414†). Judging by a 17th-century drawing by Johannes Bureus, the stone had a characteristic Gotlandic shape (U 414). In an area near Sigtuna and Lake Mälaren, there are four runestones associated with Gotland (Fig. 11), indicating a particular connection, either because Gotland is mentioned in the inscription or because of their stylistic similarities to the rune carvings on Gotland (Jansson 1945: 148–149; Svärdström, see G 200; Fig. 12). Interestingly, Thorgunn Snædal suggests that rune carvers may have travelled from Uppland to Gotland when the runestone tradition declined on the Swedish mainland, and that they found a new arena there (Snædal 2002: 230).

The analyses indicate that although geographical differences between early runestones were significant, the carving techniques of later rune carvers are more similar, which indicates that rune carvers may have met and/or inspired one another. The reasons may be linked to more frequent personal contacts between carvers from Gotland and those from the Swedish mainland. From earlier runic inscriptions, when there is evidence of violence and tribute taking, the analyses do not reveal any visible links between the rune carvers from the island and the mainland – although there are still some stylistic similarities. However, by the late 11th century, relations seem to have improved enough to allow rune carvers to cooperate (Kitzler Åhfeldt 2019 a: 108–9).

Bornholm

Another intriguing problem is how to interpret why the runestones on Bornholm are more similar to ones in Sweden, than they are to ones from other parts of Denmark. Older research

Figure 11. Runestones with specific features found on Gotland, or mentioning Gotland in the inscription. Map: Laila Kitzler Åhfeldt.

Figure 12. G 203 Hogræn. Runes chosen for analysis. The actual samples are chosen in the 3D-model, considering possible damages or weathering of the carving surface.

Photo: Bengt A. Lundberg, Swedish National Heritage Board, with drawing by Laila Kitzler Åhfeldt.

suggested that Swedish influence was indicated by Bornholm's late runestone custom; naming traditions within families; the sponsor phrasing with an auxiliary verb; as well as the ornamentation and the shape of the runes (Olsen 1906: 30–1; Moltke 1934: 17, 19, 1976: 269–71; Kristensen 1935: 155–6). Later research stresses that despite the seemingly striking parallels to Swedish runestones, there may also be other explanations than a direct influence from Swedish rune carvers, perhaps due to chronology, and the presence of common eastern Scandinavian runic features (Lerche Nielsen 1997: 69; Imer 2007: 32, 2015; 2016; Højgaard Holm 2014: 269–70, 295–6). It rejects the theory that an expansion of the power sphere of central Sweden was the underlying cause for the runestones on Bornholm. Another – political – interpretation of the reason for the appearance of runestones on Bornholm is the island's inclusion into the Danish realm, an interpretation that is partly based on the geographical distribution of its runestones (Randsborg 1980: 33, 44), although it has also been rejected on the grounds of possible geographical irregularities due to varied degrees of preservation (Lerche Nielsen 1997: 6; Lihammer 2007: 260–1, 273). So, the issue is not settled, which is also reflected by Ann-Sofie Gräslund (2016: 184–5), who argues that the ornamental simi-

larities are far too great for the Swedish and Bornholm runestones to be wholly independent of each other. I agree to some extent, since there are undoubtedly intriguing similarities, however, other explanations than Swedish rune carvers are possible.

In a study devoted to this issue, a sample of eight runestones on Bornholm were compared to c. 230 Late Viking Age runestones on the islands of Öland and Gotland, and in the (present) Swedish provinces of Uppland, Södermanland, Västergötland and Östergötland (Fig. 13). The aim was to find the closest resemblance to the carving technique used by rune carvers on Bornholm. Since the runestone traditions on Öland and Gotland lingered longer – similarly to Bornholm – than elsewhere, an initial comparison was made between the islands. Later, the comparison proceeded with the provinces on the Swedish mainland.

