Gothemshammar
– a Late Bronze Age coastal rampart on Gotland

By Paul Wallin and Helene Martinsson-Wallin

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This paper reports the results of a project aiming to use survey and excavation of the Gothemshammar rampart in a digital reconstruction to understand the site in its original landscape setting. Excavations uncovered internal construction details and dateable materials from domestic animals and charcoal. Fifteen AMS dates indicate that the rampart was built and used in the Late Bronze Age, c. 950–700 cal AD.

Its northern end is situated at a steep scarp towards the current sea shore, and the southern end is in an open slightly sloping terrain, currently about a kilometre from the sea. LiDAR data and an up-to-date shoreline displacement model indicate that the seashore was about 10 m higher when the rampart was built and used than it is today. The landscape reconstruction shows that the rampart originally cut off a headland on an islet that was strategically located at the mouth of an inland water system.

To further understand the site's Bronze Age context we made a spatial analysis of features tied to the same time frame, including other monumental structures (stone ships, burial cairns, other ramparts/enclosures) and metalwork hoards. It became evident that all kinds of monuments were mainly located close to the sea shore on capes and islets. We could also see that the monuments, especially the stone ships, were mostly on the north shore of the ancient waterway and that its entry/exit where Gothemshammar is situated served as an important control point for travel into Gotland as well as overseas.

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Gothemshammar is a forested peninsula near the mouth of the Gothem River on northeast Gotland. The river mouth is a former bay and estuary where once an inland lake and river system had its outlet (fig. 1). Due to shoreline displacement and modern wetland drainage this water system (part of the major bog Lina myr) has been transformed from shallow lakes, fens and streams into farmland.

On the peninsula, a kilometre east-south-east from the river mouth, is an ancient rampart. It consists of a 500-metre cavity wall, about four metres wide, with two roughly metre-high dry masonry walls on either side of an earth and stone bank. In this paper, we provide new evidence for the date and use of this monument. We also explore its temporal and spatial relationship to other types of monument in the vicinity. Our excavation data and dates for the site together with a new model of the shoreline displacement in the area, using LiDAR data, offer a foundation for a reconstruction of the site and the surround-

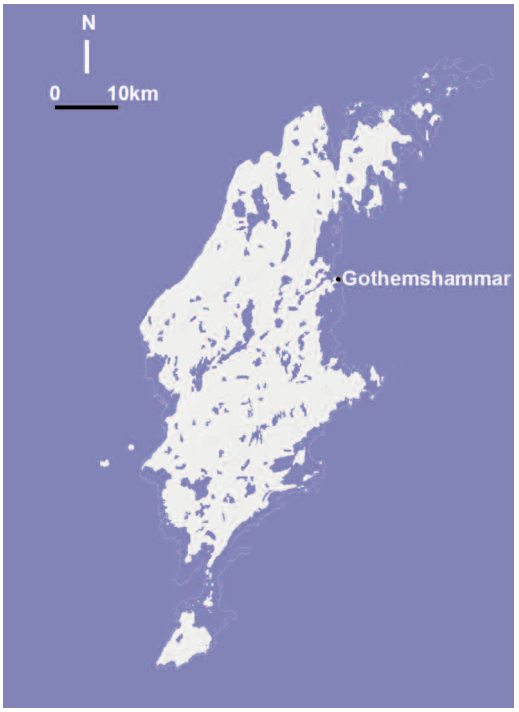

Fig. 1. Gotland with the investigation area indicated.

ing landscape as it appeared when it was built and used.

It has previously been suggested that the structure dates from the Iron Age, based on the assumption that rampart-like structures served defensive purposes and were probably built in times of social unrest in the Late Iron Age, especially the Migration Period and onwards after AD 400. An alternative hypothesis coined by Appelgren & Engström (1989b) is that the site is a causewayed enclosure from the Middle Neolithic. They tested the idea by excavations in the northern third of the rampart. Under the soil and gravel fill between the two drystone walls they found an interior stone foundation (Engström 1982; Appelgren & Engström 1989a, p. 14). They suggested that the stone structure had supported a wooden palisade along the rampart's eastern face. They also reported 22 ditches or depressions along western face, but there were no conclusive dates from their investigation (Appelgren & Engström 1989a; 1989b). The north end of the rampart is at a scarp descending into the sea, and the south end is in a gently sloping forested landscape. Appelgren & Engström suggested that the south end was also originally at the seashore and that thus the structure crossed the entire peninsula or headland. They estimated the south end's level to about 12 m a.s.l. This corresponds to the level of the nearby Middle Neolithic site at Västerbjers. On this basis they suggested that the rampart is Neolithic in date (Appelgren & Engström 1989b).

