

Rotary querns and bread – A social history of Iron Age Sweden

TORUN ZACHRISSON

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Rotary querns were introduced at the same time as the oldest known bread appeared in the Nordic countries, ca. AD 200. Since the rotary querns were very efficient, bread could have been baked and consumed in most social milieus. But that was not the case. The social acceptance for bread in Iron Age Sweden seems to have been slow. The rotary querns first appear at elite settlements, so-called central places, where the cultic dimensions were marked. Kvarnberget in Sala, Västmanland is a millstone quarry mountain in the region north of lake *Mälaren*, known from a written source from AD 1490. The quarry was located on the grounds of a lost settlement called Onsala, later split into the villages Ösby and Åby. Onsala might be interpreted as the god Odin's hall or *sal*. The lost Onsala is situated next to a settlement called Hov, a place name that can be interpreted as a settlement where cultic rituals took place. A quarry mountain on the grounds of a Late Iron Age settlement and bearing a name connected with the god Odin is an unexpected combination in this region of Sweden, where the plains transition into the wooded area Bergslagen, renowned for its production of silver, copper, iron and other minerals. Kvarnberget is poorly known but can contribute to a general discussion on the social contexts for the production sites for rotary querns, as well as reflect on the milieus where bread was eaten.

Torun Zachrisson, Department of Archaeology and Classical Studies, Stockholm University, SE-106 91 Stockholm, Sweden. Phone: (+46) 8164229. E-mail: torun.zachrisson @ ark.su.se

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Introduction

Rotary querns were a novelty when introduced in Sweden and Norway in the Roman Iron Age. This type of quern seems to appear at the same time as the oldest known bread, recently dated to AD 200 (Bergström 2007:33, see Petersen & Widgren 1998:394). Bread baking and rotary quern technology appear to have been intimately linked when they reached the Nordic region. They were part of the same cultural package probably transmitted by men returning home after having been in military service in the Roman auxiliary troops close to the *Limes* (Ek 1963, Zachrisson 2004a:358–361, 2004b:153–155, see also Bergström 2007:69).

The rotary querns were very efficient and could be manufactured from local rocks. Nevertheless, the spread of rotary querns in Nordic Iron Age society seems to have been very slow. This gradual acceptance of the new technology may seem peculiar to us today, as we tend to assume that bread quickly became an everyday food. However, bread was eaten in special places and on special occasions and seems to have been

associated with the gods. This is illustrated by the fact that this type of quern together with carbonised bread first appears in elite milieus, i.e. central places in Sweden with marked cultic dimensions, such as on Helgö – the Holy Island – in Lake Mälaren or at Uppåkra in Scania, with its long-lived ceremonial cultic hall building erected ca. AD 200 and which persisted for 800 years – an Old Norse equivalent to the early basilicas of the Continent (dates in this paper are calibrated). Some hundred years later, rotary querns appear at Migration Period hill forts (AD 400–550) and at the same time in other types of elevated elite settlements. Rotary querns only became more common during the Viking Age in Sweden (Pedersen & Widgren 1998:394, Zachrisson 2004a, 2004b, Bergström 2007, for Uppåkra in general, see also Larsson & Söderberg 2012).

Background

Millstones are a group of finds of prehistoric and medieval Sweden that have not always received much

attention. The rotary querns and grindstones and their provenances were first thoroughly discussed by medieval archaeologist Magnus Elfwendahl and geologist Peter Kresten (1993). They show that, in the medieval town of Uppsala and in a number of other archaeological contexts from Middle and Eastern Sweden from the Viking Age (AD 800–1100) and Middle Ages (AD 1100–1520), the rotary querns originated from the millstone quarry in Malung in Dalarna (see Pettersson 1977, 1981, Kresten & Elfwendahl 1994, Kresten *et al.* 1996, Elfwendahl 2001). Medieval archaeologist Peter Carelli, in cooperation with Peter Kresten, divided parts of Sweden into regions based on the provenances of the rotary querns. They showed that Viking Age and medieval Denmark, including Southern and Southwestern Sweden, was provided with millstones from Hyllestad in Åfjorden, Norway (Fig. 1). Inner and Western Sweden were locally supplied with millstone from quarries in Lugnås, Västergötland, while the whole of Central and Eastern Sweden was an area provided with millstones from the quarries in Malung in Dalarna, northern Central Sweden (Carelli & Kresten 1997:Fig. 18). A rotary quern placed at a sacrificial site in Hassle in Glanshammar in Närke, dated to the 7th and 8th centuries (cf. Annunswær 2007:36–38), may be one of the oldest known contexts for the Malung querns.