The results clearly show that the carving techniques of Öland, Gotland and Bornholm are distinctly different, which suggests that the rune carvers on Bornholm had little to do with those of the other islands. Instead, the results indicate that the runestones on Bornholm – on the whole – are most similar to the stones in Södermanland (Fig. 14; see Kitzler Åhfeldt 2019 b for the full study). A further comparison of details reveals that some of the stones on Bornholm were more similar to certain stones in Västergötland. The reference material includes various monument types, such as traditional runestones raised in fields, as well as early Christian runic grave monuments (similar to so called Eskilstuna monuments) from churchyards. Dating stretches between AD c. 980–1100 (1130). The data was collected over a long period (1994–2005), and includes examinations with different 3D-equipment, and other sampling strategies. Unfortunately, no Danish runestones were included in the comparison. Given the potential for errors, I prefer a cautious interpretation of the results, as a display of East Scandinavian characteristics. What is certain regarding carving technique is that – of the Swedish provinces – the runestones of Södermanland are the ones most similar to the ones on Bornholm (Kitzler Åhfeldt 2019 b: 20). However, a closer study of the techniques of the rune carvers on Bornholm suggests that they were connected to – and probably members of – the local sponsor families (Kitzler Åhfeldt & Imer 2019: 17). Hence, I argue that the carvers were locals, who perhaps learnt the craft in the eastern parts of Scandinavia, or from visitors from that region.

Above, examples from four different categories of runic inscription finds, associated to martial contexts, have been presented. The ‘traveller stones’ recorded events from warrior expeditions to foreign lands, in the form of commemorative inscriptions, and often mention violent incidents during such journeys. The carvings made outside Scandinavia, such as the inscriptions on the Piraeus Lion, demonstrate that some of the rune carvers actually participated in various martial undertakings. The runic inscriptions found in martial archaeological contexts demonstrate that even though such finds are fragmented and ordinary, they imply that runic writing skills were part of the diverse repertoire of some warrior groups. Runic inscriptions on weapons from the Viking Age are unusual, but finds from the Birka Garrison reveal that runic writing could be used for a variety of purposes among the members of a garrison, since it has been found on amulets, as marks on tools, or perhaps simply as a means of entertainment. Finally, the runestone carvers travelling within Scandinavia may have been sent to purposefully confirm and stabilise relationships, possibly in the aftermaths of conflicts.

To sum up: above it has been demonstrated that some proficient rune carvers took part in martial and related activities outside Scandinavia. This is evidenced on the runestone com-

Figure 13. Reference material used in the analysis of runestones from Bornholm. Map: Laila Kitzler Åhfeldt, Swedish National Heritage Board.

Figure 14. Example of results from the Bornholm analysis. The variables w and k refer to the sequence of pits in the groove base, which reflects the stone-cutting rhythm. Graph: Laila Kitzler Åhfeldt, Swedish National Heritage Board.

memorating *Ulfr*; the three inscriptions on the Piraeus Lion; the stone in Berezan; and in the ‘tags’ in Hagia Sofia. These cases clearly demonstrate that Scandinavians carved runes on their journeys abroad, although it cannot be established that all inscriptions were carved in warrior contexts. It is however likely that this was the case for the Piraeus Lion, where one of the inscriptions mentions the sharing of loot in the probable context of Byzantine warfare in the Mediterranean (Snædal 2016: 192, 207, 210). The same may apply to the runic inscriptions in Hagia Sofia by *Halfdan* and others; where there is no direct mention of martial activities but the cultural context and contemporary setting suggest that the inscriptions were carved by members of the Varangian guard. The alternative would be that they were made by pilgrims on their way to or from Jerusalem, which does not exclude martial connotations, since pilgrimage and warfare were not always clearly separated.

In the case of the runestone on Berezan the circumstances for the journey are unknown, although a martial connection seems likely. This argument is strengthened by Byzantine sources that mention Berezan as a resting point and place for repairs on the sea route leading south (Różycki 2014: 134). Still, it cannot be ruled out that the people involved in this runestone primarily dealt with trade – they may even have settled on the island – and that the monument should perhaps be seen in the light of the eastern Viking diaspora (Jesch

2015: 28–9). The runestone in Berezan is a memorial similar to early Swedish Christian grave monuments, mainly found in the provinces of Västergötland and Östergötland (Ljung 2016), which is remarkable since it indicates that there was some degree of permanency to the settlement on the island.