Gotland's landscape history

Shoreline displacement has had a significant effect on landscapes around the Baltic basin during the Holocene era. After the last Ice Age, the first part of Gotland rose above the sea around 11,400 cal BC. The shoreline displacement has not been a consistent, continuous process. Regressions and transgressions have occurred, causing Gotland's land mass to fluctuate, especially during the Neolithic. The island's topography is rather flat, with a highest elevation currently at 83 m a.s.l. The land uplift is more pronounced in the north, and the island tilts from west to east. The east coast is low and flat, and on the west coast are stretches of raised limestone scarp. Minor changes in the shoreline displacement have created significant landscape changes especially on the east coast. A research project on the large Bronze Age cairn environments by co-author Martinsson-Wallin (2010) showed that the Geological Survey of Sweden's model of the shoreline displacement is not detailed enough to understand the movements of the shoreline in landscapes where many ancient monuments were built and used. The island was once also covered by many shallow lakes, fens and streams, most of which were channelled and drained in the late 19th century to reclaim arable land (e.g. Björkander 2012 regarding Lina myr). In order to tease apart and understand the relationships of various past built and natural environments detailed dating of archaeological sites and the shoreline displacement alike are needed. With this in mind, we began archaeological excavations at Gothemshammar (Wallin et al. 2011).

Fig. 2. The main trench was 17 m long and 2 m wide. A 2 x 2 m extension was placed on the west side on the terrace following the enclosing wall in a northerly direction. Also included is the entire rampart and its system of ditches.
Drawing P. Wehlin.

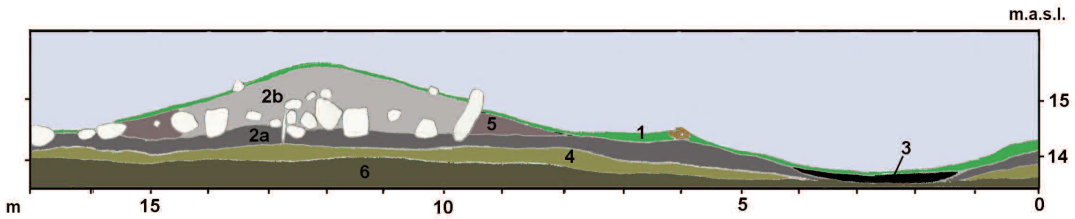

Fig. 3. Main trench, southern section. Layer 1: dark brown loamy topsoil. Layer 2a: dark brown sandy soil mixed with gravel. Layer 2b: grey brown sandy gravel (rampart fill). Layer 3: moist dark brown/black loamy soil with pieces of charcoal. Layer 4: sterile greyish brown sandy gravel with seashells. Layer 5: beige-brown sand mixed with limestone gravel. Layer 6: grey limestone gravel and lime stone bedrock.
Drawing by P. Wallin.

Excavation results

We cut an east-west trench (fig. 2) through the rampart, which included the western side terrace and one of the depressions or ditches noted in the 1980s (Wallin et al. 2011). "Causeways" of soil and gravel separate the depressions along the western side (fig. 3).

The soil that made up the fill between the drystone walls consisted of gravelly sand mixed with stones. This material probably derived from the depressions along the west side. In the fill were bones, mainly from domesticated animals. The fill also contained one pointed bone tool, a few pottery fragments, quartz flakes and Gotlandic flint flakes. Slightly off-centre, to the east, inside and under the fill, we uncovered a stone foundation made of stones in a row placed on top of each other (fig. 4ab). It corresponds to the structure reported by Appelgren & Engström (1989a). The design of this stone foundation strongly indicates that it served to anchor a c. 3–4 m high plank structure. In the excavated extension outside the rampart on the west side we found a few bone fragments and specks of charcoal.