In Norway, there were large suppliers of millstone, like Hyllestad, where millstones were exported over wide areas, while other millstone quarries had more regional importance (Baug 2007:219, 2013). Interestingly, mining at Hyllestad and in Malung in Sweden can be dated back archaeologically to the Merovingian period, at latest ca. AD 800 (cf. Elfwendahl 2001:374–376). This is consistent with other kinds of proto-industrial productions that start during the 7th and 8th centuries, such as the large-scale comb production indicated by the number of dated pitfalls for elk in northern Sweden or by the large tar pits placed on the commons in the woodlands of Northern Uppland, Sweden, replacing an earlier production that was linked to most farms in the Early Iron Age settlements in the area around the lake Mälaren (cf. pitfalls for elk see Ramqvist 2007:170–173, tar production see Hennius 2005, 2007, Hjulström *et al.* 2006, Svensson 2007).

The millstone quarries listed in the Swedish National Heritage Board's archaeological register comprise 17 sites distributed from Scania in the south to Laponia in the north. Six of these quarries also contain unfinished stones of different sizes: rotary quern sizes less than 0.3–0.5 m in diameter (Fjärås and Veddige in

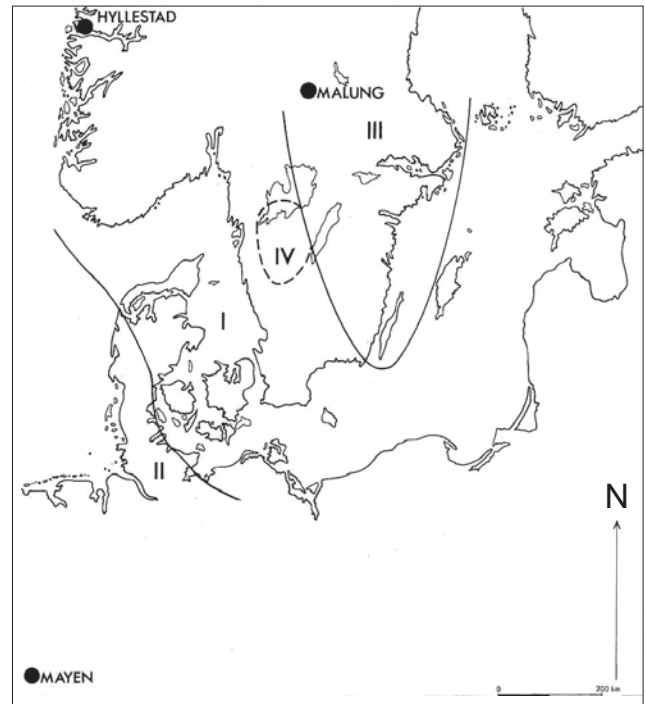


Fig. 1. Regions in Viking Age and Medieval Southern Scandinavia identified by the provenance of rotary querns: I) garnet muscovite schist from Hyllestad, II) Mayen lava, III) schistose sandstone from Malung, IV) gneiss from local quarries in Lugnås. From Carelli & Kresten (1997:125). Drawing by Christina Borstam.



Fig. 2. Unfinished millstones ca. 0.4–0.5 m in diameter, in the millstone quarry at Harg, Uppland located on the contemporary shoreline. Photo: Alf Nordström, © Stockholm County Museum.

Halland, Harg in Uppland, Nykyrka in Östergötland, Sala in Västmanland, Årsunda in Gästrikland) and larger millstones sizes used for water-powered mills (Sala in Västmanland). Special features appear in Harg parish on the coast of northern Uppland, 120 km NE of Stockholm, where a dozen of 0.4–0.5 m unfinished millstones are placed in a beehive pattern that covers a steep rock at a bay by the coast (Fig. 2). Normally, these sites are poorly known, only with regard to

Fjärås do we have a better contextual understanding (Lindälv 1980). Several of these millstone quarries may date back to prehistoric times. The millstones in the Swedish History Museum's collections that date from the late Roman Iron Age (ca. AD 200) to the Viking Age (ca. AD 800–1100) range between 0.4–0.59 m in diameter.