As for runes in martial archaeological contexts, there can be no doubt regarding the martial nature of the Birka Garrison. A variety of runic objects has been found there (see above), but none of the inscriptions have been fully interpreted. Although not specifically interpreted as housing a garrison, the Earl's Bu on Orkney may be a parallel, since it is also a high-status site with repeated runic activity (Freund 2020: 106, 110–1). On their own the inscriptions from the site may not contain a lot of information but as a whole they demonstrate a repeated use of runes on ordinary objects. The same applies to the runic 'tags' in Hagia Sophia, which display several names. Together, these three examples indicate that basic runic knowledge may have been common among warriors. On Öland, runic amulets seem to have appealed to the population of medieval fortifications, regardless of whether the sites had martial or more general pre-urban connotations. In contrast, the nearby islands of Gotland and Bornholm have not yielded any runic amulets from their fortifications but instead from graves (on Gotland) and settlements (several on Bornholm and a few on Gotland), which indicates that there were local variations in the use of runes in different social settings (Kitzler Åhfeldt 2020). One might ask why so few runic inscriptions have been found in martial contexts. However, runic objects are always rare, and for such finds to occur, favourable preservation conditions need to be met by the luck of an excavator. The most durable inscriptions are those on stones but these are also exceedingly few before the Late Viking Age runestone tradition, which started in the late 10th century, and continued throughout the following century.

Conclusion

Runestone carvers are most often discussed in relation to the spread of Christianity and ensuing literacy. Although the runic script was not limited to a specific group of people, there is reason to believe that at least some of the runestone carvers possessed special skills, which possibly conferred special roles and authority (Kitzler Åhfeldt 2012). The question is whether this also meant that they took part in war campaigns within Scandinavia? This has been implied by earlier research, which suggested that the runestones on Gotland and Bornholm may have been a result of an expansionary policy from mainland Sweden. Whether this was actually the case is difficult to determine but one way of exploring the presence of non-local runestone carvers is to analyse the carving techniques. In the cases of Gotland and Bornholm, the carving techniques have been examined in search for signs of an increased interaction between local and non-local rune carvers. On Gotland, results indicate that cooperation between rune carvers from Uppland and Gotland increased gradually in the late 11th century, which may be a sign of intensified contacts and improved relationships (Kitzler Åhfeldt 2019 a: 109). For Bornholm, results indicate that the closest similarities regarding carving technique can be found in Södermanland – or at least in eastern Scandinavia, given the limitations of this study (Kitzler Åhfeldt 2019 b: 20). Still, it is difficult to make any definite statements about possible political implications. Even though there seem to be links between *Svipioð* and the rune carvers on both Gotland and Bornholm,

the results cannot determine whether these links are connected to political expansion or to the taking of tributes. There are also other possible explanations and the evidence has to be evaluated in the light of other circumstances. The method that I have used reveals that there were personal contacts between rune carvers from different regions, which might have been perfectly peaceful. In spite of the limitations and difficulties, my methods reveal that there is potential and possibilities for further use of this carving technique source material.

The mobility and collaboration of rune carvers, as members of households with special skills, such as literacy, artistic talent and stone-carving skills, may reflect relationships between families, households and other power spheres. The opportunities available for rune carvers, as well as their inclination to travel and to carve monuments in new regions, would probably have been influenced by the power relationships and alliances of the respective families. Runestones have often been interpreted in relation to landowning, royal power, and political influence (e.g. Randsborg 1980), which in turn is related to martial aspects of society, and war campaigns. However, the raising of monumental runestones required more time than an army on the move could provide, which means that they were probably created and raised between conflicts, partly because the carvers would have needed protection while working. Hence, it is unlikely that runestones were carved and raised during acute stages of conflict, since conditions would have to be reasonably stable for such time-consuming tasks. Helle Vandkilde defined several stages of warfare in her key-note lecture at the conference *Weaving War: New perspectives in war and violence in the Viking Age*, in Oslo 2018; these ranged from the planning stage, through violent encounters, to stages with post-war activities (Vandkilde 2020). It is possible that rune carvers arrived in the wake of instances of intra-Scandinavian political strife, as a part of such post-war activities. Contrary to stages of acute conflict, the monuments indicate a need to maintain amicable relationships and stable alliances. Thus, the carvers may have helped to specify, define, and confirm new alliances and pacts of friendship.

Bibliography

Andrén, Anders

- 2007 A petrified patchwork: the rune-stone at Karlevi and the early history of Öland. In *On the road: studies in honour of Lars Larsson*, edited by Birgitta Hårdh, Kristina Jennbert and Deborah S. Olausson, pp. 295–300. Almqvist & Wiksell International, Stockholm.

Androshchuk, Fedir

- 2013 *Vikings in the East: essays on contacts along the road to Byzantium (800–1100)*. Uppsala Universitet, Uppsala.
- 2014 *Viking swords: swords and social aspects of weaponry in Viking Age societies*. Historiska, Stockholm.

