Deborah J. Shepherd

THE RITUAL SIGNIFICANCE OF SLAG IN FINNISH IRON AGE BURIALS

Abstract

An evaluation of the presence of iron slag in Finnish burials of the later Iron Age concludes that, on the basis of present limited knowledge, there are several strong reasons for believing that the slag may have a ritual meaning. Archaeological data are combined with mythological and etymological evidence to demonstrate a possible symbolic interpretation for the use of slag in funerary ritual. Smelting and smithing activity also acquires a metaphoric meaning in this view of prehistoric Finnish belief in the afterlife.

Keywords: Finland, Iron Age, iron slag, burials, funerary rituals, symbolism.

Deborah J. Shepherd, 2744 Meridian Drive, Robbinsdale, Minnesota 55422-3745, USA.

For decades, archaeologists working in southern Finland and central Sweden have frequently observed iron slag in a number of Iron Age burials. These observations provoked the question that has been argued for at least half a century, whether or not the puzzling slag was placed intentionally within these burials as part of the funerary ritual (e.g. Cleve 1943: 55; Lehtosalo-Hilander 1982/1: 15; Leppäaho 1951). Quite often the case is hardly clear. The slag may appear to be an accidental inclusion thrown in with the fill earth. Or, slag pieces may be scattered randomly across the area of the site as if to suggest that their presence is due to normal iron smelting or smithing activity associated with a nearby settlement. Indeed, it is claimed that such circumstances, producing large and obvious surface scatters of slag pieces, have been documented with reference to colonial American settlements and adjacent burial grounds where ordinary iron slag unrelated to burial activity nevertheless commonly fell by chance into graves in a nearby burial ground.[1] Undoubtedly, it is possible such a culture process occurred on occasion in the Finnish and Swedish Iron Age sites. Although the present state of the evidence from cemetery excavations in both Finland and Sweden will not allow a convincing answer, it is still possible to refine this problem from an interdisciplinary perspective and offer at least one explanatory hypothesis which might help guide or inspire future investigations.

Chronologically, burials with slag have been dated to the latter part of the northern Iron Age, from approximately the 5th through as late as the 12th century AD in Finland and from the mid–6th through the 11th century in Sweden. In both Finland and Sweden, these approximate dates take us into the early period of the Christian conversion. The extension into the early conversion period of slag occurrences in burials does not preclude finding possible reasons for slag usage in pagan practice. Indeed, some continuity of traditional beliefs alongside the earliest Christian practices is to be expected.

The nature of the cemetery slag itself is difficult to determine without further examination of the material. Reports usually do not attempt to distinguish between types of slag and sometimes include other possible types, such as clay or glass slags, without paying much attention to the differences. The iron slags can be divided into two types with reference to the different stages of iron production generating them – smithing and smelting – but it is difficult to determine with certainty which process may have produced a given piece of slag, although specialized chemical and physical tests

may give some indications (Hansson 1989: 133 ff.; Taavitsainen 1990: 198). However, this information is often not available from the reports at hand. Nevertheless, it is still possible to suggest the likelihood that most if not all cemetery slag is smithy slag. Smelting furnaces are fairly visible archaeologically, since a structure – furnace or pit – capable of sustaining an adequate temperature must be constructed. The presence of smelting structures on a cemetery site would be difficult to miss. Furthermore, it is generally believed that ore is commonly smelted at or near the place where it is found in order to simplify the transport of raw materials. Smithies, however, might leave fewer indications of their presence. Some field smithies known ethnohistorically were constructed atop portable tables with the use only of sand and stones (Taavitsainen 1990: 198). Smaller quantities of fuel and raw materials would also be required for smithy work. Therefore, cemetery slag, *if produced on site*, is more likely to be smithing slag than smelting slag, but if the slag found in cemeteries was brought in from elsewhere, then it can be either type.

This paper is intended as a preliminary inquiry into a problem that I find vexing. Slag pieces are more troubling than other materials at grave sites because they seem so unimportant. Daub normally indicates the former presence of a human-made structure, often a shelter. Sherds indicate pottery. Animal bone can reasonably indicate food materials left on site. But slag is much more enigmatic. Are these inclusions meaningful, and why? The second part of the question is most important to address because no argument in favor of significance can be convincing without offering its own plausible explanation.

The geographical scope of this preliminary inquiry encompasses the relatively dense southwest and central Finnish settlement along the Kokemäki and Aura River valleys and coastline and, across the Gulf of Bothnia, the Mälaren region of central Sweden, the provinces of Gästrikland, Dalarna, Hälsingland, Jämtland, and, to the south, Småland (based on reports mainly from Burström 1990). I have not been able to discover any reports of contemporary slag burials from elsewhere in the Nordic countries, nor from adjacent Russian territory to the east. Such reports, if extant, would make an important addition to the study.

Evaluation of the Arguments

The arguments for interpreting the slag which is found in or with burials as a ritual phenomenon can be classified in their main points as follows:

1. The circumstance of the presence or absence of slag in individual burials or in cemeteries seems more important than the actual quantity of slag found.

