Chapter 11

Interpreting Social Space and Social Status in the Viking Age House at Hrísbrú Using Integrated Geoarchaeological and Microrefuse Analyses

Karen Milek, Davide Zori, Colin Connors, Waltraud Baier, Kate Baker, and Jesse Byock

In the Viking Age North Atlantic, the most important social space was the farmstead, with its residential buildings, outbuildings, and outdoor activity areas. Here members of the household – the basic socio-economic unit – interacted with each other, their animals and visitors, and performed any number of daily routines and social, economic and religious activities. Fortunately for us, Viking Age houses in the North Atlantic region are exceptionally well preserved compared to their counterparts in Scandinavia due to the lack of arable agriculture in Iceland and the use of turf as a construction material for walls as well as roofs, which tended to collapse inwards to rapidly seal internal occupation deposits.[1] Houses such as the tenth- to early eleventh-century house at Hrísbrú in the Mosfell Valley therefore have the potential to provide important information about the organization of everyday life in the Viking Age. In Iceland, where the number of excavated Viking Age houses now numbers close to forty, the house at Hrísbrú was exceptional in its preservation, size, and the richness of its artefact assemblage, and it therefore has an important role to play in the understanding of how the earliest settlers established new homes for themselves in a new environment, how they organized their households and economic activities, how they interacted with the wider community, and how household and social organization changed over the first few hundred years of the society's development.

At first glance, Viking Age houses in the North Atlantic region appear to have so many common characteristics that they have been described by numerous scholars as 'homogenous', 'standardized', or even 'identical' in layout – a direct importation of Norwegian building traditions.[2] At 25.2 metres long, the internal length of the house at Hrísbrú was substantially larger than the average Viking Age house in Iceland, which was only around 15 metres (Graph 11.1), but in most other ways it displayed the classic characteristics of the

[1] Milek, 'Floor Formation Processes and the Interpretation of Activity Areas', p. 124.

[2] Crawford, *Scandinavian Scotland*; Þór Magnússon, 'Isländska Boningshus under Vikingatid och Medeltid'; Stoklund, 'Houses and Culture in the North Atlantic Isles'; Stummann Hansen, 'Viking Settlement in Shetland'; Stummann Hansen and Waugh, 'Scandinavian Settlement in Unst, Shetland'.

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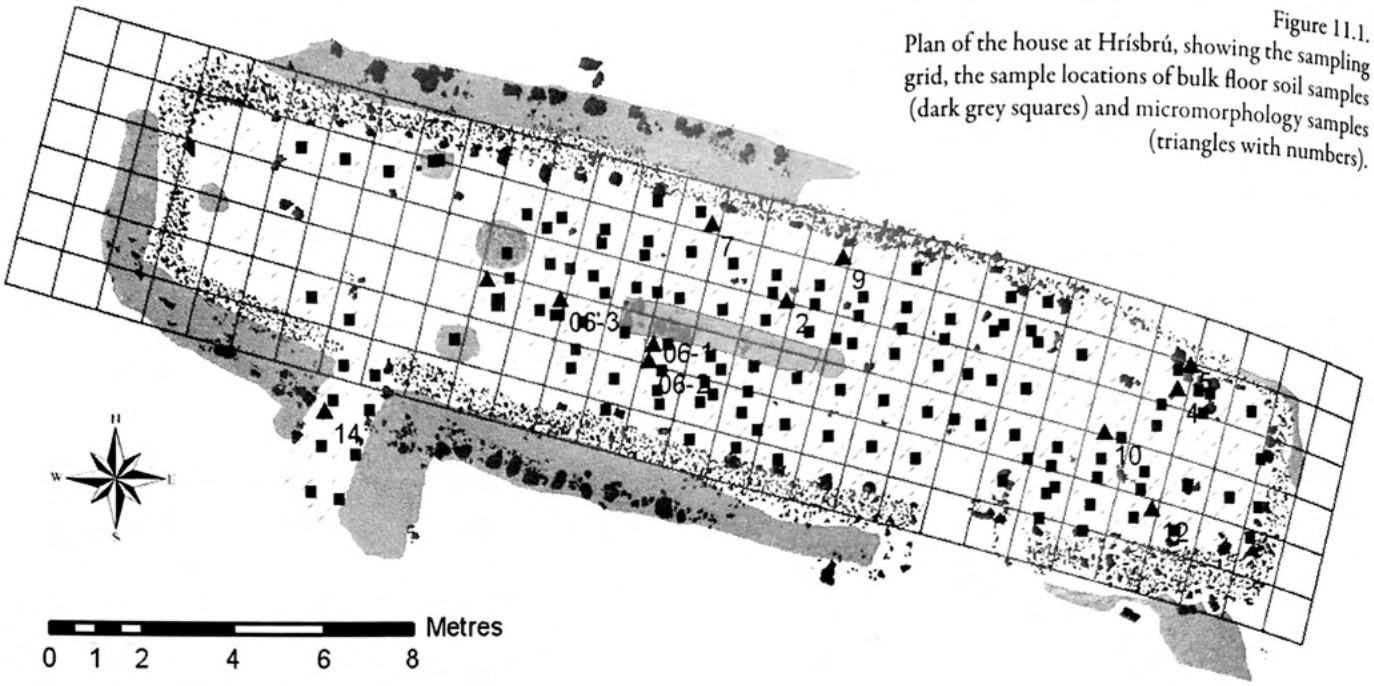
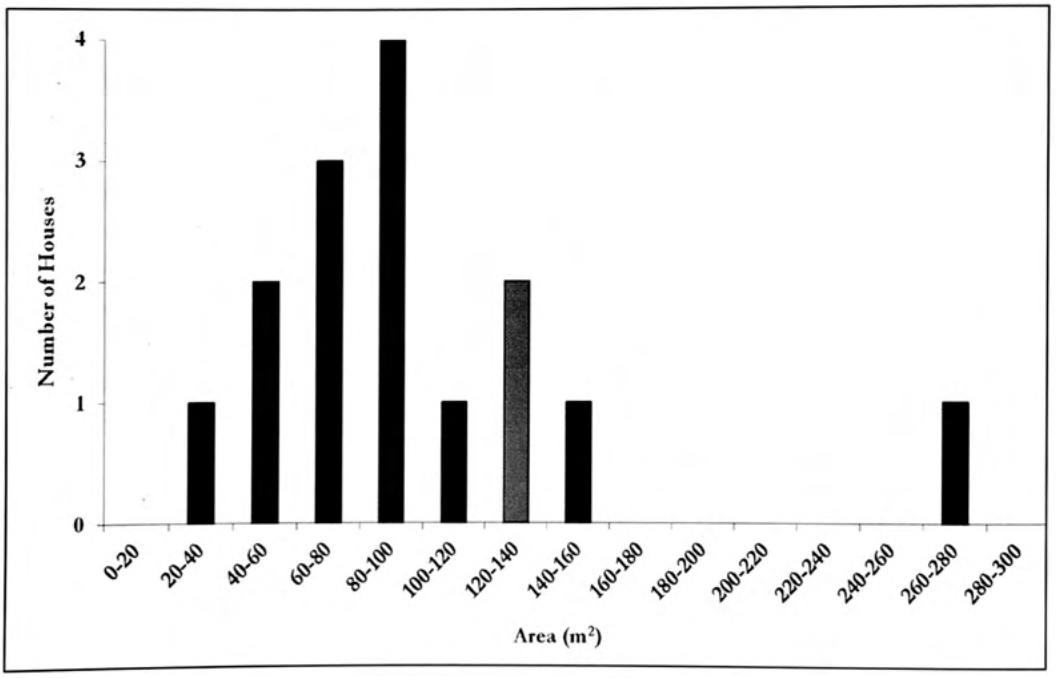