Androshchuk, Fedir and Magnus Källström

- 2020 Bofus the Gute and the production of Viking Age weapons on Gotland. *Archäologisches Korrespondenzblatt* 50: 429–48.

Arne, Ture J

- 1907 En svensk runinskrift i Sydryssland. *Formvännen* 2: 204.
- 1914 Den svenska runstenen från ön Berezan utanför Dnjeprmynningen: referat efter prof. F. Brauns redogörelse i Ryska arkeol. kommissionens meddelanden 1907. *Formvännen* 9: 44–8.

Barnes, Michael P

- 1994 *The runic inscriptions of Maeshowe, Orkney*. Uppsala University, Uppsala.

- Bianchi, Marco
2010 *Runor som resurs: vikingatida skriftkultur i Uppland och Södermanland*. Uppsala universitet, Uppsala.
- Carelli, Peter
1997 Thunder and Lightning, Magical Miracles. In *Visions of the Past: Trends and Traditions in Swedish Archaeology*, Lund Studies in Medieval Archaeology 19, edited by Hans Andersson, Lars, Ersgård and Peter Carelli, pp. 393–418. Swedish National Heritage Board (Riksantikvarieämbetet), Lund.
- Danske Runeindskrifter
Runedatabas. [<http://runer.ku.dk/>], last accessed 22.12.20.
- DR (Danmarks runeindskrifter)
1941–2 Search by designation, by Lis Jacobsen and Erik Moltke. 3 vols. Text: Atlas, Registre: Munksgaard, København.
- Düwel, Klaus
1981 Runeninschriften auf Waffen. In *Wörter und Sachen im Lichte der Bezeichnungsforschung*, edited by Ruth Schmidt-Wiegand, pp. 128–167. Walter de Gruyter, Berlin/New York.
1994 Runische und lateinische Epigraphik im süddeutschen Raum zur Merowingerzeit. In *Runische Schriftkultur in kontinental-skandinavischer und -angelsächsischer Wechselbeziehung. Internationales Symposium in der Werner-Reimers-Stiftung vom 24.–27. Juni 1992 in Bad Homburg*, edited by Klaus Düwel, pp. 229–308. De Gruyter, Berlin/New York.
- Erlandsson, Kjell-Olof
2015 Nya inblickar i några öländska fornborgar. In *Grävda minnen. Från Skedemosse till Sandby borg*, edited by Kjell Arnell and Ludvig Papmehl-Dufay, pp. 61–71. Kalmar läns museum, Kalmar.
- Freij, Henry
1986 Viking ristade och Grimulv. Studier av runstenarnas spårprofiler och huggmärken. *Laborativ arkeologi* 1: 41–57.
1990 Tracing a Rune-Carver by Groove Profile and Cut-Marks. *Journal of Norwegian Archaeological Review* 23 (1–2): 150–2.
- Freund, Andrea
2020 *Runic Inscriptions in Orkney*. PhD dissertation, Institute for Northern Studies. University of Highland and Islands, Kirkwall.
- G (Gotlands runinskrifter 1–2)
1961–81 G followed by individual signum, In *Sveriges Runinskrifter* 11–2, by S. B. F. Jansson, E. Wessén and E. Svärdström. Almqvist & Wiksell international, Stockholm.
Individual signums over 222 are published in *Gotlands runinskrifter* 3, by H. Gustavson & Th. Snædal, [<https://www.raa.se/kulturarv/runor-och-runstenar/digitala-sveriges-runinskrifter>], last accessed 15.06.21.
- Grimm, Oliver & Pesch, Alexandra
2015 Themen und Leitfragen, Ergebnisse und Syntheseansätze. In *Archäologie und Runen: Fallstudien zu Inschriften im älteren Futhark*, Schriften des Archäologischen Landesmuseums 11, edited by Oliver Grimm and Alexandra Pesch, pp. 15–24. Wachholtz, Kiel.
- Grünzweig, Friedrich E
2004 *Runeninschriften auf Waffen. Inschriften vom 2. Jahrhundert n. Chr. bis ins Hochmittelalter*. Wiener Studien zur Skandinavistik 11. Edition Praesens, Wien.
- Gräslund, Anne-Sofie
2006 Dating the Swedish Viking-Age runestones on stylistic grounds. In *Runes and their secrets: studies in runology*, edited by Marie Stoklund, Michael Lerche Nielsen, Bente Holmberg and Gillian Fellows-Jensen, pp. 117–39. Museum Tusculanum Press, Copenhagen.
2016 Review of *Danmarks runesten: En fortælling*, by Lisbeth M. Imer and Roberto Fortuna (Copenhagen 2016). *Futhark*, Volume 7: 181–5. [<https://doi.org/10.33063/issn/1892-0950>] last accessed 15.05.21.
- Gustavson, Helmer
1991 *Runstenar i Vallentuna*. Cewe-förlag, Bjästa.