We test-excavated three additional depressions or ditches, which gave similar results as in the main trench. We also excavated one of the dividing causeways which proved to consist of natural undisturbed sand and gravel. Phosphate tests in the area gave no conclusive results (Wallin et al. 2011, pp. 38–40). 23 metre squares excavated on the peninsula side of the rampart showed a few darker spots with specks of charcoal, but yielded no artefact finds.

Fig. 4 a). Stone foundation for a standing plank wall, about 90 cm wide at the base, made up of 20–40 cm stones in 2–3 layers. At the bottom of the feature were eight larger stones placed four on each side with their flat sides towards each other, with a 7 cm gap between them Photo P. Wallin.

b). South section indicating that the stone foundation continues into the section. A vertical limestone slab and some greystone boulders are seen slightly off-centre to the east. Photo P. Wallin.

Dating the rampart

A detailed radiocarbon analysis of bones and charcoal from the excavation has been carried out (Wallin et al. 2011, pp. 33–35). The bones derive mainly from cattle, sheep/goat and pig. Three samples from each species from different find contexts were selected, as well as five charcoal samples from different contexts. The single seal bone found was also submitted for analysis. All dates have been calibrated at 2 sigma (tab. 1).

The sheep/goat samples range in date from 1130–540 cal BC, the pig samples from 980–770 cal BC, and the cattle samples from 920–480 cal BC. The seal bone, with a marine reservoir correction for the Baltic (a subtraction of 100 years; Wallin & Martinsson-Wallin 2016, p. 6) gave a date in the range 810–540 cal BC. A charcoal sample from under the stones gave a date in the range 910–800 cal BC. We conclude that the rampart was built some time between 900 and 750 cal BC, that is, in the LBA. Similar structures on Gotland at Vasstäde and Ljugarn have also given indications of Bronze Age dates (Bendegard 1970; Manneke 1971; 1973).

Three charcoal samples, one from the depression, one from next to the rampart's western face and one in the fill close to the drystone wall gave dates in 1410–1660 cal AD, and one charcoal sample from a test pit 300 m east of the trench gave a date in 1650–1820 cal AD (tab. 1). These Medieval or Early Modern dates are in line with the results of thermoluminescence analyses of burnt stones by Appelgren & Engström (1989b). They probably indicate forest fires.

Detailed mapping of the structure established that the lowest part of the rampart, that is the southern end, is located at 10.6 m a.s.l. This is 1.4 m below the level that Appelgren & Engström estimated.

Landscape reconstruction

The LBA began c. 1100 cal BC and entailed significant changes in social and ritual practices tied to burials and monumental expression (Wehlin 2013, p. 184). Collective cemeteries with stone cists surrounded by concentric circles were probably closed and covered to form monumental cairns about this time (Martinsson-Wallin & Wehlin 2018). A new type of monument, the stone ship,

Lab no	Find context	Material	^{13}C	^{14}C age BP	Cal. 2 sigma
Ua-41062	Outside base of rampart E	Cattle	-22,5	2493±39	790–480 BC
Ua-41063	Fill inside rampart	Cattle	-21,2	2593±38	830–750 BC
Ua-41064	Outside base of rampart W	Cattle	-21,8	2704±39	920–800 BC
Ua-41065	Outside base of rampart E	Pig	-21,3	2703±37	920–800 BC
Ua-41066	Under fill inside rampart	Pig	-21,6	2637±39	900–770 BC
Ua-41067	Fill inside rampart	Pig	-22,3	2751±39	980–820 BC
Ua-41068	Under fill inside rampart	Sheep/Goat	-20,7	2540±40	800–540 BC
Ua-41069	Fill inside rampart	Seal	-15,4	2554±39	810–540 BC
Ua-41070	Outside base of rampart W	Charcoal	-24,2	459±36	AD 1410–1490
Ua-41071	Under fill inside rampart	Charcoal	-26,8	2685±38	910–800 BC
Ua-41072	Fill inside wall facing	Charcoal	-25,9	294±35	AD 1490–1660
Ua-41073	Ditch connected to main trench	Charcoal	-25,8	415±36	AD 1430–1630
Ua-41074	Test trench #22, 300 m E	Charcoal	-26,6	173±38	AD 1650–1820
LuS-8684	Under fill inside rampart	Sheep/Goat	No value	2850±50	1130–900 BC
LuS-8684	Fill inside rampart	Sheep/Goat	No value	2660±50	920–780 BC

Tab. 1. Radiocarbon dates for the Gothemshammar rampart. Ua (Tandem Laboratory at Uppsala University), LuS (Radiocarbon Dating Laboratory at Lund University).