Although some graves contain a large amount of slag, many contain just one, and only one, piece.[2] Others contain several small pieces but no more. In Finnish cremation fields, where cremated bones and fire-damaged grave goods are scattered and mixed among layers of stones, sometimes to the extent that pieces of the same object are found some distance apart, slag is occasionally discovered in single coherent deposits as large as several kilograms – e.g., several squares at Loima cemetery in Huittinen (TYA 17953/37) yielded in excess of four kilograms of slag at defined levels (fig. 1), but in most instances, as at other cremation fields, slag occurs in substantially smaller clumps. In Sweden, some burial cairns are reported to be constructed mainly of slag debris (Burström 1990: 261). Elsewhere, slag deposits associated with burials are minimal. Is the explanation merely that slag occurs randomly in association with burials? If that were the case, then one would guess that many slag-containing burials would have few pieces, but also, some sort of continuum, no matter how ragged, would exist between the occurrence of a few small pieces and massive heaps of slag. Where are the many burials with a median amount of slag content? What explanation would account for their relative absence? In order to cope adequately with such questions as these, more precise information is needed about burials with slag. As has certainly been noted before, slag has often not been consistently recorded from burial finds. The absence of its mention in reports means nothing conclusive in the vast majority of cases. The presence of its mention may range in content from vague references to undetermined finds and contexts in unspecified areas to precise records of amounts and locations (not to mention evaluations of slag types). This inconsistency in the available data makes the present analysis of the problem, if one may be allowed the verbal liberty, problematic.

2. A persistent assertion holds that slag placed in burials might have served as a symbolic metaphor equivalent to the corpse itself.

The symbolism of the breath and heat of life makes for powerful metaphor in funerary ritual. The idea of representing rebirth or transformation and translation into a new realm of existence, and afterlife, with symbols of life and birth, is a familiar one from various cultural contexts worldwide. But when life is viewed as separating from the body, it is particularly useful to have a metaphor for the

	I	II	III	IV	Total
V:1	—	250	10	300	560
V:2	—	625	300	45	970
V:3	—	—	50	10	60
V:4	—	—	120	—	120
VI:-1	—	5	—	—	5
VI:1	—	—	5	200	205
VI:2	70	225	600	1100	1995
VI:3	—	275	60	25	360
VI:4	—	25	40	—	65
VI:5	—	—	—	—	—
VII:-1	—	1600	765	—	2365
VII:1	—	11100	7350	10	18460
VII:2	—	350	50	—	400
VII:3	—	900	50	—	950
VII:4	—	—	10	—	10
VII:5	—	—	908	—	908
VIII:-1	2000	1900	1500	—	5400
VIII:1	1000	9150	250	—	10400
VIII:2	—	50	—	—	50
VIII:3	—	150	—	—	150
VIII:4	—	—	—	—	—

Fig. 1 Loima cemetery, Huittinen (from report by Jukka Luoto, 1973). Iron slag quantities from excavation area (indicated in grams by levels I–IV and excavation squares V:1–VIII:4).

corpse. As the corpse is the by-product of a human life transformed by death into a freed and disembodied spirit, slag is the by-product of the transformation of iron ore into powerful and dangerous iron. Both processes are transformations made possible by the agent of heat: the heat of life on the one hand and of the smelting fire on the other (Shepherd 1996). When smithing iron, great heat is again applied and additional slag by-product produced. It is not really necessary to distinguish the two technical processes in order to find their related symbolic meanings. Although prehistoric belief in this sort of symbolic explanation cannot be proven by archaeological or any other means, circumstantial evidence from linguistic and folkloric sources combine to lend strong support to the interpretation.

According to Juha Pentikäinen, the Finnish language gives us three separate words for spirit or soul: *henki*, *löyly* and *itse*. *Henki* connotes "spirit" in the sense of supernatural being or animistic power, normally not ever having been part of a living person (Pentikäinen 1985: 134). *Löyly* refers to the life force of living creatures which is intimately connected with breathing; it is notably a kind of spirit that does not discriminate between human and animal and motivates the life functions of both. *Löyly* is the kind of "soul" or "spirit" which a person has for the duration of his or her physical life; it arrives with the first breath and departs with the last. Each person, however, has in addition another kind of soul known as the *itse*. *Itse*, meaning "self" and functioning grammatically as the intensive pronoun, also denotes the human soul, or ego. This ego "lives a life independent of *henki* and *löyly*." *Itse* is inherited from the ancestors and lives on after death. In naming a child after a parent or ancestor, it is thought that the child will thus inherit the *itse* of that person along with the name (Pentikäinen 1985: 135). Therefore, although the spirit or *löyly* lives only once, the self or *itse* lives in a cyclical fashion "wandering from one generation to another" (Pentikäinen 1985: 135). This cyclical human existence is closely paralleled by a strong sense of cyclical time, the seasons and rituals of the year repeating themselves eternally (Shepherd 1996). Thus, language justifies a contention that a

clear separation of body and soul in non-earthly existence was well understood by Finns long before Christian or historic times.

But why slag? We need also ask ourselves the meaning of iron in an Iron Age society. The central importance of iron to pagan Finnish society is emphasized by the fact that the three main culture heroes of Finnish mythology are Väinämöinen, Lemminkäinen (both shamans; cf. Oinas [1987] for a comparison of their functions and relationships), and Ilmarinen the Smith. Iron is mentioned in charms a number of times in the *Kalevala*, principally in rune 9. The archetypal shaman-smith Ilmarinen tames iron by forging it. The runic lines stress how iron suffered in the fire and begged to be taken out. Ilmarinen wondered whether iron might "grow to be terrible, / will start raging exceedingly, / cut your brother even further, / carve up your mother's child." Iron's response was to swear a solemn oath that it would not "abuse my tribe" (Maguon 1963: 49; rune 9, ll. 167–92). But iron could not keep its oath, and there occur further charms against the harm and abuses caused by the use of iron blades for which iron itself, not man, is blamed. Iron is excoriated as being "wretched", "miserable", and "bewitched". It is said to have gotten horrible and grown very big. But in the beginning, iron was found "on the very big surface of a fen, / on the top of a rough bald hill, / when you were changed there to earthy muck, / began to become rusty soil." From there, iron had been brought to Ilmarinen's forge, and so its life is recounted (Maguon 1963: 50–51; rune 9, ll. 271–306).