The rotary querns in Sweden and Norway that date to the period AD 200–600 seem to be made of local rocks. Imported basalt lava quern stones were used in southwestern Jutland in Denmark (Hardt 2003:60, Bergström 2007:176). In all other areas in the Nordic countries, the knowledge of the rotary quern was introduced, but the querns themselves were locally made. A recent analysis of the rotary querns made by the Archaeological Museum of the University of Stavanger shows that the oldest rotary querns from the Late Roman Iron Age and Migration Period (AD 200–550) found in southwestern Norway are of varying types of local rocks (Åsa Dahlin Hauken, pers. comm., Museum of Archaeology, Stavanger, 22.11.2013). This agrees well with the rotary querns from Helgö kept in the Swedish History Museum in Stockholm, Sweden, where the 13 fragments of rotary querns (11 fragments from building group 2 on Helgö and 2 fragments from building group 3) are of both reddish-grey coarse granite and jotnian sandstone (Lamm 2008:114). At Torp, in the parish of Kolsva, Västmanland, a Late Roman and Migration period longhouse (ca. AD 200–400) was situated on a natural plateau above the stream, Hedströmmen. Here, rotary querns of mica schist were used as lining for the postholes for the roof support poles on a house from the 3rd century (Hallgren 2004, 2005:84–85). The settlement is located only two kilometres southwest of the recently found quarry Tallåsen, in the parish of Odensvi, Västmanland. The long house in Torp is one of the oldest known contexts for rotary querns in central Sweden, located on the border to Bergslagen – a region that will be discussed later in the article.

Social contexts for bread

Rotary querns seem to be intimately associated with the production of bread in the Nordic countries. The introduction of bread has been viewed as a “soldier's import” that took place in the late 2nd century, when men from the North served in the Roman army auxiliaries. Rotary querns were in daily use in the smallest army unit consisting of the eight men who shared the same tent (Junkelmann 1993, Bergström 2007:185).

Together with the rotary querns, other baking utensils such as the frying pan and baking sheets were introduced (Bergström 2007:129–139). There was a massive Roman impact on the Nordic countries at the time, which resulted in, for example, the invention of the runes and the introduction of surgical instruments, in addition to cultural influences that resulted in changed religious rituals and the appearance of specific cultic buildings (Andrén 2006:73–74, Andersson 2013, see also Larsson & Lenntorp 2004, Larsson 2007:14).

Although rotary querns were much more efficient than traditional grinding stones and the raw material for producing rotary querns was locally available, they are rare finds in settlements from the Iron Age. They are not found in the many excavated Iron Age settlements dating to the period AD 1–550 that have been excavated in the vast cultivated plains in central Sweden, except for in Lida in the parish of Åker, Södermanland and Löfstaholm close to Old Uppsala (Zachrisson 2009:93). One could argue that these settlements are found in ploughed fields and that the querns therefore have been removed. But rotary querns are neither found in clearance cairns near the fields nor in the postholes where they could have been preserved as in the case of Torp. Rotary querns are furthermore not found in the excavated Migration period settlements AD 400–550 from Öland and Gotland (Stenberger 1964:436). People in general seem to have eaten porridge and various fermented products where grain was included; food remains of this kind have been found inside ceramic vessels (cf. Hansson 1997, Pedersen & Widgren 1998:396). For this type of food, the old type of grinding stones were suitable as the grain only needed to be coarsely crushed.

Bread seems to have been baked and eaten at special places and on special occasions (Zachrisson 2004b:154). Charred bread has been found at Helgö, the holy island in Lake Mälaren. These are the oldest dated bread finds in the Nordic countries. They occur in the form of rolls of barley and oats baked in ovens, as well as thinner biscuit-like bread baked in a pan or on a baking sheet (Bergström 2007:170, 180). The main settlement on the holy island was established around AD 200. At the same time, an open-air site for cultic rituals was created, placed at a short distance from the houses, at the foot of a bare rock where people sacrificed bread for 600 years (Bergström 2007:41–43). During these rituals fires played an important part. Normally organic matter such as bread is badly preserved in the ground, and a necessary requirement for it to last is that it has been burnt. Six rotary querns