- 2001 Krigarens runor. In *Birkas krigare*, edited by Michael Olausson, pp. 35–8. Arkeologiska forskningslaboratoriet, Stockholms universitet, Stockholm.
- 2007 Omvikt runbleck i bly. In *Borgholms slott – bebyggelse från järnålder och medeltid*. UV Öst, Rapport 2006: 42, edited by Magnus Stibéus, pp. 204–5. Riksantikvarieämbetet, Linköping.
- 2009 Runes as a mark of status. In *The martial society: aspects of warriors, fortifications and social change in Scandinavia*, edited by Lena Holmquist and Michael Olausson, pp. 117–24. Archaeological Research Laboratory, Stockholm University, Stockholm.
- Hallencreutz, Carl Fredrik
- 1981 Der Heiligenkönig und die Christianisierung Gotlands. In *St. Olav, seine Zeit und sein Kult*, Visby-symposiet för historiska vetenskaper 6: 1979, Acta Visbyensia 6, edited by Gunnar Svahnström, pp. 69–84. Gotlands fornsal, Visby.
- Hedenstierna-Jonson, Charlotte
- 2006 *The Birka warrior: the material culture of a martial society*. Theses and papers in scientific archaeology 8. Stockholms universitet, Stockholm.
- 2010 I en skrivkunnig miljö – om skriftkultur mellan vikingatid och medeltid (950–1150 e.Kr.). *Situne Dei* 2006: 175–81.
- Holmbäck, Åke and Elias Wessén
- 1943 *Svenska landskapslagar Ser. 4 Skånelagen och Gotalagen*. Geber, Stockholm.
- Holmquist, Lena
- 2016 Birka's defence works and harbour – linking one recently ended and one newly begun research project. In *New aspects on Viking-age urbanism c. AD 750–1100: proceedings of the the international symposium at the Swedish History Museum, April 17–20th 2013*, Theses and papers in archaeology. B 12, edited by Lena Holmquist, Sven Kalmring and Charlotte Hedenstierna-Jonson, pp. 35–46. Stockholm University, Stockholm.
- Holmquist Olausson, Lena
- 2001 Birkas befästningsverk – resultat från de senaste årens utgrävningar. In *Birkas krigare*, edited by Michael Olausson, pp. 9–15. Arkeologiska forskningslaboratoriet. Stockholms universitet, Stockholm.
- Højgaard Holm, Lilliane
- 2014 De bornholmske runesten og deres inskrifter. *Bornholmske Samlinger* IV (8): 260–99.
- Ilkjær, Jørgen
- 1990 *Illerup Ådal 1. Die Lanzen und Speere. Textband*. Jysk Arkæologisk Selskab, Aarhus University Press.
- 1991 Mosefundene i perspektiv. In *Samfundsorganisation og regional variation: Norden i romersk jernalder og folkevandringstid: beretning fra 1. Nordiske jernaldersymposium på Sandbjerg Slot 11–15 april 1989*, edited by Charlotte Fabech and Jytte Ringtved, pp. 277–281. Jysk Arkæologisk Selskab, Højbjerg.
- Imer, Lisbeth M
- 2007 *Runer og runeindskrifter – kronologi, kontekst og funktion i Skandinaviens jernalder og vikingetid*. PhD-dissertation. Det Humanistiske Fakultet, Københavns Universitet, København.
- 2015 The Danish runestones – when and where? *Danish Journal of Archaeology* 4: 164–74. [<https://doi.org/10.1080/21662282.2015.1104905>], last accessed 15.06.21.
- Jacobsen, Lis, and Erik Moltke
- 1942 *Danmarks runeindskrifter: Text*. Munksgaard, København.
- Jansson, Sven B. F
- 1945 Gotlands runinskrifter. In *Boken om Gotland: minnesskrift med anledning av Gotlands återförening med Sverige genom freden i Brömsebro den 13 augusti 1645 D. 1 Gotlands historia fram till år 1645*, edited by Mårten Stenberger, pp. 138–52. AB Sylve Norrby's bokhandel, Visby.
- 1987 *Runes in Sweden*. Translated by Peter Foote. New rev. ed. Royal Academy of Letters, History and Antiquities. Swedish National Heritage Board. Gidlund, Stockholm.
- Jesch, Judith
- 2001 *Ships and men in the late Viking Age: the vocabulary of runic inscriptions and skaldic verse*. Boydell Press, Woodbridge.