A rune called the "Warrior's Departure" (*Sotaanlähtö* III, in Kuusi, et al. 1977: 492–93) describes iron as something first sprouting from the earth like a plant in places where wolf tracks and bear paws had been. Ilmarinen took these "iron shoots" and forged weapons so that the men of the Kaleva clan could go to war. Origin beliefs such as this elevated the importance of iron in a society sufficiently involved in armed skirmishes such that iron's incorporation as weaponry into eschatological beliefs and practices became natural. That armed conflict had a presence in late Iron Age Finland is suggested not only by large numbers of "warrior" graves[3] in the Merovingian period but also by observations such as excavator Pirkko-Liisa Lehtosalo-Hilander's suggestion that the early 10th-century graves at Luistari show evidence of frequent robbing after burial due to the society's great need for weapons (Lehtosalo-Hilander 1982/3: 20–1). However, whether these actions represent emergency efforts to obtain more weapons, or for example, an accepted practice of removing selected grave goods after their involvement in certain funerary rites, is impossible to say.

More than merely recognizing iron's obvious functional and economic importance to society, the origin myth discussed above clearly indicates that iron, like other important substances in the Finno-Ugric universe, is a power unto itself, a spirit essence with a will of its own and therefore equivalent in nature to any life force. The weapons that make for powerful warriors and strong leaders owe their being in part to iron as well as to the weaponsmith who tames the substance. Hence, society – how it is organized and protects itself – is built on a foundation of iron. The presence of a smith among the three central shamans is no accident.

3. Slag has been found *in* burials even when it is not otherwise reported scattered about in the soil.

For example, this appears to be the case with five graves and one hearth from the small Kjuloholm cemeteries A and B in Finland. At cemetery A, the hearth, cremation grave A1, and inhumation A4 all contained slag. At cemetery B, graves B9, B10, and B11 each had a small number of slag pieces as inclusions (Cleve 1943). This persistent pattern of occurrence seems to lend credence to the notion that slag is present precisely because it is part of ritual activity. However, most researchers agree that existing excavation reports are largely inadequate on conditions and finds from the areas between and surrounding excavated burials so that we have yet to feel completely confident about the apparent absence of slag outside burials being a true and accurate description of conditions on any site.

4. Some burial slag appears deliberately placed within burial areas.

Although one can easily argue that some of the slag found randomly placed within graves arrived there only accidentally with the fill earth, provided that slag pieces were already scattered about the cemetery area, in other instances, notably involving mounds containing cremations, placement of slag seems more exact and deliberate. At the rich mound #110 at Myllyvainio, Kaukola containing the remains of what may have been one or two females of the 4th or 5th century and one male of the 7th or 8th century,[4] iron slag is found mixed with clay slag and burnt daub, near some burnt human bone, at the northern end of the mound where a pyre may well have burned (Salmio 1982: 25–29). The burnt daub just mentioned could have originated from a wattle-and-daub funeral house built over the body on its pyre before burning. The iron and clay slags are found mixed with this burnt residue, all of which enhances the metaphor of leaving

the corpse (not just of the body but the residue of the pyre and perhaps even of the funeral house) behind after freeing the spirit from the body (and all other structures?) by means of a flash of heat and life energy.

5. Graves containing slag are not always adjacent to settlement sites, the most frequently cited causes for burial evidence contamination.

Asserting that if graves are found to contain slag, then the source of that slag must be a nearby settlement site merely denies the question. A primary argument for the accidental inclusion of slag in burials is exactly this, that slag scatters from ordinary smelting pits or smithing activity associated with ordinary settlements would provide all the accidental slag inclusions necessary to fool archaeologists into the interpretation of mysterious ritual. At Luistari, a large pre-Christian inhumation cemetery in Finland, an earlier Iron Age settlement may well have caused some slag contamination of burials in the southeast sector, but the excavator argues that it is unlikely all the slag in the more northerly and westerly burials (at least 29 burials away from the southeast sector also contain slag) came accidentally from this same source (Lehtosalo-Hilander 1982/1: 13, 15; map, 16). One should certainly always look for signs of contamination from a nearby settlement, as the possibility of a settlement occupying the same general neighborhood as a cemetery is often reasonable, but current evidence in no way supports that there will *always* be a settlement to explain the presence of slag, as some seem to assume (e.g. Sjösvärd 1984: 57–58).

6. There is an expected distance between Finnish Iron Age settlements and their cemeteries.

In Finland, Iron Age settlements and their cemeteries are not expected to be physically connected so closely that slag contamination of the latter from the former ought to be a natural, or common, event (Shepherd 1996: 105–11). Ethnohistoric parallels indicate that cemeteries and settlements should be found near each other, but a certain physical distance is always maintained, for the spirits of the dead ancestors – as these ancient Finno-Ugrian beliefs have been understood – are potent, remain present with the family, and need their separate space (Pentikäinen 1989; Storå 1971). However, people in Finno-Ugrian cultures made it part of the obligatory observance to the dead kin to travel at frequent intervals to the nearby burial ground and celebrate their presence there with memorial meals. This intentional distance complemented by regular contact between settlement and cemetery implies that if settlement debris contaminated burials because of the former's immediate proximity, then the settlement where the debris originated and the contaminated cemetery are probably *not* contemporary – which is, of course, another possibility, but changes the implications about on-going activity – that is, in this scenario, slag does not occur at a cemetery as a normal result of ordinary smelting or smithing activity carried on at a closely associated settlement; it occurs at only some cemeteries because of the *accidental* proximity of a prior settlement, as was precisely suggested for at least a portion of Luistari. Therefore, if this were the explanation for slag in cemeteries, then the occurrence would arguably be less common than it actually seems to be. Thus we encounter another problem in the current state of the data: we still have no useful perception of the real frequency and distribution of this phenomenon.