were found together with 70 pieces of bread and the remains of clay ovens. In the long houses next to the sacred place, 41 grinding stones had been built into the houses, supporting the posts that held up the roof. The rotary querns, however, were not found in the long houses, but had been placed at the open-air cultic site. Unfortunately, the quern stones were only documented in detail when they were found in some types of constructions, two of the fragments are thus tied to the Migration Period/early Merovingian period while the other four fragments are tied to the cultic site at large. Since the oldest layers date from ca. AD 200–400 and Early Migration Period AD 400–500 contain parts of ovens and bread it is reasonable to assume that the fragments of rotary querns could have emanated from those layers too (Zachrisson 2004a:358, 2004b:154). Around 70 kg of bones, mainly from cattle, but also from pigs and sheep were found together with the bread. Mainly, the animals skulls had been selected, in particular skulls of cattle dominated (Olson 2004:24). The bread and the meaty parts of the animals were probably eaten at communal meals in the ceremonial building. The large number of glass fragments from beakers and vessels indicates that drinking rituals were also important (see Lamm 2004, Jørgensen 2009, Lund Hansen 2011). At these types of indoor ritual meals, the gods were perceived to be present (Drobin 1991, Nordberg 2003:178–183). The cult congregation was united with the gods through the meal and the sacrifices of the blood and heads of animals, for example (Hultgård 1996, Hultgård 1997:30–32). The heads of the animals along with the bread, “food for gods”, were placed outdoors at the open-air cultic site (Zachrisson 2010:81–82).

The only other really large central-place in present-day Sweden with a cultic house and large hall building is Uppåkra, outside of Lund in southern Sweden, mentioned in the beginning of this article. Some 20 rotary querns have been found there, many of them are contemporary with the ones on Helgö (Vifot 1936:111, 124–126, Larsson & Lenntorp 2004:40–41). They were used secondarily in a row of pits in an area with several longhouses placed immediately northeast of the famous cultic building referred to as an “Old Norse” temple. Around the latter there were thick white layers containing unburnt bones, mostly of cattle cut in portion pieces – traces of large feasts for lots of people (Magnell 2008). So, meat from cattle was also consumed here and probably bread as well.

Rather soon after bread and rotary querns came into use in central places with religious significance, they

appear at fortified settlements, ancient hill-forts, dating from AD 400–550 in central and western Sweden (Pedersen & Wigren 1998:394, Zachrisson 2004:154, Bergström 2007:190), as well as stray finds at hill-forts in northern Sweden and Norway. In such environments, such as Runsa, located as an eagle’s nest on a high rocky island, bread was found inside the hall building (Bergström 2007:44). Rotary querns can also be linked to elevated settlements from the late Roman Iron Age–Migration period (AD 200–400) such as Torp in Kolsva in Västmanland and Sylta in the parish of Fresta in Uppland (Hallgren 2004:18, 2005:85–88, Zachrisson 2009:93). These settlements were situated in elevated positions in the landscape with their main house placed on a constructed terrace. This mode of construction has been interpreted as a way to strengthen the farms land claim and importance. They were newly established, but independent settlements (Hamilton 2007:105). These types of terraced longhouses were repeatedly re-built on the same spot and thus expressed continuity (Hållans Stenholm 2013:184). House foundations that have been re-built correspondingly in Denmark have been interpreted as settlements that did not split the inheritance, but applied an inheritance principle where one of the children inherited the farm (cf. Jørgensen 1994:60–62, Holst 2004:200). We may imagine that the eldest son inherited the estate, i.e. that already at this stage there was what were later called *odal* rights (cf. Zachrisson 1994, 2013). In line with this reasoning, the household structure at these farms can have comprised of extended households with relatives. The fact that the rotary querns are present may also indicate that the division of labour was different in these households. Grinding using a rotary quern was a heavy and tedious task. In the Old Norse written sources this was closely associated with female thralls. Baking was, however, not socially stigmatised as grinding was; baking could be done by both free and thrall women (Myrdal 2003:126). It is possible to argue that these types of elevated settlements may have housed extended households including relatives and servants.