Figure 11.1.
Plan of the house at Hrísbrú, showing the sampling grid, the sample locations of bulk floor soil samples (dark grey squares) and micromorphology samples (triangles with numbers).



Graph 11.1.
The area of the internal floor space of the Hrísbrú house (grey) relative to other Viking Age houses in Iceland. The outlier with the largest internal surface area is Hofstaðir AB.

oblong, bow-sided dwelling houses found throughout the Viking world (Figure 11.1 and Plates 1 and 3). Two rows of roof-supporting posts ran the length of the building, dividing the interior width into three aisles, the central of which contained the thickest and most compacted floor deposits and clearly served as the main corridor for foot traffic through the house. The length of the house was also divided into three main spaces, with two smaller rooms at the gable (short) ends of the house and a larger, central room that contained a hearth in the middle of the lower central aisle and two raised platforms or benches in the side aisles.[3] As was common practice, the central room was separated from the gable rooms by entrance passageways, in this case leading from two doors that faced down slope, to the southwest. At Hrísbrú, the main entrance – the western entrance – was marked by a small porch or entrance lobby with its own walls and roof, a practice seen in a few other dwelling houses in Iceland.[4]

[3] See the interpretation of Oma, Norway, in Myhre, 'Bolighusets Utvikling fra Jernalder til Middelalder i Sørvest-Norge'.

[4] For example, see Gréluttótir, Skallakot, and Aðalstræti 16, in Reykjavík, in Guðmundur Ólafsson, 'Grelutóttir'; Roussell,

Based on this superficial consideration of the form and internal layout of Viking Age houses, one could be excused for thinking that Norse immigrants in the North Atlantic region had a fixed architectural template from which they did not deviate. In fact, a closer analysis of activity areas in Viking Age houses shows that only the large central room remained relatively uniform in its internal organization and the character of its internal features, while there was considerable innovation in the sizes, forms, features and functions of the gable end rooms and the small annexes that were often abutted to the original houses.[5] Moreover, there appears to have been variety in the degrees and ways in which houses were elaborated with different types of flooring (e.g. timber, stone pavements) and wooden wall panelling or wainscoting.[6] A comparison of the size, complexity, elaboration of space and organization of activities in houses therefore has the potential to shed light on social relations in Viking Age Iceland – not just how members of a household interacted with each other on a daily basis, but also how they wished to present themselves and interact with people in the wider community.

This chapter considers how the Viking Age house at Hrísbrú functioned as a social and economic space, and explores whether there is evidence for the expression of social status beyond the plain fact of the building's large size – in the layout and elaboration of different rooms, for example, and in the organization of different types of social and economic activities within the house. Even by Icelandic standards the house at Hrísbrú was exceptionally well preserved, with intact floor deposits, post holes, barrel pits, a hearth, and an abundance of artefacts, which provided insights into the layout, organization of space, and activity patterning particular to this house. Interpretations about how space in the house was organized and used based on these macroscopic features and finds[7] was substantially built upon by a suite of detailed sedimentary analyses that examined the microscopic residues in the floor sediments. Although the distributions of finds in floor layers *may* suggest the activities that took place there, ethnoarchaeological and experimental studies have shown that in fact few artefacts enter the archaeological record in the exact location where they were used – especially those larger than ten millimetres, which are likely to be seen and picked up for disposal in a midden, kicked or swept aside from heavy traffic areas, taken away for reuse when the dwelling was abandoned, or intentionally placed in a building as part of a cache or a ritualized closing deposit.[8] For this reason, we used several different micro-analytical techniques to analyse the activity areas in the house at Hrísbrú, including the distributions of artefact and bone microrefuse, micromorphological analysis of sediment thin sections, and basic chemical properties and organic content of the floor sediments.