The argument *against* interpreting slag burials as a ritual phenomenon involves the following points:

1. Slag in burials may merely be contamination from earlier settlement debris. The issues involved here have just been discussed.

2. All burial slag really originates as part of the fill earth.

Some archaeologists are convinced that this is the case. At Björka in Hälsingland, Sweden, the excavator found six Migration period mounds with cremations, all of which contained slag within the cremation deposit as well as in the fill earth. Yet, he argued that all the slag must have been contamination by activity debris from a nearby settlement, although an actual settlement site had not been located and there was no direct evidence for the existence of such a site. High phosphate levels in the soil were cited as evidence for the presence of a settlement area, but in fact, phosphate increases can also result from burials and other kinds of non-residential sites or activities (Renfrew and Bahn 1991: 87). It remains a fact, however, that at Björka, iron "slag occurs in spreads widely dispersed over the excavation area..." (Sjösvärd 1984: 57–58). Whether these spreads were the natural result of local smelting or smithing activity or a deliberate deposition of slag made for other reasons remains to be demonstrated.[5]

3. Finnish cremation cemeteries may be harder to identify correctly than assumed, and some sites may be mislabeled accordingly.

In fact, the cremation fields – which appear as low, stony piles mixed with burnt daub, sherds, fragments of relatively common objects, bits of

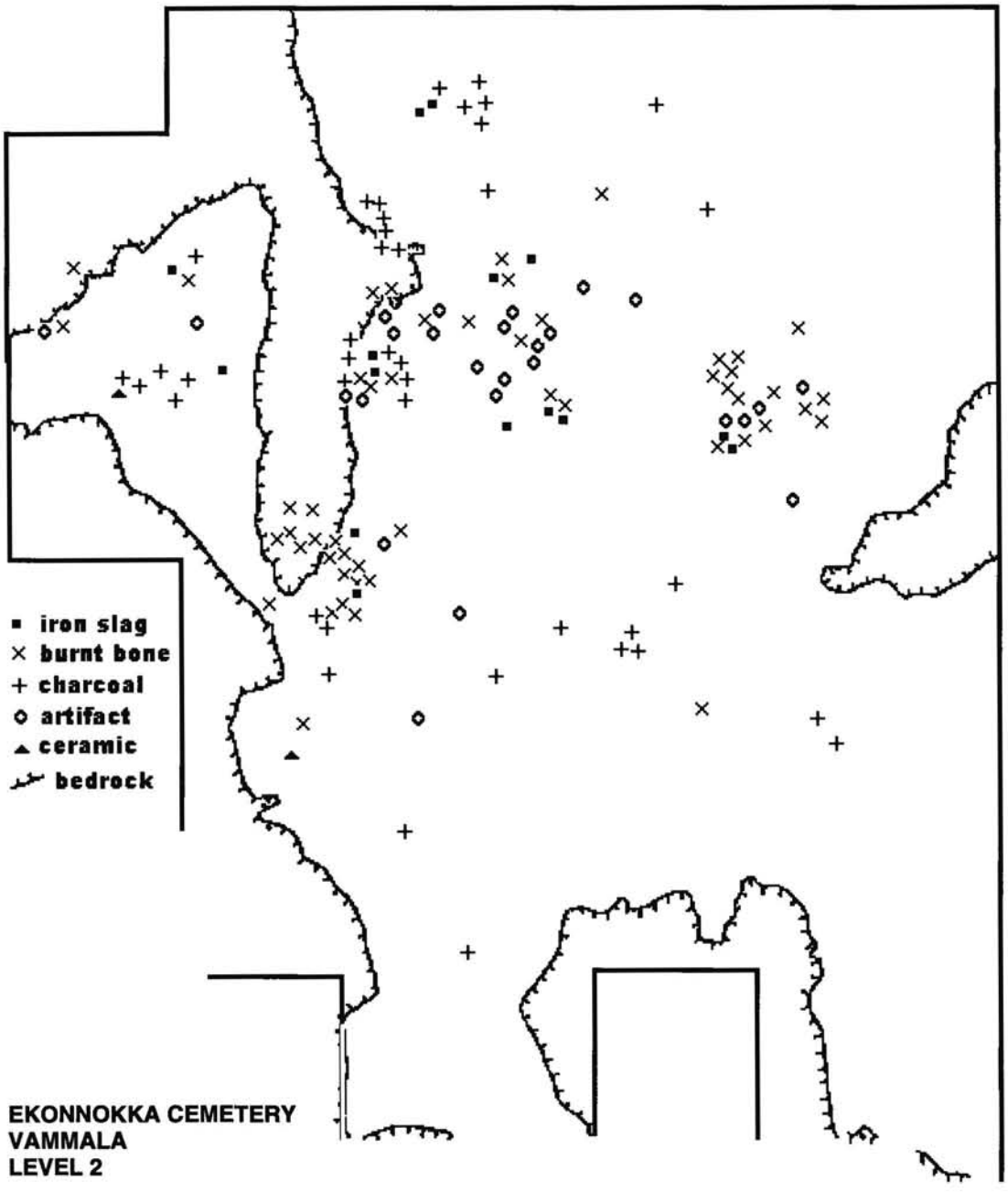

Fig. 2. Distribution of gravegoods and different materials on one level of Ekonnokka cemetery, Vammala showing a tendency for slag pieces to be more closely associated with burning activity than other gravegoods are.