The household defined by bread

The runes on the Tune stone from ca. AD 400 in Østfold in Norway, are the oldest written evidence of bread, the Old Norse word *lev*, compare with the English word loaf. It is mentioned in connection with the man Wodurid called *lávardr*, bread guardian (Grønvik 1981:142, Sundqvist 2002:264, Brink 2003). Stefan

Brink has shown that a series of words have survived in Anglo-Saxon where bread is central, namely in the old titles lord, lady, *bryti* and *deigja* (cf. Brink 2003:104, 2008). The word lord is originally *hlāf-weard*, bread guardian, securer of bread, later figuratively “master”, while a lord’s wife, the lady is derived from *hlāf-dighe*, she who prepares the dough. This complex includes, among other things, the *hlāf-brytta*, the one who divides and probably sends around the bread. This word can be connected with the Old Norse word *bryte* meaning bailiff, or steward, known from the Viking Age and the centuries thereafter. The Old Swedish titles *bryti* (bailiff) and *deigja* (milkmaid) show that we may assume that a similar institution once existed in the Nordic countries. Stefan Brink outlines an extended household including relatives and servants, a household defined by bread (Brink 2008).

Bread was part of the ritual meals that the gods received at the cultic site at Helgö. Bread was also something that the gods were expecting to be given. When the god Odin hung on the world tree, he complained that he had neither been given “horn-drink” nor bread (Hávamál 139, see also Bergström 2007:204). The god Thor also seems to be associated with bread during the Viking Age in the lake Mälars region, central Sweden. In many graves where bread occurs, Thor’s hammer-rings have also been found, iron rings with hammer pendants, produced specifically for the funeral. Discus-shaped amulets are attached to some of these rings, probably symbolic bread with a hole in the centre (Bergström 2007:214–216). Ring bread has been found in graves dating from the late 8th century and the Viking Age (AD 800–1100, Bergström 2007:214–216).

Bread was given as burial gift to deceased persons in the eastern lake Mälars region from around AD 500 (Bergström 2007:13). The tradition may have originated from Helgö and the nearby island of Lovö (Bergström 2007:70). Since bread was symbolically connected with fertility and rebirth (see Hansson 1997:75), one would have assumed that bread could be given to anyone. But bread was given to a selected social category of people: mainly adult men buried in burial mounds. Only in the 8th century, when the custom of placing bread in graves had become more common, it came to include women. However, not all buried men in the cemeteries received bread, in fact, only about two to three men buried per century (Bergström 2007:59–60, 212–214). Liselotte Bergström connects this with property rights, and believes that the buried men can have been identical with the farm owners (Bergström 2007:219–220). Thus the “bread graves” may symbolise the farm structure and

odal property rights (see Zachrisson 1994, Bergström 2007:220). Central to when property was transferred from one generation to another was the funeral feast, the *erfi*, a concept which included both the funeral ale and the ancestral inheritance (Zachrisson 1994:222, see also Wessén & Jansson 1940–43:194–196). The bread placed in the grave of the deceased might have symbolised both these aspects of the *erfi*.

The lost settlement Onsala

It is important to have an understanding for the cultural background and the social contexts where bread consumption took place when we look at Kvarnberget in Sala, Västmanland and its millstone quarries situated 125 km northwest of Stockholm. The Sala-stone does not belong to the traditional millstone types in Sweden known from historical times (Elfwendahl & Kresten 1993:55). Bo Hedblom, archivist and local historian in Gästrikland, presented the quarries at Kvarnberget in Sala in an article in 1996 where he argued that some of the millstones classified as Malung-stone by Peter Kresten, such as those from the fortification at Eketorp on Öland and the medieval town of Sigtuna in Uppland, may in fact be the mica schist from Sala (Hedblom 1996:93). Kresten has rejected the criticism (Kresten 1997, 1998, see Elfwendahl 2001:374, see also Mellquist Danielson 2011).

In an inventory from AD 1773 from Hedesunda in Gästrikland a rotary quern of Sala stone has assigned a special term: *Salgryt* (Hedblom 1996:92). Here, *gryt* means “stone”. Thin sections of Sala mica slate from the quarries in Åby, Ösby and Ingborbo have been analysed under microscope by mining engineer Ingemar Stock. The stone is described as a matrix of mica with stray grains of quartz and sometimes feldspar. The form of the quartz grains suggests a volcanic formation environment (in Hedblom 1996:Note 4, see also Rinnman 1789, Gumaelius 1868). During historical times, stone quarried at Sala was used for lining the inside of blast furnaces. A recent mapping shows that there are also elements of leptite and metavulkanite north of Ösby. The metavulkanite ranges from very fine to fine-grained, sometimes with numerous stray grains of quartz or feldspar (Persson 1997:189, 197; see also Björk & Gradin 2009:13, 17).