Methods

Excavation and Sampling

The house at Hrísbrú was excavated using the single-context recording method and all small finds were recorded three dimensionally (Table 11.1). All of the thirty-eight occupation phase contexts below the post-abandonment turf collapse layers were one hundred per cent sampled, half of which were floor surface layers and half of which were ash dumps and pit fills. Each floor layer was sampled using a 1 m grid that was aligned with the main axes of the house. Small bulk samples (about 200 ml) from each grid square in each floor layer were bagged and set aside for geochemical analyses, while the remainder of the sediment from each sampling square was collected for flotation and wet sieving with 1 mm mesh. Altogether two hundred and ten flotation samples totalling 1181 litres of sediment were processed, from which the light fraction was collected for archaeobotanical analysis and the heavy fraction was collected for microrefuse analysis.[9] In addition, seventeen undisturbed blocks for micromorphological analysis were taken using 90 × 50 × 40 mm

'Skallakot, Þjórsárdalur'; Roberts, ed., *Excavations at Aðalstræti, 2003*.

5 For a detailed survey, see Milek, 'Houses and Households in Early Icelandic Society', pp. 139–54.

6 Milek, 'Houses and Households in Early Icelandic Society', pp. 190–91; Guðrún Sveinbjarnardóttir, 'Settlements and Buildings of the Scandinavians in the North Atlantic Region'.

7 Byock and Zori, *The Hrísbrú Longhouse Excavation and Borg Test Excavation*; Zori, 'Viking Chiefdoms to Medieval State in Iceland'; Hansen and others, Chapter 9, this volume.

8 Bartram, Kroll, and Bunn, 'Variability in Camp Structure and Bone Food Refuse Patterning'; Hayden and Cannon, 'Where the Garbage Goes'; LaMotta and Schiffer, 'Formation Processes of House Floor Assemblages'; Lange and Rydberg, 'Abandonment and Post-Abandonment Behavior'; Schiffer, *Formation Processes of the Archaeological Record*, pp. 62–63; Stevenson, 'Toward an Understanding of Site Abandonment Behaviour'; Tani, 'Beyond the Identification of Formation Processes'; Wilk and Schiffer, 'The Archaeology of Vacant Lots in Tucson, Arizona'.

9 See Martin, Chapter 14, this volume, on the analysis of the macrobotanical remains from the Hrísbrú longhouse.

Table 11.1. Summary field descriptions of the floor layers in the house at Hrísbrú.

Context	Location	Description
C-2006-11	Central hall	floor layer on top of N bench under collapse
C-2006-12	Central hall	floor layer on top of S bench under collapse
C-2006-13	Central hall	floor layer under collapse in E end of Trench-2006-2 (same as C-11)
C-2006-14	Central hall	floor layer, black and compact
C-2006-19	Central hall	floor layer under turf collapse, uneven, with pockets of light brown soil
C-2007-40	West gable room	midden dump, charcoal rich, W end of longhouse
C-2007-88	East gable room	greasy grey floor/midden layer in east gable room next to N wall
C-2007-94	East gable room	floor layer in elevated part of E gable room
C-2007-95	Anteroom	black charcoal floor layer on plateau in the anteroom
C-2007-96	East gable room	white ash, thin lens in E gable room, N side
C-2007-115	West doorway	layer in walkway on S side
C-2007-120	East gable room	hay floor, E end, N side
C-2008-145	Central hall	mottled floor layer in central hall under C-2006-14, S of hearth
C-2008-147	Central hall	mottled black, orange, grey floor layer under C-2008-14, N of hearth
C-2008-148	Central hall	hearth spill SW corner of hearth in central hall; gravel and charcoal mix
C-2008-154	Central hall	floor material on side of N bench
C-2008-155	Central hall	floor material on side of S bench
C-2008-156	Central hall	very thin black charcoal lens beneath C-2008-147
C-2008-157	Central hall	orange clay spread between hearth and N bench, beneath C-2008-147
C-2008-158	Central hall	black/mottled floor under C-2008-157, N of hearth in central hall
C-2008-163	Central hall	thin black lens overlying sterile orange clay, under C-2008-158
C-2008-164	West gable room	dark charcoal layer starting in the entrance and onto the S bench
C-2008-165	Anteroom	surface layer under C-2007-95 in the NE corner of the anteroom
C-2008-167	Central hall	orange clay spread; small layer above C-2008-163
C-2008-168	East gable room	dark grey-brown organic silt; charcoal flecks in S side aisle of E end
C-2008-183	West gable room	layer of burnt wood and unburnt wood inside W doorway
C-2008-190	Central hall	ash and charcoal deposit between double post holes W of central hearth
C-2008-193	East gable room	floor in NE corner of east end; grey with charcoal
C-2008-194	East gable room	floor in east end of central aisle in E gable room; grey with charcoal
C-2008-202	East gable room	small wood ash spread in S side of the Eastern end
C-2008-203	Central hall	layer under C-2007-94 in E end, adjacent to N bench of central hall
C-2008-208	West gable room	surface layer in S aisle in W gable room
C-2008-209	West gable room	surface layer in N aisle in W gable room
C-2008-213	East gable room	white organic lens in N side aisle of E end
C-2008-214	East gable room	wood ash spread between post holes N of central aisle in E end
C-2008-216	East gable room	small dump of peat ash around NE post hole in E end
C-2008-217	East gable room	layer of mixed/multi-lensed, undulating charcoal/trampled floor and aeolian soil