Fig. 5. Reconstructed Late Bronze Age landscape around Gothemshammar with the rampart indicated. Map A. Sandelin.

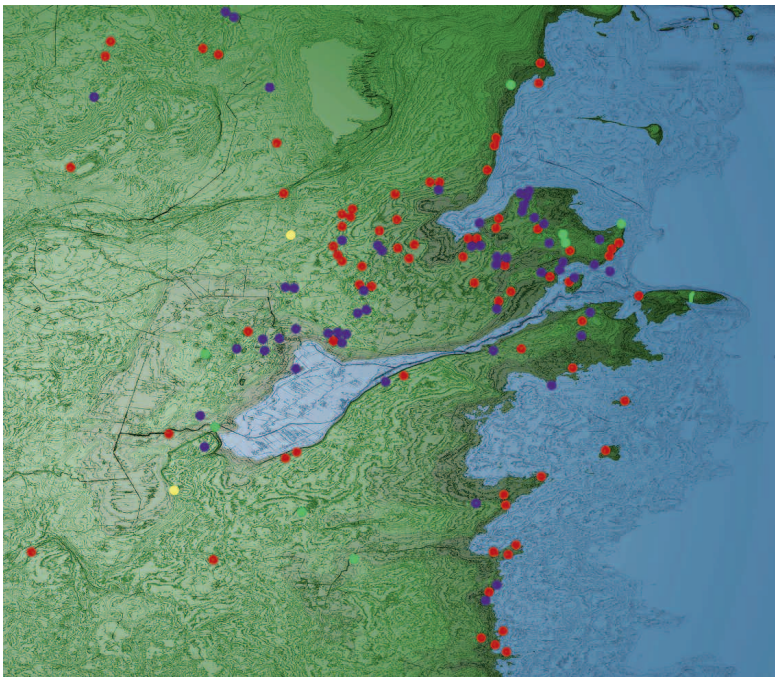

Fig. 6. Reconstruction of the surrounding landscape with the rampart on the island. Red dots are cairns, blue dots are stone ships, green dots are other circular stone enclosures and yellow dots are bronze hoards. Map A. Sandelin & P. Wallin.

which is tied to cremation practices and also served as a ritual site, appeared (Wehlin 2013). A monumentalisation of burial and ritual sites and a shift from inhumation to cremation took place (Price 2015, pp. 220–223).

We suggest that the shoreline in the LBA at the time of the rampart's erection and use be set at 10.6 m a.s.l. In combination with other near-shore archaeological sites in the vicinity that are securely dated, the LBA shoreline provided a foundation for a landscape reconstruction using LiDAR data (elevation measurements). A detailed LBA landscape emerged, consisting of bays, headlands and small islands near the shore. A short animated film by Sandelin Animation AB (available on YouTube; Sandelin 2015) shows how the landscape around Gothemshammar has changed from the LBA until today. Prior to the landscape reconstruction, we assumed that the rampart delimited a headland. Instead the detailed reconstruction shows that the structure was initially built across an islet and that the rampart excluded its east, seaward-facing part. The rampart's south endpoint appears to have been a good landing place for boats (fig. 5).

To understand the use of the landscape and the practices tied to the building of the rampart, we plotted other monuments dated to the same time frame – large burial cairns, stone ships, hill forts and bronze hoards – on the reconstructed landscape (fig. 6). We selected only large cairns of 15–45 m diameter since many smaller cairns may belong to a later Iron Age setting. In the imme-diate surroundings of the Gothemshammar rampart, on the northwest side of the islet, there is one Bronze Age cairn. This monument faces the entrance to the Lina myr water system as well as the narrow strait that divided the islet from the mainland. The islet was a strategic location, and there are clusters of monuments on the north side of the bay and the water system. This waterway once continued into the centre of the island. It is also evident that almost all exposed headlands and islets along the coast had large cairns and stone ships (fig. 6, 8). At the most exposed point we find the Gothemshammar rampart, at the south-east entrance to this vast system of waterways.