How should we understand the importance of the millstone quarry in Kvarnberget in Sala? Unfortunately, it is not always possible to identify individual rotary querns in museum collections from excavations such



Fig. 3. The quarries in Åby and Ösby are the blue area to the top left on the map from the archaeological register of the Swedish National Heritage Board, numbers added from SW to NE, Sala 114, 209 and 172, © map Lantmäteriet permission I 2011/94. R marks are monuments of various kinds.

as the one at the key site and fortifications at Eketorp on Öland, to test Bo Hedblom's observations. Rotary querns have generally not had high status and consequently not always been precisely fixed as to find spot during archaeological excavations and consequently not easy to track and date by reading older excavation reports. Furthermore a large part of the rich material of rotary querns from Sigtuna (ca. AD 980–?) has not been geologically analysed (Anders Wikström pers. comm., Sigtuna museum, May 2012). In certain excavations, where one would suppose that the rotary quern might be of Sala-stone such as in the Late Viking Age settlement in Fällnäs in Södermanland, analyses are lacking. Here, rotary querns of a grey-green stone were found inside a house with a hearth pallet dated to ca. AD 1000–1100 (Olausson & Kjelkerud 2004).

There are several larger quarries situated adjacent to each other north of Åby and Ösby as shown on the map (Fig. 3). The total area ca. 1.5 x 0.4 km is marked in dark blue in the Swedish National Heritage Board's register for ancient monuments in Sala divided between: a

quarrying area of 610 x 170 metres (register number Sala 114:1), an area 450 x 190 m with unfinished larger millstones left ca. 1–1.5 m in diameter (register number Sala 209:1, see Hermodsson & Jensen 2009) and a quarrying area of 275 x 100 metres (register number Sala 172:1). The size of the quarries and the fact that they are heavily overgrown and that there are no oral traditions recorded about them speak for their high age. Millstone quarrying is assumed to have taken place from at least the 12th century (Löthman 2004:39).

The idea that the millstone quarry in Sala is of old age is supported by a medieval document from AD 1490 where the villages of Åby and Ösby dispute over the rights to the millstone quarry. "*Frödger i Aby skulle haffua qernabergit j Ösby bolstad oc Jap j Ösby skulle haffua ena halffuan qwern j Aby til en tid som thom bado samda epter thet at qwernabergit war thom forment som war Frödgers dotterbarn Per Joansson j Aby tha aeskade the qwernena igen Oc eptir thet at hon lag j teras giarede oc qwernabergit war thom forment tha sade wy Per Joansson j Aby qwernena igen oc*

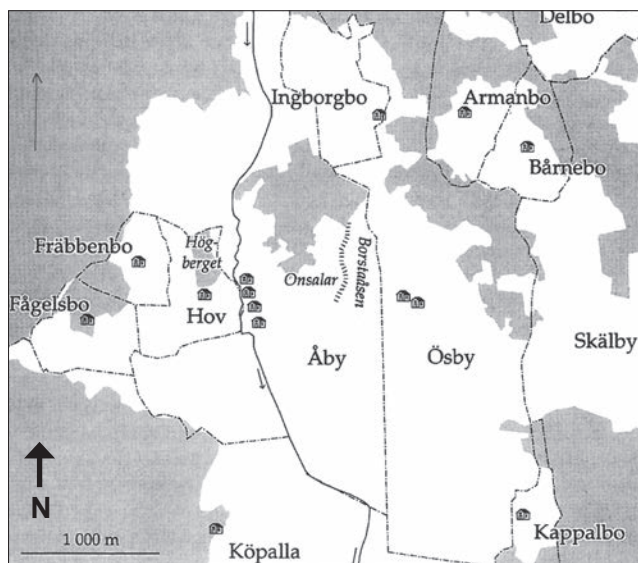


Fig. 4. Åby, Ösby and Onsalar in Sala parish, Västmanland. Boundaries after the map 1908–9. Villages (several house symbols) and single farms (one house symbol) locations from older historical maps. White areas are the infield areas. Map from Vikstrand (2001:257).