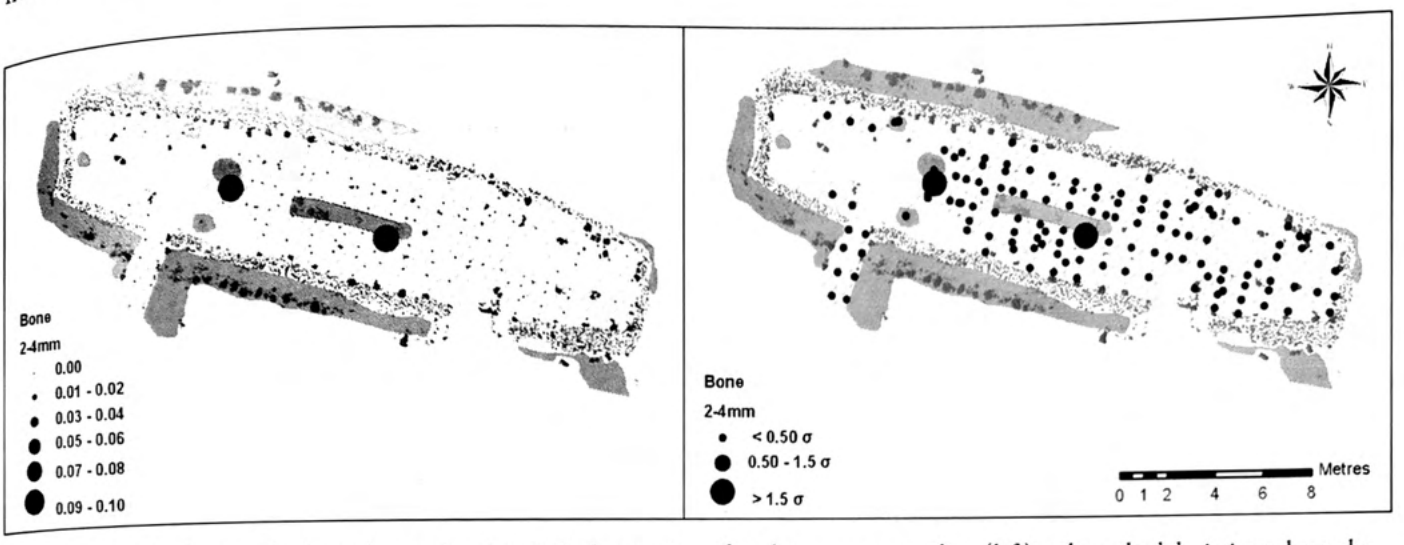


Figure 11.2a. Distribution of unburnt bones, showing the 2–4 mm microrefuse data as counts per litre (left) and standard deviations above the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

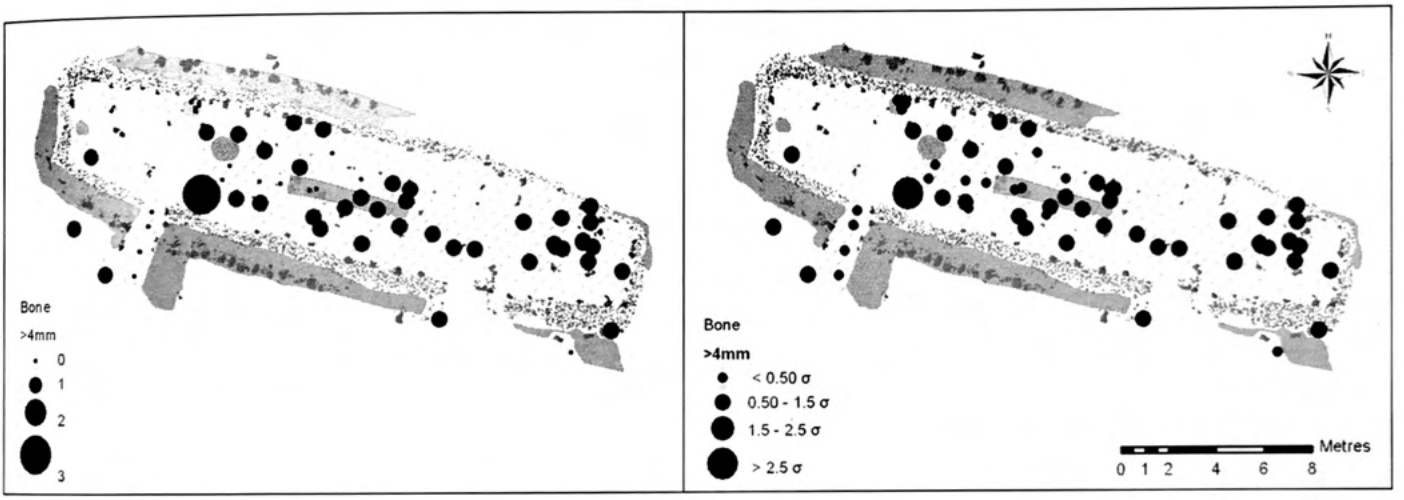


Figure 11.2b. Distribution of bones >4 mm, which were hand-collected in the field, showing the data as NISP counts (left) and as standard deviations from the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

aluminium kubiena tins from all of the key floor layers (Figure 11.1).[10] Twelve of these samples were impregnated with resin and thin sectioned, while the remainder were stored for future subsampling, if needed.

Microrefuse Analysis

Microrefuse analysis involves the quantification of the most minute artefacts and bones, usually 0.25–5 mm in size, which have a better chance of being preserved *in situ* than larger objects due to the size-sorting that occurs on floor surfaces during trampling and cleaning, and which therefore provide more precise information about the locations of activity areas.[11] The heavy fraction recovered from the Hrísbrú flotation samples was dry-sieved using 1 mm, 2 mm and 4 mm sieves, and all finds over 1 mm in size were sorted under a stereomicroscope, including stone artefact fragments (flint, sandstone, rhyolite), bone, burnt bone, iron fragments, hammerscale and slag. After being counted and weighed, each type of microrefuse was quantified per litre of sediment (counts divided by volume of the floated sample) and mapped using ArcGIS to permit an analysis of their concentrations within the house. Since there were several overlapping occupation deposits in the central living room,

[10] Following the methods of Courty, Goldberg, and Macphail, *Soils and Micromorphology in Archaeology*.