animal teeth and bones, and slag – might instead be occupational or work areas of the living (Taavitsainen 1992). Some do indeed amount to little more than that description, producing little or no certain evidence of burnt human bone, and their identification as cemeteries ought to be reevaluated. But other sites contain too many ornamental artifacts, too much burnt bone that seems to be human,[6] and too many transported stones to be reasonably construed as non-burial occupation sites. Some sites with significant quantities of slag, on the other hand, might be actual smelting or smithing sites

(either is possible, based on present evidence) – whether or not they are *also at the same time* cemetery sites. That possibility requires more thought. The distribution of artifacts, slag, burnt (presumed human) bone, and charcoal or sooty soil at Ekonnokka cemetery in Vammala shows a tendency for pieces of slag to be placed in proximity of both burnt bone and sooty deposits whereas artifacts are associated usually with the burnt bone alone (fig. 2).

It seems likely from this example that the inclusion of the slag was not a result of the same activity as the deposition of gravegood-type artifacts, yet neither is its distribution random. Given the symbolic potential of iron and smelting or smithing activity observed from the Ilmarinen myth, we are reminded that symbolism lies not merely in the object but also in the action. It is here suggested that the ritual action of smelting and/or smithing iron – of transforming the ore, producing the slag, beating out the impurities, and creating from the former substance a new object or "being" – could be metaphorically equated to the afterlife transformation of the soul at death as described earlier. Perhaps funerary ritual in the Iron Age included not merely the inclusion of slag as a metaphor but also its actual creation on site – at the cemetery. If we follow the myth more closely, the type of ironworking that concerned Finns most seems to be the process of smithing. It is what was *made* from the iron that defines iron's character.

Let us turn for a moment from the cremation fields to the burial mounds, which continue as a cemetery form throughout the Iron Age. These mounds sometimes contain a clear structure, including a floor pavement, a spiral pattern of foundation boulders, and a distinctive central eye-stone. Other mounds, however, are quite low and lack any systematic structure to their construction. Taavitsainen's cautionary statements are important: it is necessary to be careful of how a site is labeled a burial or cemetery. Furthermore, the presence of human bone is not required of a mortuary mound structure: some structures lacking human bone may be legitimate parts of cemetery complexes – fifteen mounds out of about 45 in the communes of Kaukola, Liekosaari and Tyrväänkylä, for example, have been interpreted as "offering" places or commemorative meal sites and apparently never intended for burials (Salmio 1982; Shepherd 1996: appendix).

What can we say about gender and status correlations with respect to slag in burials? Based on the data available from Finland, gender and status do not seem to be relevant factors. There appear to be no significant overall male/female or age-group patterns among the burials containing slag. Although Jouko Pukkila found that slag burials in the Aura River valley were almost always the graves of male warriors (Pukkila 1995), this does not seem to hold true for the rest of Finland.[7]

At none of the Finnish cemeteries where I found arguable evidence for non-accidental slag inclusion was there significant distinction in the slag associations among the graves based on gender. As for children, although it is impossible to distinguish them among cremations, those found in inhumation cemeteries (recognized most often merely by the small size of their burial pits) provided the only distinct evidence for differential treatment: children were clearly not accompanied by slag as often as adults, particularly in the early and late periods (fig. 3). This appearance of differential treatment – unless some other explanation for the pattern is forthcoming – provides further support for the intentionality of slag inclusions.

As shown in figure 3, the undated graves likewise exhibited slag inclusion according to the usual pattern. "Undated" graves are essentially those graves lacking artifacts, or sufficient kinds of artifacts, to be dated by artifact style or type. Whether these graves lacking such artifacts belong to the pagan poor or the later Christian dead is difficult to ascertain. Comparisons of burial pit dimensions and depth produce some means of making a distinction, but there remains much overlap. Still, a researcher in the field can gain some sense of which grave may belong to which category. The excavator of Luistari, Lehtosalo-Hilander, argues that many of what appeared to be early medieval and presumably Christian graves continued to receive deliberate inclusions of slag. Thus, neither status, gender, nor incipient Christian belief appear to affect the alleged use of slag in burial ritual; and minority of age only hinders it somewhat, depending on the time period. But as Lehtosalo-Hilander asserts, children seemed to be short-changed on funerary ritual in all respects generally during the pagan periods (Lehtosalo-Hilander 1982/1: 41).