Ösbononne *sina stenar oc sit qwernaberg oc garden som bolstad mellan*” (parchment collection, State Archives, Uppsala, Sweden in Hedblom 1996:94). The document has been interpreted by history professor Birgitta Fritz. The meaning is as follows: Fröger of the village of Åby exchanged land in Åby for land in neighbouring Ösby. Then it was decided that Fröger should have the quarry mountain in Ösby and that Jap (short for Jacob) of the village of Ösby should have half of a mill in Åby, as long as they had agreed upon it. Later on, Fröger’s grandsons were prevented from using the quarry mountain and therefore in AD 1490 they demanded that the mill be returned to them. After inspection the mill was awarded to Per Johansson in Åby. And the inhabitants of Ösby would, it was said, have their millstones and their quarry back (Hedblom 1996:Note 24). The document was written in a time when other disputes about rights to millstone quarries were occurring in Europe (cf. Belmont & Anderson 2011). From the written document it is clear that the quarry mountain was situated at the village of Ösby, nearest neighbour to the larger village of Åby.

The setting for the millstone quarry Kvarnberget is interesting when you add place-name researcher Per Vikstrand’s discovery that the quarry is situated on the grounds of a lost settlement (Fig. 4, see Vikstrand 2001:256–258). The historical map from 1785 shows that the place names Onsalar and Onsala occur in the easternmost part of Åby (Lantmäteriet, Sala parish, Åby akt 16). Linguistically the names can either be

interpreted Odin’s *al* (probably temple area) or Odin’s *sal* (hall building). Vikstrand points out that when there are two Sala’s in the close vicinity of each other as here, a prefix (in this case Odin’s) is used to distinguish it from the other nearby Sala (Vikstrand 2001:258). Thus it is reasonable to imagine that Odensala is an original “–sala” place name that can be interpreted as the god Odin’s hall building or *sal* (see Vikstrand 2001:258). The name Borståsen, on the ridge that separates Åby from Ösby, might be a distorted word for Bolstad ridge, a term that refers to the site of an abandoned settlement (Vikstrand 2001:257–258). Iron Age finds and place names in the environment suggest that there has been a settlement Oden(s)ala. The village grounds were split into the two villages Åby and Ösby sometime before the late 15th century. West of and adjacent to the large village Åby is a settlement called Hov. Hov had probably designated a separate sacred building where cultic rituals occurred (cf. Vikstrand 2001:260–272). We may thus assume that the milieu in Hov functioned together with that in Odensala.

That a sacral place name Odensala occurs in this type of landscape where the plains turn into the mining district, Bergslagen, i.e. the region where the Law of the Mountain prevailed (see Calissendorff 1980) is unexpected. On the distribution map of sacral place names and central place names presented by Per Vikstrand, Odensala can be seen in the periphery of the distribution area of the sacral place names in the Mälars valley (Fig. 5), marked with a red dot in the far northwest (Vikstrand 2011:326). That a high status name like Odensala is located directly at a quarry mountain indicates that primary production areas for quern stones can coincide with places where gods were thought to be present.

Kvarnberget is located just north of a famous mountain, Salberget, which extends from Tortuna in the southwest and Fläckebo in the southeast to Sala and Möklinta in the north. The area contains mines for silver ore concentrated around the town of Sala, the most famous of which is the Sala silver mine. But there are also quarries of another character in Fläckebo, boulder quarries, where detached boulders in the terrain were processed (see Pettersson Jensen *et al.* 2004:136). Unfortunately this latter production is very difficult to date. But there is a great similarity between the smelting processes for copper, silver and iron and the iron production in the region dates back to the Early Iron Age. For Salberget there is written evidence from the 16th century when the Swedish king issued a prohibition against smelting silver at the farms, making