The results from Wallin et alii's (2011) and Appelgren & Engström's (1989a) excavations ser-

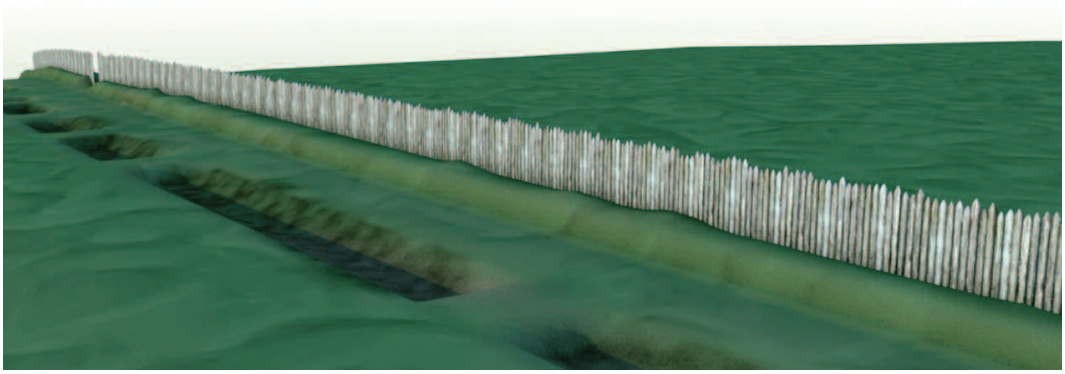

Fig. 7. Reconstruction of the rampart and associated ditches. View from the south-west. By A. Sandelin.

ved as a base to make a digital reconstruction of what the rampart may have looked like when it was built and used (fig. 7). The stone foundation inside the cavity wall seems to have supported wooden planks/stakes forming a palisade. One metre of gravel and sand covered this fairly solid stone foundation, and thus we suggest that the palisade may have been as high as 3–4 m, facing east, towards the sea. The west side including a terrace and ditches is probably the interior side of the rampart (fig. 7). It is also evident that the rampart had three openings, allowing people to pass in and out.

Parallels and wider context

Gotland has several prehistoric ramparts and enclosures: most are interpreted as Iron Age fortifications. The excavation of the aforementioned circular stone enclosure at Vasstäde in Hablingbo parish, southern Gotland, exposed a stone foundation that supported a palisade with the lower parts of wooden uprights surviving in situ. A sample subjected to radiocarbon dating instead showed a temporal range of c. 750–160 cal BC, in the LBA or Pre-Roman Iron Age (Manneke 1971). In 1996 an enclosure or rampart with ditches at Lake Tingstäde träsk was investigated, and a charcoal sample from a structural timber was radio-

Fig. 8 a). A large stone cairn, Majsterrojr "Master's Cairn", located on the inlet to the Lina myr area. Note the south stone structure. Photo P. Wallin.

b). A stone ship setting called the grave of Tjelvar, a legendary figure from the High Medieval Guta Saga who brought light to the island, located c. 2 km north of Majsterrojr. Photo H. Martinsson-Wallin.

carbon dated to c. 1000–900 cal BC, the LBA (Manneke & Wennersten 1999). This site is on a ridge between Gotland's largest current lake and a former lake system (today Elinghem and Martebo bogs). This lake system formed an ancient waterway into the interior of the island in a northwesterly direction. Similarly to the location of Gothemshammar, the Tingstäde träsk site is strategically located and perhaps served as a place for trade and/or cult (Manneke & Wennersten 1999).

Another similar rampart or enclosure is Burgbacken in Ljugarn, located on a headland on the south-east coast. Activities within the enclosure have been radiocarbon dated to the Early Bronze Age (c. 1400–1200 cal BC) using two charcoal samples from hearths inside the enclosure. Another sample indicated a date in the LBA or PRIA (Wickman-Nydolf 2012; Wehlin 2013, p. 170). Wehlin (2013, p. 170 f) has also pointed to several other enclosed sites with possible Bronze Age dates. He mentions Baraberget (a hilltop site) in the Lina myr area with a stone cairn, 20 m across and surrounded by eight smaller cairns (p. 174). Besides the Vasstäde site in the south of Gotland, the enclosure at Havor in Hablingbo has also rendered Bronze Age dates (Manneke 1973). Additional enclosed sites that may have been built and used during the Bronze Age are found at Hällänge in Barlingbo, Burggattskogen in Tofta and Styrmansberget in Fröjel.