Summary

Taking archaeological and ethnohistoric evidence together, I find it difficult to deny outright the intentional inclusion of slag in these burials. Returning to the hypothesis that smelting or smithing may actually have been part of the funerary ritual carried out at the cemetery site, a few additional thoughts come to mind. It seems generally assumed that smelting pits were located at or within

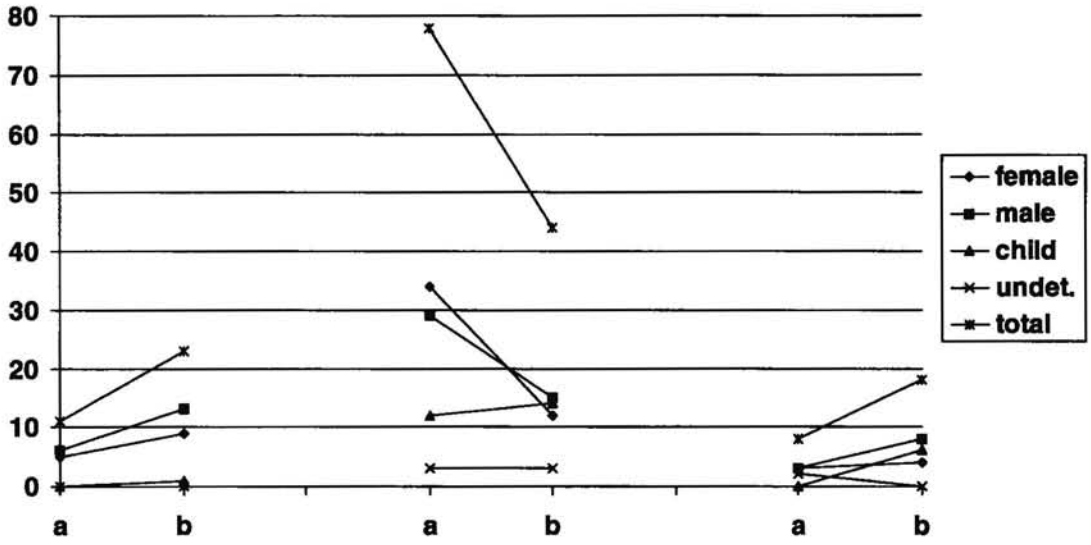

Fig. 3. Analysis of slag content of Luistari graves (data taken from Lehtosalo-Hilander 1982). Merovingian, Viking and Crusade periods are represented from left to right. Numbers of graves with slag (a) compared to number without slag (b).

settlements, that is, at residential sites. In reality, however, the unpleasant smoke and debris ought to provoke reasonable people to place the smelting pits elsewhere, as often happens in other societies. Such a motivation combined with *ideological* reasons may have inspired the Finns to take their smelting pits *directly to their burial grounds* – leading us back to the possibility that the slag and other potential evidence for smelting activity at what otherwise appear to be cemetery sites do indeed have a ritual reason for being there. The traditional Finnish view of iron seems to be somewhat different than the surviving Nordic view. Whereas the Nordic weaponsmith was revered for his ability to instill power and even magic into the iron material out of which he constructed a sword (Foote and Wilson 1970: 273), the Finns typically attributed to iron a more animate and willful spirit that needed to be tamed by the smith. Thus, iron's role in indigenous funerary ritual would be uniquely Finnish and not part of the larger group of shared Fenno-Scandinavian culture traits.

Ethnohistorians and archaeologists alike have argued that the pre-Christian Finns very likely participated in a shamanistic ancestor cult which incorporated a belief in both a strong spirit animism and reincarnation. The body-and-spirit symbolism of slag and iron smelting – the latter an act of creation in itself – combined with the same animistic images of the Ilmarinen iron origin myth, which emphasize, among other aspects, the natural kinship between iron and humanity, proffer a reasonable cosmic justification for the symbolic juxtaposition of death and slag. The act of smelting, the creation of slag, and the places where these events occurred would then involve sacred meanings, but smelting sites would not necessarily have been the only work sites imbued with sacred qualities.

Burning is a primary ritual act in many contexts. Veikko Anttonen has argued on linguistic grounds that swidden cultivation plots, *because* they were burned, acquired the quality of *sacred* land, comparable to that of the cremation (burned) field cemeteries, in the Finnish worldview (Anttonen 1992: 66). I am arguing that a similar sacred conception of smelting sites, where the burning of iron ore took place, is worth consideration. Furthermore, the attribution of sacredness to place in this manner thus falls into a pattern that can be seen as characteristic of the traditional Finnish belief system.

The general concept of slag symbolism may or may not have originated in Finnish culture, but it clearly also appealed to the Mälaren Swedes who both maintained and established trade and culture contacts with the Finns across the Gulf of Bothnia. They were also much involved with local iron production. A comparison of what is known of how slag occurs in relation to both Swedish and Finnish burials could be productive. It would also be worthwhile, as has been mentioned, for archae-

ologists to investigate the larger areas around cemeteries and between burials more closely for signs of actual smelting and to establish whether this activity, if present, is connected and contemporaneous with nearby settlements or, in fact, with the cemeteries themselves. Finally, and most fundamentally, if this phenomenon is to be evaluated further, we need a collection of data on the precise incidence of slag in burials and the particular conditions surrounding the incidence in each case.

Acknowledgements

I am ultimately indebted for the opportunity to conduct my research which produced many results, one of which being this paper, to the helpfulness of the faculty and staff at the Department of Archaeology, Helsinki University, who assisted me and gave me access to unpublished reports when I was conducting my initial dissertation research. Financial support came from a Fulbright-Hays doctoral dissertation scholarship and several HEA Title VI grants, among other sources. The dissertation thesis was directed and defended within the Program for Interdisciplinary Archaeological Studies, University of Minnesota.

NOTES

[1] From post-symposium discussion, Society for American Archaeology meetings, 1996.