- 2005 Memorials in speech and writing. *Hikuin* 32: 95–104.
- 2009 Constructing the warrior ideal in the Late Viking Age. In *The martial society: aspects of warriors, fortifications and social change in Scandinavia*, edited by Lena Holmquist and Michael Olausson, pp. 71–7. Archaeological Research Laboratory, Stockholm University, Stockholm.
- 2010 The warrior ideal in the Late Viking Age. In *The Viking Age: Ireland and the West. Papers from the Proceedings of the fifteenth Viking Congress, Cork, 18–27 August 2005*, edited by John Sheehan and Donnchadh Ó Corráin, pp. 165–73. Four Courts Press, Dublin.
- 2015 *The Viking diaspora*. Routledge, London.
- Kitzler Åhfeldt, Laila
- 2002 *Work and Worship: Laser Scanner Analysis of Viking Age Runestones*. Theses and Papers in Scientific Archaeology B: 9. Stockholm University, Stockholm.
- 2012 Carving technique and runic literacy. In *Epigraphic literacy and Christian identity: modes of written discourse in the newly Christian European North*, Utrecht studies in medieval literacy 4, edited by Kristel Zilmer and Judith Jesch, pp. 63–97. Brepols, Turnhout.
- 2019 a Rune carvers traversing Austmarr. In *Contacts and Networks in the Baltic Sea Region: Austmarr as a Northern mare nostrum, ca. 500–1500 CE*, Crossing boundaries 11, edited by Maths Bertell, Frog and Kendra Willson, pp. 91–115. Amsterdam University Press, Amsterdam.
- 2019 b Provenancing Rune Carvers on Bornholm through 3D-Scanning and Multivariate Statistics of the Carving Technique. *European Journal of Archaeology* 23 (1): 82–104. [<https://doi.org/10.1017/ea.2019.37>], last accessed 15.06.21.
- 2020 Islanders' attitudes to runic script – personal objects with runic inscriptions on Öland, Gotland and Bornholm. Relations and runes. In *Relations and Runes: The Baltic Islands and Their Interactions During the Late Iron Age and Early Middle Ages*, edited by Laila Kitzler Åhfeldt, Charlotte Hedenstierna-Jonson, Per Widerström, and Ben Raffield, pp. 151–61. Riksantikvarieämbetet, Visby.
- Kitzler Åhfeldt, Laila, and Lisbeth M. Imer
- 2019 Rune Carvers and Sponsor Families on Bornholm. *Danish Journal of Archaeology* 8: 1–21. [<https://tidsskrift.dk/dja/article/view/113226/165528>] last accessed 23.06.21.
- Knirk, James
- 1999 Runer i Hagia Sofia i Istanbul. *Nytt om Runer* 14: 26–7.
- Krakow, Annett
- 2021 Olof Erikssons dödsår och dateringen av Ingvarståget. *Fornvännen* 116: 101–113.
- Kristensen, Marius
- 1935 En Opkaldelsesskik på svenske og bornholmske Runestene. *Danske Studier* 1935: 150–6.
- Källström, Magnus
- 2016 Byzantium reflected in the runic inscriptions of Scandinavia. In *Byzantium and the Viking world*, *Studia Byzantina Upsaliensia* 16, edited by Fedir Androshchuk, Jonathan Shepard, and Monica White, pp. 169–86. Acta Universitatis Upsaliensis, Uppsala.
- Larsson, Mats G
- 1983 Vart för Ingvar den vittfarne? *Fornvännen* 78: 95–104.
- 1989 Nyfunna runor i Hagia Sofia. *Fornvännen* 84: 12–4.
- 1990 *Runstenar och utlandsfärder: aspekter på det senvikingatida samhället med utgångspunkt i de fasta fornlämningarna*. Acta archaeologica Lundensia. Series in 8o, 18. Almqvist & Wiksell International, Stockholm.
- Lerche Nielsen, Michael
- 1997 *Vikingetidens personnavne i Danmark: belyst gennem runeindskrifternes personnavne og stednavne på torp sammensat med personnavneforled*. PhD-dissertation. Institut for Navneforskning. University of Copenhagen, Copenhagen.
- 2014 Runic Inscriptions Reflecting Linguistic Contacts between West Slav Lands and Southern Scandinavia. *Scripta Islandica* 65: 153–72.
- Lihammer, Anne
- 2007 *Bortom riksbildningen: Människor, landskap och makt i sydöstra Skandinavien*. Lund Studies in Historical Archaeology 7. Institutionen för arkeologi och antikens historia. Lunds universitet, Lund.