Around the Baltic Sea, several Bronze Age milieux with stone ships and cairns in the Åland archipelago to the north of Gotland are of interest in comparison to Gothemshammar. The Hummelmyrshägnaden site includes a rampart or enclosure made of stones. Strategically situated between wetland areas, it is also near the largest stone ship among the Åland isles and in the vicinity are Bronze Age cairns. Excavations inside the enclosure have revealed Bronze Age pottery and a Bronze Age razor (Wehlin 2013, p. 172).

In the Lake Mälaren region in eastern Sweden, several enclosures have been studied by Michael Olausson (1995). One interesting analogue to Gothemshammar is Predikstolen ("the Lectern") in Uppland. It is a 760 m long rampart dated to c. 1300–800 cal BC. Located by an ancient central waterway, Olausson (1995, p. 160–163) interprets it as a place where controlled trade took place. Some kilometres inland from Predikstolen is the great LBA barrow Hågahögen which was built on a Bronze Age island or headland (Olausson 1995, p. 125–133). Vistad is another enclosed site east of Lake Vättern in Östergötland. It is circular in shape and has been interpreted as a fortified settlement (Price 2015, p. 211). The structure dates from c. 900–500 cal BC, measures 140 m across and is located on a small hillock (Larsson 1993). A metre-deep trench with large stones formed the foundation for a log palisade. The excavators suggested that it might have been 4–5 m high. Five rectangular houses have been excavated inside (Larsson 1993; Price 2015, p. 211). In excavated hearths and cooking pits, bones of domestic animals were found, as well as pottery largely imported from the Lausitz region (Larsson & Hulthén 2004).

An enclosed site that has been ascribed a ritual function is found at Odensala Prästgård in the Lake Mälaren region. Dated to c. 1300–200 cal BC, it centred on a burial monument, and other burials were also found together with dispersed human and animal bones (Olausson 1995, pp. 59–76, 199–221).

Another type of enclosed site are the hilltop settlement (?) sites, which indicate long-standing or particularly intensive activity. Such sites are known from the Lausitz area near the southern Baltic Sea coast (Coles & Harding 1979), as well as farther south on the Continent. A well-known example is the wetland fortification at Biskupin in Poland, dated to around 700 cal BC (Kristiansen 1998b, pp. 295–307). Typically these sites are located in strategic places along river systems (Larsson 1993, pp. 85–103). Enclosed hilltop settlements are also common in the Baltic area, where many are found in Latvia on River Daugava. Bronze neck-ring moulds found at such sites on the Estonian island of Saaremaa indicate manufacture. Lang (2007, pp. 60–65) and Vasks (2010) interpret such sites as places for bronze craftsmanship included in trading networks with the Scandinavian area and the Continent. Several Gotlandic LBA hoards include such rings, and this can support the idea that Gotland was part of this network and that Gothemshammar might be one of the nodal trading and meeting places thanks to its location.

As indicated above there are several kinds of ramparts and enclosures from the Bronze Age. Together they express specific practices that demanded enclosed spaces. These sites are not just remnants of single events tied to certain areas: instead we can see the same phenomenon in the whole southern Baltic region. Some of the sites show extensive use, and other reflects temporary activities. Some sites include burials, and others bronze casting workshops. The enclosed sites may have had an array of functions, for defence and protection, as meeting places to exchange valuables, as well as ritual places for the dead. We suggest that the diversity of ramparts and enclosed spaces indicate a variety of actions by specialists including metal craftspeople handling bronze, traders managing the exchange of goods and priests or shamans dealing with the dead. Every site thus requires a contextual analysis of its environmental setting and its qualities, detectable by the practices tied to the place. In the case of the Gothemshammar rampart, this site is an exclusive place enclosed by the small island itself and divided by the rampart. This division provided two spaces or rooms, one on the headland towards the sea (the outside) and one on the other side directed towards the land (the inside). The location at the outlet of the Lina myr water system suggests it to have been a meeting place for controlled activities from visitors outside and inside Gotlandic society. We suggest that Gothemshammar was an important node in a trade network in the Baltic Sea area as well as an important local meeting place.