[2] Kylähiisi, Kalanti–slag found generally in very small quantities in mounds although one piece weighs 530 grams (from reports archived by Pirkko-Liisa Lehtosalo-Hilander [1968–69]; Jorma Leppäaho and Matti Huurre [1955–56], at Museovirasto, Helsinki). Quantities in each grave mostly limited at Luistari. Child graves are significantly less likely to contain slag than adult graves; if this reflects differential (and lesser) treatment of children in burial as Lehtosalo-Hilander asserts (1982/1: 41), then this point also argues for the intentional use of slag as a ritual item. No more than 6 pieces of slag were found with any one grave at Kjuloholm B (Cleve 1943: 36–48). At Kjuloholm A, cremation grave A1 produced one piece of slag, but inhumation A4 had more than 20 pieces; however, Cleve determined here that the pieces had been included accidentally with the fill earth (1943: 20–1, 24–5). At least 23 graves in mounds from the Kaukola and Tyrväänkylä area produced slag, only 5 with more than 800 grams (Salmio 1982: 178–81). Rather low quantities (259 grams total) in the cremation field at Hätilä, Hämeenlinna (from reports archived by Oiva Keskitalo [1950]; Matti Bergström and Jyri Saukkonen [1980]; and Jyri Saukkonen, Hannu Kotivuori and Markku Heikkinen [1981], at Museovirasto, Helsinki). About two-thirds of the burials at Eko, Vammala (Tyrvää) seem to have deliberate slag inclusions, but many quantities are quite a bit larger here (12 slag groups in excess of 1000 grams total weight; however, some of the larger quantities may be associated with more than one burial; from report archived by Martti Pärssinen [1981], under the auspices of Turku University and the Tyrvää Commune Museum). The quantities are much smaller, consisting mainly of singular or several pieces, in the unusual mound group with inhumations at Kalanti, Kylähiisi (from archived reports by Lehtosalo-Hilander [1968–1969] and Leppäaho and Huurre [1955–1956]).

[3] Many recent changes have occurred in the interpretation of the meaning of so-called "warrior" graves, primarily with respect to the Anglo–Saxon studies of Heinrich Härke (1990, 1992). Others, however, have similarly questioned continental graves, and it is likely that a reevaluation of Scandinavian and even Finnish graves in this light would be a great benefit. In short, there is much evidence that the individuals buried as "warriors" were often not actually the ones who most likely did the fighting. Who and how many among the population were real fighters at need, are questions not directly answered by the grave goods.

[4] In this paper I am accepting the traditional assumptions for sexing (or "engendering") burials by the use of accompanying artifact categories, despite the growing body of research questioning this procedure (e.g. Lucy 1997) which certainly ought to be considered in the future in Finland as well as elsewhere. Unfortunately, the test of comparing gravegood associations with biological skeletal determinations in Finland is scarcely possible, given the usual extremely poor organic preservation, unless currently experimental DNA techniques can be improved and made more accessible for archaeological research.

[5] In support of Sjösvärd's position, such spreads do occur for the stated reason, i.e., nearby smelting activity, in historic burial contexts in New England, as mentioned above. I argue here, however, that the evidence does not fully support that possibility in Iron Age Finland, and at the very least, each side in the argument need to prove its case more strenuously.

[6] Of course, more precise analysis (biochemical and genetic, if necessary) of the bone finds to confirm the human versus animal component would be helpful, although admittedly this work is sometimes prohibitively expensive.

[7] At Kylähiisi, Kalanti, mound 45a contained both slag and a key-ring which has led to a very tentative identification of the burial as female. Other burials at Kylähiisi associated with finds of slag could not be determined with respect to gender at all. At Luistari, based on Lehtosalo-Hilander's published evidence, 36% of the Merovingian period females and 74% of the Viking period females were buried with slag compared to 32% of the Merovingian males and 66% of the Viking males. No Merovingian child was identified with slag, but 46% of the Viking children were. Nevertheless, the issue of accidental slag contamination of at least some burials remains unresolved. Slag occurrence persists in a number of graves at Luistari into the Crusade period, but by then, only 43% of the females and 27% of the males are accompanied by it; again, no child burials contain slag in this last prehistoric period, a striking omission that requires some explanation if it is argued that slag inclusion is accidental. At Kjuloholm B, only females and individuals of undetermined gender are found with slag, but at

Kjuloholm A, two male graves did produce slag content. At Ohriniemi, slag was found associated only with the third of three mounds which also contained a primary burial linked to two spears and a secondary burial lacking gender-specific artifacts. At Kaukola, Vänniä/Ala-Knaapi mound XXXVIII produced 90 grams of slag along with a primary burial accompanied by a sword and a possible secondary burial (presumed female) with a distaff (although Leena Salmio suspects that at least some "female" objects such as loom weights and cubic stones actually occur in direct association with male burials so that this may in fact be only a single burial; 1982: 13 ff.). Slag was found in 23 Kaukola, Tyrväänkylä, and Liekosaari graves, and most of these were judged to be male although very few females were "visible" from these mounds except for the few lavishly buried females that were noted.

REFERENCES

Andersen, Steen Wulff 1990. Alsiske brandgrave fra den yngre jernalder. *Kuml* 1988–89, Årbog for Jysk Arkæologisk Selskab: 249–87.

Anttonen, Veikko 1992. Interpreting Ethnic Categories Denoting 'Sacred' in a Finnish and Ob-Ugrian Context. *Temenos* 28: 53–80.

Arwidsson, Greta, ed. 1984-86. *Systematische Analyses der Gräberfunde, Birka* II: 1–2. Stockholm.

Burström, Mats 1990. Järnframställning och gravritual. *Fornvännen* 85: 261–71.

Cleve, Nils 1943/1978. Skelettgravfälten på Kjuloholm i Kjulo, I-II. *Suomen Muinaismuistoyhdistyksen Aikakauskirja* 44:1–2.