[11] Dunnell and Stein, 'Theoretical Issues in the Interpretation of Microartefacts'; Fladmark, 'Microdebitage Analysis'; Metcalfe and Heath, 'Microrefuse and Site Structure'; Sherwood, Simek, and Polhemus, 'Artifact Size and Spatial Process'.

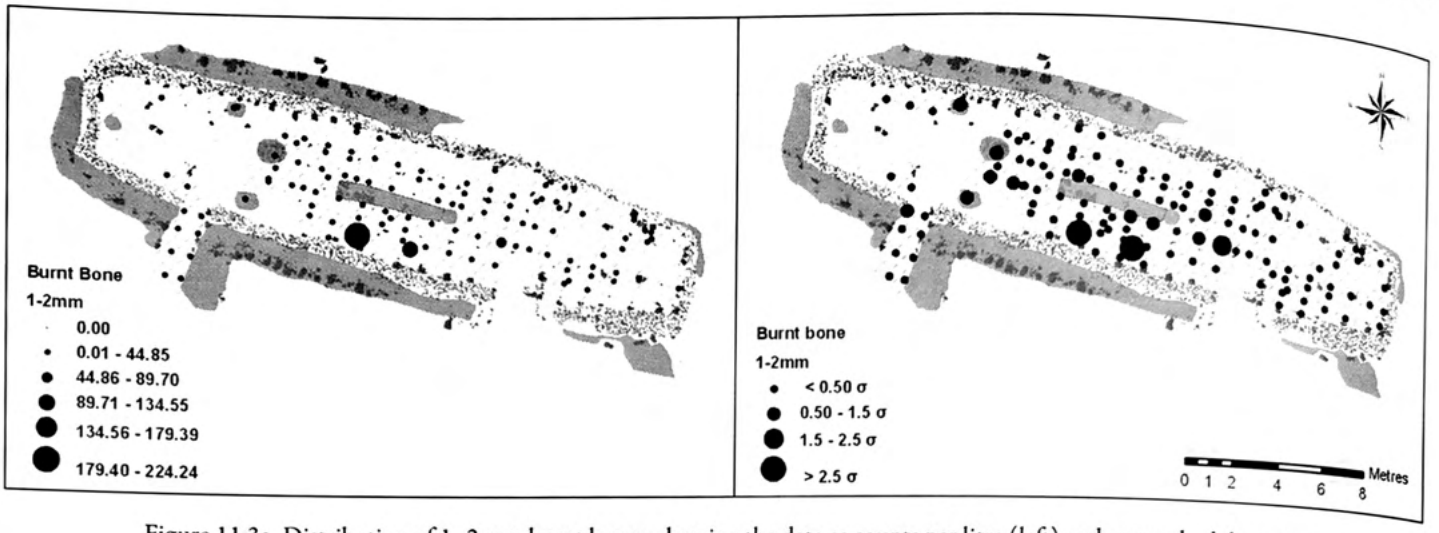


Figure 11.3a. Distribution of 1–2 mm burnt bones, showing the data as counts per litre (left) and as standard deviations from the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

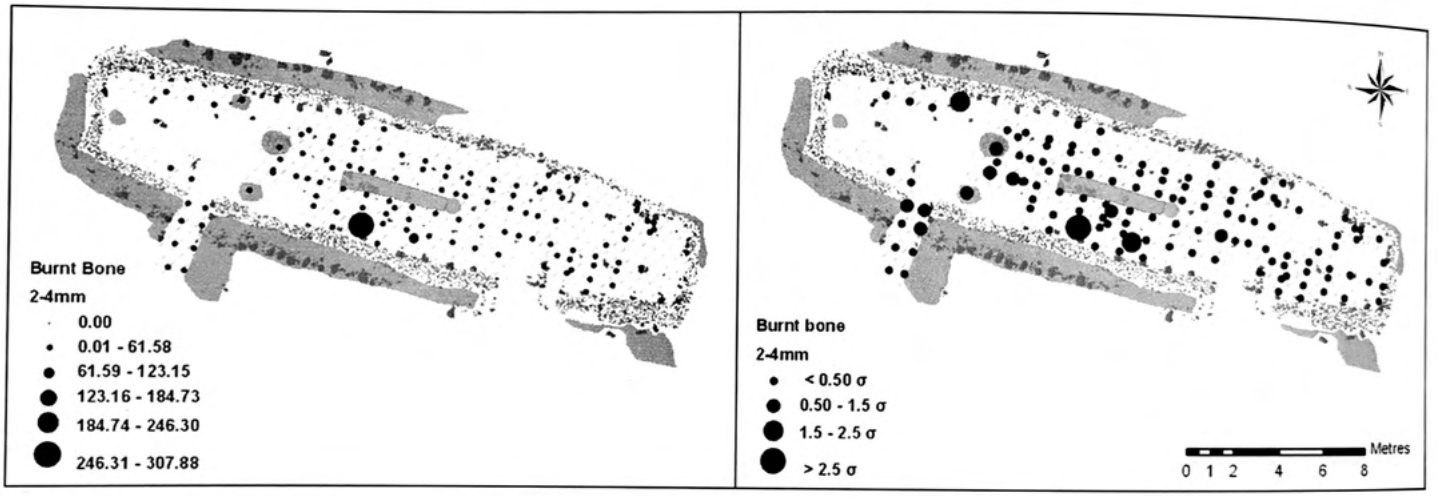


Figure 11.3b. Distribution of 2–4 mm burnt bones, showing the data as counts per litre (left) and as standard deviations from the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