Discussion: monuments and people

Monuments and monumentality are linked to social complexity, hierarchical societies and associated practices (Renfrew 1983, p. 6; Trigger 1990, p. 125; Kristiansen 1998a; Clark & Martinsson-Wallin 2007). We suggest that monuments are expressions of social distinctions acted through habitus-driven traditions, collective as well as individually based, tied to expert and power relations (Bourdieu 1977, pp. 78–87; Broady 1991; Berggren & Nilsson-Stutz 2010).

Late Neolithic and LBA societies on Gotland were complex and cultivated the idea of constructing burial chambers (stone cists) for their dead. The cists were often used repeatedly for deposition of family or lineage members (Wallin 2010). The stone cists were initially covered with slabs and surrounded by concentric stone circles (Wehlin & Schönbäck 2012). These structures were not visible in the landscape, but with time some of the more important stone cists were covered by stones to form highly visible monumental cairns (Martinsson-Wallin & Wehlin 2018). This monumentalisation is linked to the transition from the Early to Late Bronze Age about 1100 cal BC. Some cairns were continuously used as burial and ritual sites in the LBA and beyond (Wehlin 2013; Martinsson-Wallin & Wehlin 2018).

We suggest that this monumentalisation was tied to the concept of memory as it operates in traditional societies, where memory is a spontaneous changeable practice (Nora 1989; Halbwachs 1992; Mills & Walker 2008). As long as the genealogies of the buried individuals could be traced and the memory was alive there was no need for specific actions other than the burial act itself. However, if there were several competing families in a limited area, things became complex and competitive. At a point in time when the memory-based expressions became vague, the active memory of a place and its tangible and intangible expressions transformed it into a memorial place, which was also an expression of social distinctions. We suggest that when stone cists were covered some people risked being forgotten depending on why the site was covered and by whom (Halbwachs 1992). Remembering and forgetting are two independent acts of memory work (Mills 2008, p. 81). These acts can lead to the obliteration of memory, but the covering-up can also lead to a selective mythologisation of genealogies and ancestors, which creates new memories that provide a high rank to the present leaders (Mills 2008, p. 82). The claim of a highly ranked genealogy gives a hierarchic distinction to the individual in control over the land and its surroundings, including significant communal works such as the Gothemshammar rampart (Wallin 2014).

In the area around Gothemshammar, there are some cairns of considerable size (c. 35–50 m in diameter). There is also a large number of c. 15–20 m cairns. We suggest that the relationship between larger and smaller cairns mirror a rela-

tionship between senior and junior branches within a lineage or family group (Martinsson-Wallin & Wallin 2014) since there is competition or cohesion between such family-based social units (Earle 1997; Clark & Martinsson-Wallin 2007). We can also see expressions of social distinctions in the cairn milieux (Martinsson-Wallin & Wallin 2018). We suggest that the senior branches controlled internal issues such as land and seascape use and the division of territories at land and sea, and that the senior leaders entrusted external contacts and bartering to the junior branches. The juniors were thus directly involved as trade experts, which were hazardous tasks. The high-ranked senior leaders handled and controlled the re-distribution of the valuables brought to Gotland by the juniors. We interpret the Gothemshammar rampart as a collective expression, built by the individuals buried in large cairns in the surrounding area but administrated by the individuals buried in the stone ships (Wehlin 2013, p. 71).

The 21 ditches along the western side of the rampart probably originated as a result of the building process, since the excavated gravel ended up as fill in the rampart. However, the ditches were visible with causeways between them, and periodically they would hold water, which is often important during ritual cleaning procedures (Wallin 1998, p. 25). The ditches were never backfilled, which suggests that they were respected and represented something of importance. One suggestion is that each ditch may have represented a family involved in constructing the rampart. If each family group in a competitive way built their part of the rampart, the building process may have been quite swift. The rampart at Gothemshammar is a monumental structure which resulted from a communal effort. It differs from monumental structures in the form of burial cairn milieus or the stone ships, which work on the individual-family-lineage-based scales.

Social as well as ritual distinctions were embedded into the landscape setting at the entrance-exit of an internal water-way and visualised in lineage burial monuments as well as the communal enclosure. The Gothemshammar rampart was used and monitored by individuals acting through the legitimacy of collective inherited practice-based rules (Wallin 2014).

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