- Ljung, Cecilia
 2015 Early Christian Grave Monuments and the Eleventh-Century Context of the Monument Descriptor *hvalf. Futhark* 5: 151–69.
 2016 *Under runristad håll: Tidigkristna gravmonument i 1000-talets Sverige* (vol. 1–2). Stockholm Studies in Archaeology 67: 1–2. Stockholms universitet, Stockholm.
- Martin, Max
 2004 Kontinentalgermanische Runeninschriften und “alamannische Runenprovinz” aus archäologischer Sicht. In *Alemannien und der Norden. Internationales Symposium vom 18.-20. Oktober 2001 in Zürich*, edited by Hans-Peter Naumann, pp. 165–212. De Gruyter, Berlin/New York.
- Mel’nikova, Elena A
 2016 A New Runic Inscription from Hagia Sophia Cathedral in Istanbul. *Futhark* 7: 101–10.
- Moltke, Erik
 1934 Vester Marie-stenen VI og lidt om svensk Indflydelse på bornholmske Runestene. *Danske studier* 1934: 9–20.
 1976 *Runerne i Danmark og deres oprindelse. 1. opl.* Forum, København.
 1985 *Runes and their origin: Denmark and elsewhere*. Nationalmuseets forlag, Copenhagen.
- Nordén, Arthur
 1937 Magiska runinskrifter. *Arkiv för nordisk filologi* 53: 147–89.
- Olsen, Magnus
 1906 De skaanske og bornholmske runestene. *Danske studier* 1906: 20–39.
- Pålsson, Hermann, and Paul Edwards (editors)
 1989 *Vikings in Russia: Yngvar’s saga and Eymund’s saga*. Edinburgh univ. press, Edinburgh.
- Pereswetoff-Morath, Sofia
 2019 *Viking-Age Runic Plates: Readings and Interpretations*. Translated by Mindy MacLeod. Acta academiae regiae Gustavi Adolphi 155/ Runrön 21. Kungl. Gustav Adolfs akademien för svensk folkkultur/ Institutionen för nordiska språk, Uppsala universitet, Uppsala.
- Randsborg, Klavs
 1980 *The Viking Age in Denmark: The Formation of a State*. St. Martin’s Press, New York.
- Rau, Andreas
 2015 Archäologische Forschungen zu den Opferungen von Heeresausrüstungen und Herkunftsbestimmung von Funden mit besonderem Hinblick auf runenbeschriebene Objekte. In *Archäologie und Runen: Fallstudien zu Inschriften im älteren Futhark*, edited by Oliver Grimm and Alexandra Pesch, pp. 29–43. Schriften des Archäologischen Landesmuseums 11, Schleswig.
- Różycki, Łukasz
 2014 Description de l’Ukraine in light of De Administrando Imperio: Two Accounts of a Journey along the Dnieper. *Byzantinoslavica* 72 (1–2): 122–35.
- RuneS (Runische Schriftlichkeit in den germanischen Sprachen)
 Datenbank. Akademie der Wissenschaften zu Göttingen [<https://www.runesdb.de>], last accessed 22.12.20.
- Rydh, Hanna
 1952 Kring en vikingatida spjutspets med runinskrift. In *Runer og rids. Festskrift til Lis Jacobsen. 29 januar 1952*, pp. 27–32. Rosenkilde og Bagger, Copenhagen.
- SRD (Samnordisk runtextdatabas)
 2020 Institutionen för nordiska språk, Uppsala universitet. [<http://www.nordiska.uu.se/forskn/samnord.htm>] last accessed 01.02.20.
- SRI (Sveriges runinskrifter)
 1900– Various authors. Kungl. Vitterhets Historie och Antikvitets Akademien. 14 vols. to date. Almqvist & Wiksell international, Stockholm. Also available at: [<https://www.raa.se/kulturarv/runor-och-runstenar/digitala-sveriges-runinskrifter/digitala-sveriges-runinskrifter-publicerade-volymer/>] last accessed 15.06.21.
- Shepard, Jonathan
 1984–5 Yngvar’s expedition to the East and a Russian Inscribed Stone Cross. *Saga-Book* 21 (3–4): 222–92.