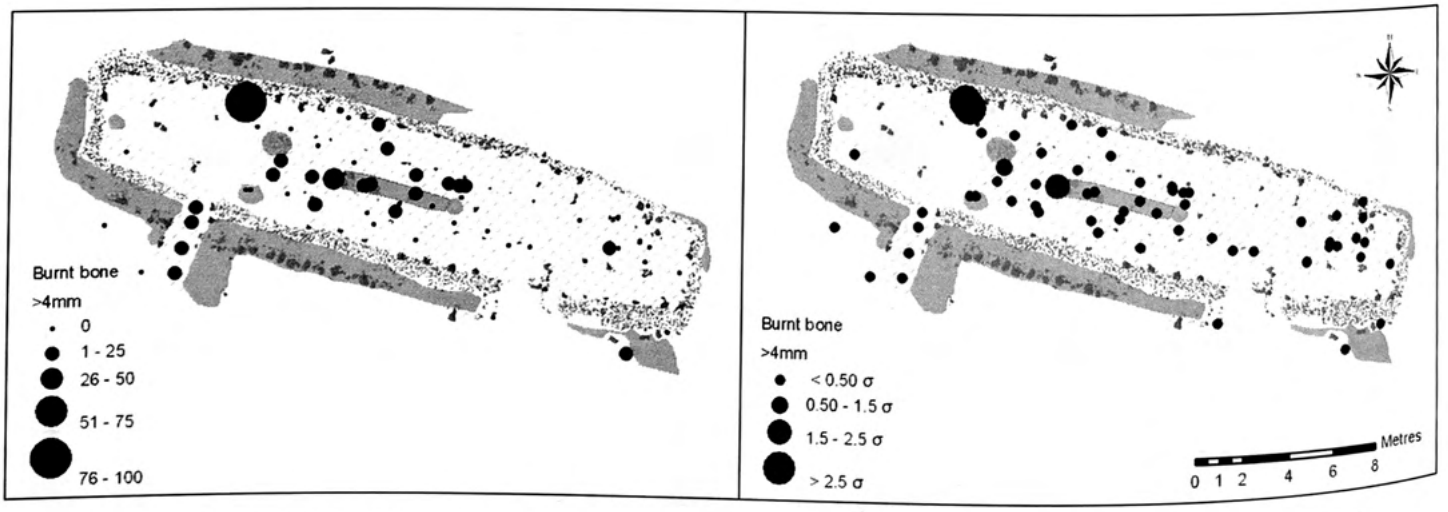


Figure 11.3c. Distribution of burnt bones >4 mm, which were hand-collected in the field, showing the data as NISP counts (left) and as standard deviations from the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

only the main occupation surfaces in this room, contexts C-2006-11 and C-2006-12 in the northern and southern side aisles, and C-2006-14 in the central aisle, were chosen for display here (Figures 11.2–11.7).

Sediment Analyses

Rapid and inexpensive analyses such as loss on ignition for an estimation of organic content, electrical conductivity for an estimation of soluble salt content, and pH for an assessment of the acidity or alkalinity of the soil, provide valuable preliminary information about differences in soil or sediment composition, the possible locations of different activity areas, and the preservation conditions on the site.[12] Loss on ignition at 550 °C, the temperature at which organic matter fully combusts, provides a simple means of verifying and quantifying the charred and/or decomposed organic matter observed in the field and recorded routinely on context sheets. One can gain an understanding of the relative proportions of charred and decomposing organic matter behind the loss on ignition values if one compares them to pH values. Archaeological sediments containing a high proportion of decomposing organic matter, which yields humic acids, or peat ash, which yields silicic acids, will have a lower pH relative to archaeological sediments containing a high proportion of wood ash or charcoal, which are rich in alkaline elements such as calcium, potassium, sodium and magnesium. In Iceland, where soils are naturally acidic due to the high proportion of silicic minerals (tephras, for example), the acidity of archaeological sediments is also affected by the quantity of soil relative to the human-made inputs. In addition, rain water (natural pH 5.6) percolating through archaeological sediments will dissolve alkaline materials, especially fine-grained calcareous ash, gradually acidifying them over time. Bone is soluble in acidic conditions (pH<7), and therefore any consideration of bone distributions – especially bone microrefuse – must take into consideration the distribution of pH values as well.

Similarly, the distributions of metal artefacts and microrefuse such as iron hammerscale should be interpreted in light of the distribution of the sediment's soluble salt content. Electrical conductivity of the soil solution, which measures its ability to carry an electrical current, provides an estimate of the soluble salts (ions) present, which can rapidly corrode and deteriorate metal artefacts, especially in the presence of fluctuating moisture conditions. It is not possible to determine the types of ions present using electrical conductivity.[13] However, the distribution patterns of electrical conductivity values can give a preliminary insight into the locations of activity areas, and if the distribution appears to be clustered rather than random, it indicates that it might be worth pursuing more costly techniques such as multi-element analyses (such as ICP-AES).

To conduct these basic geochemical and organic analyses, bulk samples were air dried, gently powdered with a mortar and pestle, and sieved to remove inclusions larger than 2 mm. Loss on ignition was conducted by drying 5–10 g of sediment in a crucible at 105 °C for at least three hours and measuring the weight lost by the sample after ignition at 550° C for six hours.[14] Electrical conductivity and pH of the soil solution were tested using a HANNA Combo Waterproof metre immersed in beakers containing 2:5 soil:water suspensions made with distilled water with a pH of 6.8. The results were plotted on a plan of the house using ArcGIS (Figure 11.7).

Micromorphological Analysis

The analysis of undisturbed soil or sediment in thin section permits the identification and quantification of the mineral, organic, and anthropogenic components, including different types of fuel ash residues, charred plant and wood remains, animal excrements, wood and herbaceous organic matter in various stages of decomposition, minute artefacts, and bones. It also makes it possible to observe the physical organization and orientation of these components (for example, whether they are horizontally bedded or randomly organized), the microstructures present, which can indicate compaction by trampling, for example, and any post-depositional soil formation processes such as bioturbation, leaching or eluviation, which can affect preservation conditions.