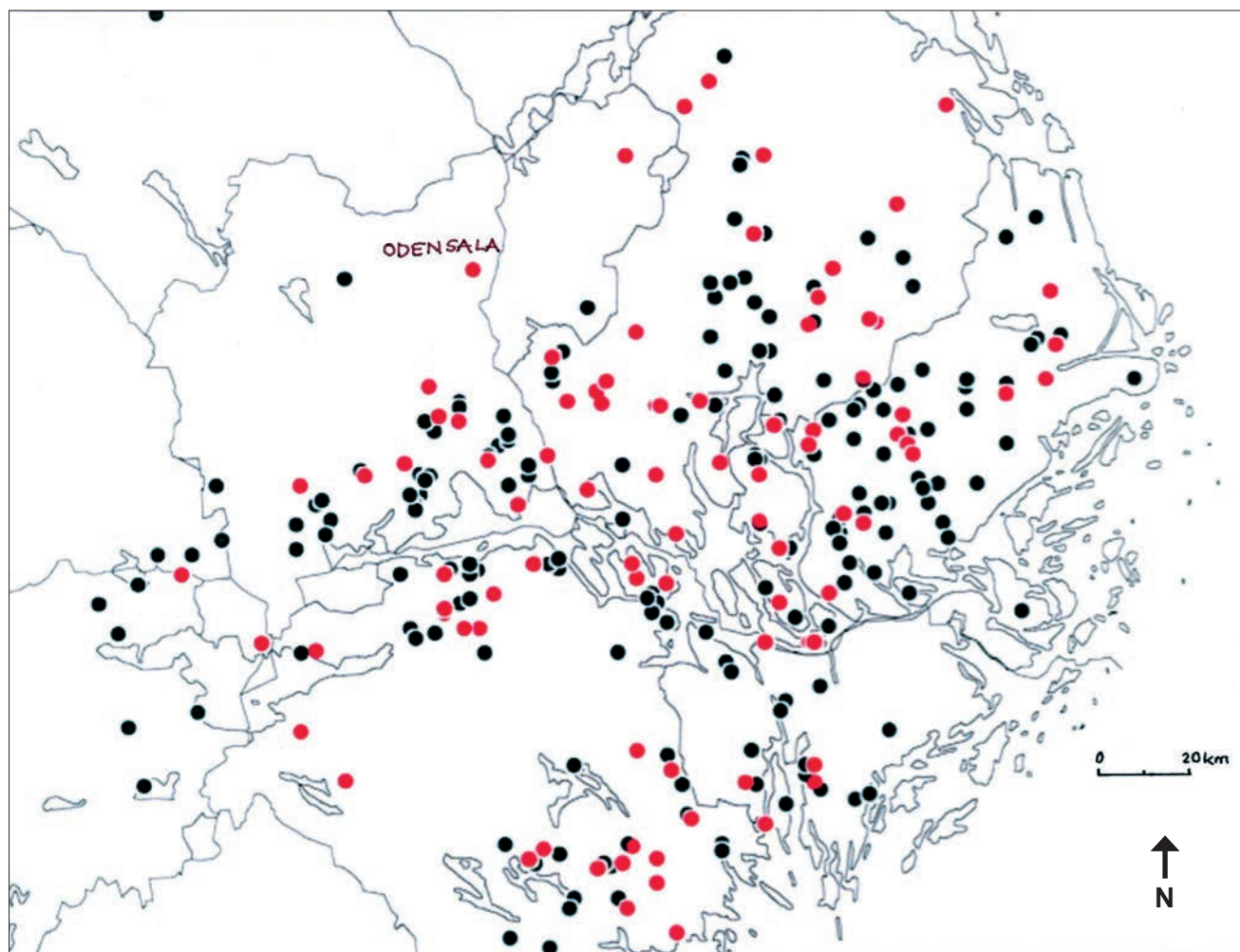


Fig. 5. Sacred place names (red) and place names indicating central places (black) in the Lake Mälaren region. Odensala is the red dot in the northwestern edge of the map, close to a district border. Map from Vikstrand (2011:326) slightly altered.

sure that smelting would only take place in the town of Sala. Probably, this farm production can be associated with a substantially older silver/lead production (see Pettersson Jensen *et al.* 2004:196). Interestingly a sacred place name also occurs in the Fläckebo region: Gussjön. Old Swedish *gudh* (god) is probably found in the name (Vikstrand 2001:402–404). It is situated east of the area where the boulder quarry production of silver was known in the medieval period. Once more a sacral place name is found in the same area as a production site, in this case for silver. Although it may seem as a mere coincidence, it is quite possible that in the future better datings and further research will show that they belong in a coherent context.

Conclusions

Kvarnberget in Sala, situated on the grounds of former Onsala in Sala needs further research. However,

although still very poorly known, it can contribute to a general discussion on the social contexts for the production sites for rotary querns. To understand the milieus where the rotary querns were produced, it is necessary to have an understanding for the cultural background and the social contexts where bread consumption took place.

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