Foote, Peter G. & Wilson, David M. 1970. *The Viking Achievement, the Society and Culture of Early Medieval Scandinavia*. London.

Gräslund, Anne-Sofie 1980. *Birka IV: the Burial Customs, A Study of the Graves on Björkö*. K. Vitterhets Historie och Antikvitets Akademien.

Hansson, Pär 1989. Samhälle och järn i Sverige under järnåldern och äldre medeltiden. Exemplet Närke. *Aun* 13. Societas Archaeologica Upsaliensis.

Härke, Heinrich 1990. Warrior Graves. The Background of the Anglo-Saxon Weapon Burial Rite. *Past and Present* 126: 22–43.

Härke, Heinrich 1992. Changing Symbols in a Changing Society: the Anglo-Saxon Weapon Burial Rite in the Seventh Century. In *The Age of Sutton Hoo: the Seventh Century in North–Western Europe*, ed. Martin Carver. Woodbridge, England: Boydell: 149–62.

Humphreys, Sally C. 1981. Death and Time. In *Mortality and Immortality: the Anthropology and Archaeology of Death*, eds. S. C. Humphreys, H. King. London; New York: Academic Press: 1–14.

Jankavs, Peter 1987. *Samhälle–Symbol–Grav, reflexioner kring ett arkeologiskt problemområde*. Göteborg: Universitet, Inst. för Arkeologi.

Kuusi, Matti & Bosley Keith & Branch, Michael 1977. *Finnish Folk Poetry–Epic*. Finnish Literature Society. Helsinki.

Lehtosalo-Hilander, Pirkko-Liisa 1982. Luistari I-III. *Suomen Muinaismuistoyhdistyksen Aikakauskirja* 82:1–3.

Leppäaho, Jorma 1951. Raudan synnystä Suomen muinaisrunojen ja -löytöjen valossa. *Kalevalaseuran vuosikirja* 31: 201–24.

Lucy, S.J. 1997. Housewives, Warriors and Slaves? Sex and Gender in Anglo-Saxon Burials. In *Invisible People and Processes: Writing Gender and Childhood into European Archaeology*, eds. Jenny Moore and Eleanor Scott. London; New York: Leicester University Press: 150–68.

Madsen, Orla 1994. Søndervang ved Bjerre, en østjysk gravplads fra yngre germansk jernalder og vikingetid. *Kuml* 1991–92, Årbog for Jysk Arkæologisk Selskab: 105–49.

Maguon, Francis Peabody, Jr., trans. 1963. *The Kalevala, or Poems of the Kaleva District*, compiled by Elias Lönnrot. Cambridge, Massachusetts: Harvard University Press.

Oinas, Felix J. 1987. Shamanistic Components in the Kalevala. In *Kalevala et Traditions Orales du Monde*, ed. M. M. Jocelyne Fernandez-Vest. Paris: Éditions du C.N.R.S.: 39–52.

Ojala, Helena & Tiitinen, Teija & Viitaharju, Johanna 1987. Vammala, Kutala, Ohriniemi. Rautakautisten kumpujen tutkimus 1983–85. *Karhunhammas* 11: 152–77.

Pentikäinen, Juha 1985. The Human Life Cycle and Annual Rhythm of Nature in Finnish Folklore. *Temenos* 21: 127-43.

Pentikäinen, Juha 1989. *Kalevala Mythology*, trans. and ed. Ritva Poom. Bloomington; Indianapolis: Indiana University Press.

Pukkila, Jouko 1995. Iron Slag and Iron Work in the Aura River Valley during the Iron Age. *Karhunhammas* 16: 83-90.

Renfrew, Colin & Bahn, Paul 1991. *Archaeology: Theories, Methods, and Practice*. New York.

Salmio, Leena 1982. Tyrvään Kaukolan, Tyrväänkylän ja Liekosaaren rautakautiset kalmistot. *Karhunhammas* 6.

Shepherd, Deborah J. 1996. *Funerary Ritual and Symbolism: An Interdisciplinary Interpretation of Burial Practices in Late Iron Age Finland*, Ph.D. Dissertation, University of Minnesota (May 1995). Ann Arbor, Michigan: University Microfilms.

Sjösvärd, Lars 1984. An Iron Age–Medieval Settlement and Cemetery Complex in Hälsingland, N. Sweden. *Sachsen Symposion Skara 1983*, eds. Ulf Erik Hagberg, Lars Jacobson, Christer Ask. Skaraborgs Länsmuseum: 56-61.

Sjøvold, Thorleif 1974. The Iron Age Settlement of Arctic Norway, v. 2, Late Iron Age. *Tromsø Museums Skrifter* 10 [2].

Söyrinki-Harmo, Leena 1984. Problems of Research Related to Cremation Cemeteries in Häme. In Fenno–Ugri et Slavi 1983, papers [from] the Soviet-Finnish Symposium "Trade, Exchange and Culture Relations of the Peoples of Fennoscandia and Eastern Europe," 9–13 May, 1983, ed. Torsten Edgren. *Iskos* 4: 112:20.

Storå, Nils 1971. Burial Customs of the Skolt Lapps. Suomalainen Tiedeakatemia. *FF Communications* 210.

Taavitsainen, J.-P. 1990. Ancient Hillforts of Finland. *Suomen Muinaismuistoyhdistyksen Aikakauskirja* 94.

Taavitsainen, J.-P. 1992. Cemeteries or Refuse Heaps. Archaeological formation processes and the interpretation of sites and antiquities. *Suomen Museo* 1991: 5–14.