Twelve undisturbed block samples from Hrísbrú were dried using acetone replacement of water, impregnated with crystic polyester resin and thin-sectioned to a thick-

[12] For examples of these methods at work, see Milek, 'The Roles of Pit Houses and Gendered Spaces on Viking-Age Farmsteads in Iceland'.

[13] For example, whether they are calcium (Ca^{2+}) or potassium ions (K^{+}), which are especially abundant in wood ash, sodium (Na^{+}) or chloride ions (Cl^{-}), which are especially abundant in seaweed, or phosphate (PO_4^{3-}) or nitrate (NO_3^{-}), which are especially abundant in animal excrements.

[14] Following Nelson and Sommers, 'Total Carbon, Organic Carbon and Organic Matter'.

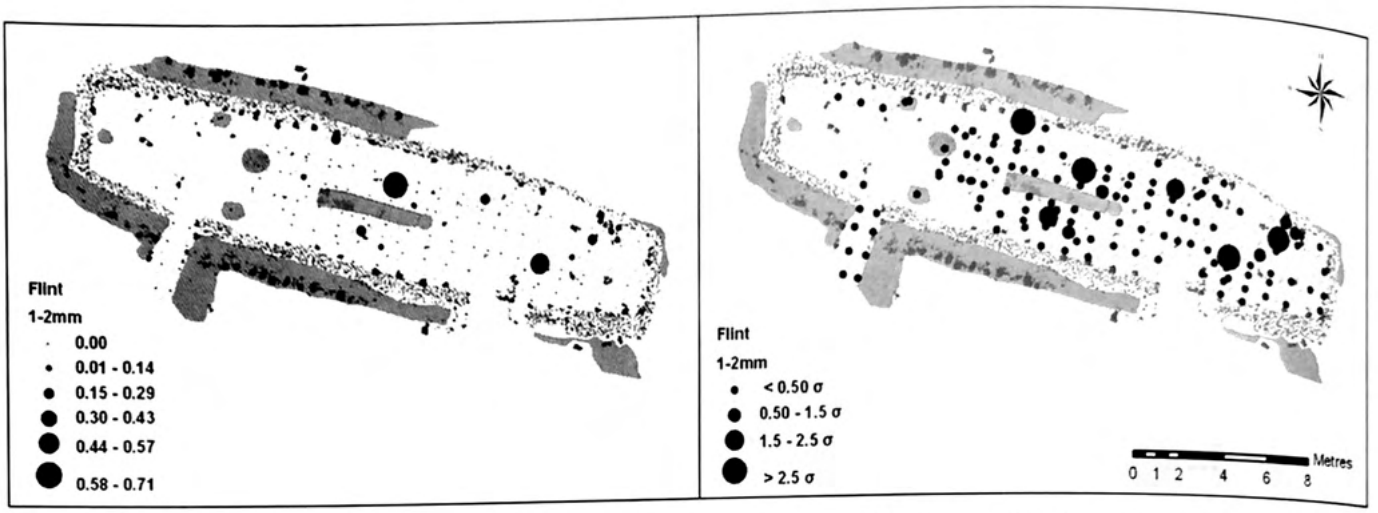


Figure 11.4a. Distribution of 1–2 mm flint flakes, showing the data as counts per litre (left) and as standard deviations from the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

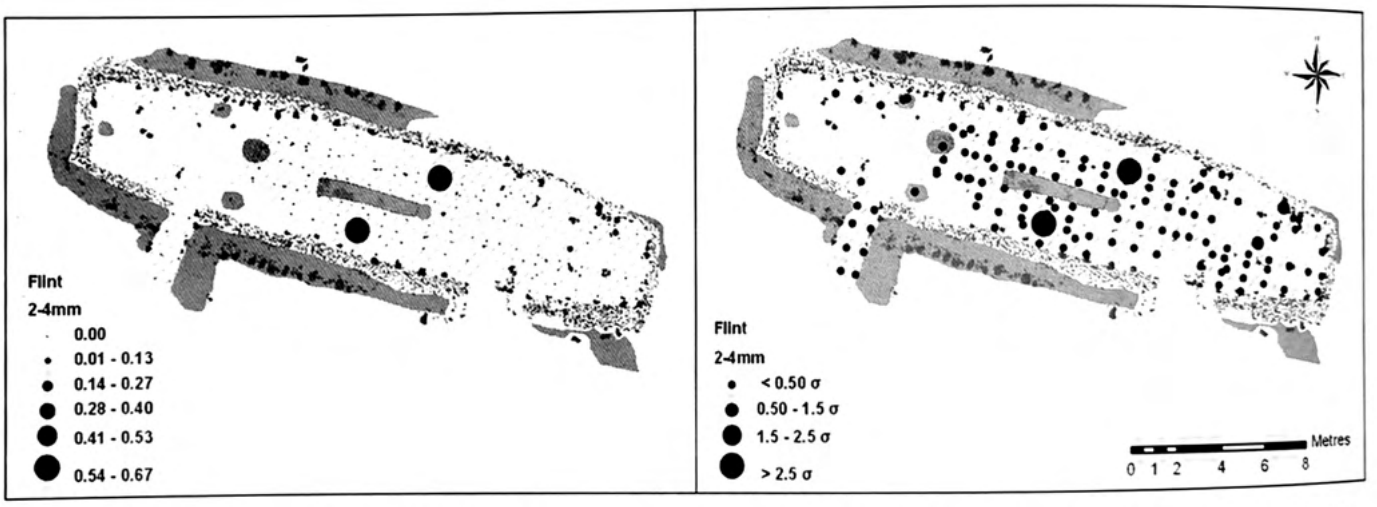


Figure 11.4b. Distribution of 2–4 mm flint flakes, showing the data as counts per litre (left) and as standard deviations from the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