- Snædal, Thorgunn
 2002 *Medan världen vakar. Studier i de gotländska runinskrifternas språk och kronologi*. Runrön 16. Uppsala universitet, Uppsala.
 2016 Runes from Byzantium: reconsidering the Piraeus lion. In *Byzantium and the Viking world*, Studia Byzantina Upsaliensia 16, edited by Fedir Androshchuk, Jonathan Shepard and Monica White, pp. 187–214. Acta Universitatis Upsaliensis, Uppsala.
- Snædal, Thorgunn, Marie Stoklund and Marit Åhlén
 1988 Runfynd 1987. *Fornvännen* 83: 234–50.
- Spurkland, Terje
 2005 *Norwegian runes and runic inscriptions*. Translated by Betsy van der Hoek. The Boydell Press, Woodbridge.
- Stibéus, Magnus
 2015 Borgholms slott – några medeltida aktörer ger sig till känna. In *Grävda minnen. Från Skedemosse till Sandby borg. Årsboken Kalmar län 2012–2015*, Meddelande från Kalmar läns hembygdsförbund och Stiftelsen Kalmar läns museum 95, edited by Kjell Arnell and Ludvig Papehl-Dufay, pp. 205–23. Länsstyrelsen Kalmar län, Kalmar läns hembygdsförbund and Stiftelsen Kalmar läns museum, Kalmar.
- Strid, Jan Paul
 1997 Ingvar den vittfarnes saga. Från fornisländskan av Jan Paul Strid. In *Vikings i österled*, edited by Mats G. Larsson, pp. 101–19. Atlantis, Stockholm.
- Svärdström, Elisabeth
 1958 Västergötlands runinskrifter. In *Sveriges runinskrifter* 5. Almqvist & Wiksell international, Stockholm.
 1970 Runorna i Hagia Sofia. *Fornvännen* 65: 247–9.
- Sö (Södermanlands runinskrifter)
 1924–36 Sö followed by individual signum. In *Sveriges runinskrifter* 3, by E. Brate, & E. Wessén, Almqvist & Wiksell international, Stockholm.
- U (Upplands runinskrifter)
 1940–58 U followed by individual signum. In *Sveriges runinskrifter* 6–9, by E. Wessén, & S. B. F. Jansson. Almqvist & Wiksell international, Stockholm.
- Vg (Västergötlands runinskrifter)
 1958 Vg followed by individual signum. In *Sveriges runinskrifter* 5, by Hugo Jungner och Elisabeth Svärdström. Almqvist & Wiksell international, Stockholm.
- Vandkilde, Helle
 2020 Warfare in theoretical and comparative perspective. Paper presented at Weaving War: New perspectives on violence and society in the Viking Age, Oslo.
- Zachrisson, Torun
 2020 Öland during the Late Iron Age and Early Middle Ages (550–1200 AD): a donkey between two strips of hay. In *Relations and Runes – the Baltic Islands and their interactions during the Late Iron Age and Early Middle Ages*, edited by Laila Kitzler Åhfeldt, Charlotte Hedenstierna-Jonson, Per Widerström, and Ben Raffield, pp. 107–26. Riksantikvarieämbetet, Stockholm/Visby.
- Zilmer, Kristel
 2006 The representation of waterborne traffic in Old Norse narratives: the case of the Baltic Sea area. *Viking and medieval Scandinavia* 2: 239–74.
- Åhlén, Marit
 2006 En nordlig Ingvarssten?: den lilla runstenen vid Attmars kyrka. In *Namn och runor: Uppsalastudier i onomastik och runologi till Lennart Elmevik på 70-årsdagen 2 februari 2006*, Namn och samhälle 17, edited by Lena Peterson, Svante Strandberg and Henrik Williams, pp. 283–88. Uppsala universitet, Uppsala.
- Öl (Ölands runinskrifter)
 1900–06 Öl followed by individual signum. In *Sveriges runinskrifter* 1, by S. Söderberg & E. Brate. Almqvist & Wiksell international, Stockholm.