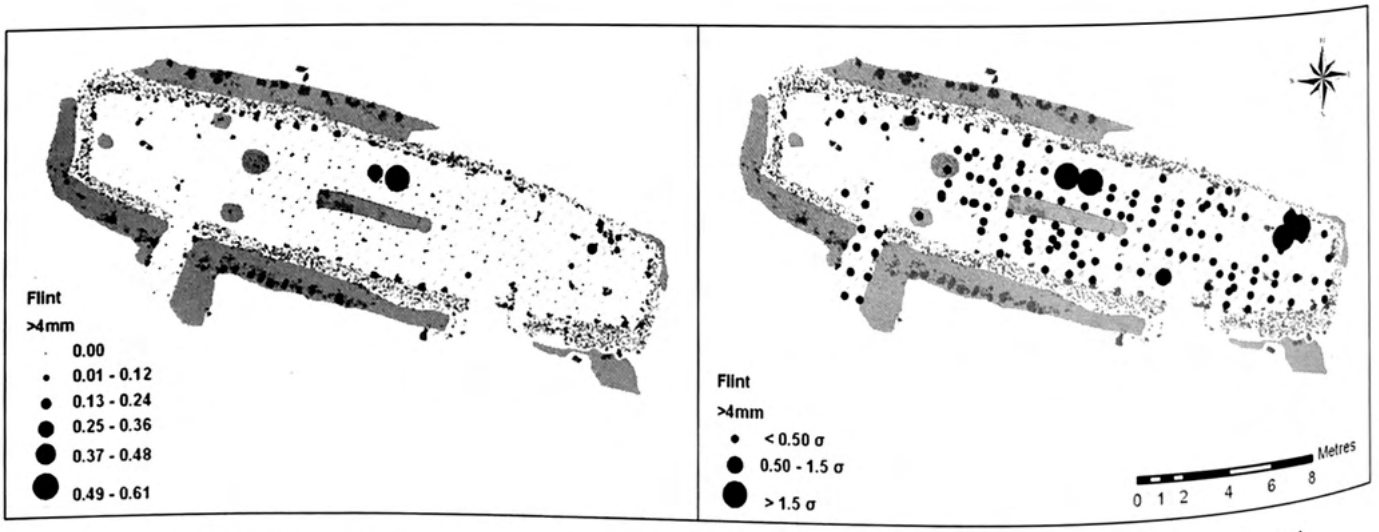


Figure 11.4c. Distribution of >4 mm flint flakes, shown as counts per litre (left) and as standard deviations from the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

ness of *c.* 30 μm.[15] Thin sections were scanned on a flatbed scanner and then analysed with petrographic microscopes at magnifications ranging from x 4–250 with plane-polarized light (PPL), cross-polarized light (XPL) and oblique-incident light (OIL). Micromorphological analysis produces visual data, which are normally presented in the form of photographs and written descriptions of the components and features observed under the microscope (Plates 8, 9, and 10).[16] The identification and interpretation of different components seen in thin section is aided by reference to modern analogues, other micromorphological studies, and sedimentary, biological and chemical processes in soils.[17]

Results: The Organization and Use of Space in the House at Hrísbrú

The excavation at Hrísbrú revealed a turf- and stone-built house with gently curving long walls and straight short (gable) walls enclosing an internal space roughly twenty-five metres by five metres. The house was divided into five distinct spaces: a three-aisled central room containing a hearth in a sunken centre aisle and raised platforms in the side aisles, gable rooms on both ends of the house, a sort of anteroom between the central room and the western gable room, and an entryway leading out of the house. Within these distinct spaces, the excavation uncovered twenty individual floor layers of varying composition, colour, texture and structure as well as distinctive features such as hearths and pits. These floors and features guided the preliminary interpretations of how the five spatial units of the house had been used.

Western Entrance

The western door of the house was flanked on the outside by short turf walls that abutted the south wall of the house, creating an entrance passageway that was about 3.5 metres long and 1.2 metres wide (Figures 1.2 and 1.3, Chapter 1 in this volume). Stones lined the insides of these walls, some of which were post-pads for roof-supporting posts, and it is likely that the entrance had its own small gable. Underneath the turf collapse, there was an occupation surface consisting of grey and black ash, as well as partially decomposed wood fragments and stains of fully decomposed wood severely reworked by soil fauna, all clearly oriented east-west and parallel to the south wall of the house (C-2007-115). The surface had a rippled appearance, caused by what appeared to be depressions of wooden planks laid at intervals across the passageway.

Relatively few artefacts were found in the occupation deposit in the entrance passageway, including a bone pin-head and a lead weight. The latter was probably an accidental loss,[18] but as it is such a special find, the possibility cannot be discounted that it may have been placed in the entrance intentionally during the abandonment of the house as a closing deposit. Several large pieces of burnt bone were also found here (Figure 11.3c), and the micro-refuse analysis revealed a spread of minute burnt bone fragments as well, which were more heavily concentrated close to the threshold of the door, gradually thinning out further from the door (Figures 11.3a–b). There was also a very light scattering of iron hammerscale in the entrance passageway (Figures 11.6a–b), and, in micromorphology sample MS2008-14, a few minute charcoal fragments (Plate 8b). In thin section the floor layer was distinguished by the dark brown organic pigmentation of the fine mineral material, a result of the wood decomposition, and by abundant earth worm excrements, which had also been observed in the field. Most of the wood captured by the thin section was too decomposed for identification (for example, see Plate 8a), but in a few places enough cell structure was preserved to show that it was a ring-porous deciduous wood, distinctive both from the native birch and willow species, and from the coniferous driftwood species that dominate Icelandic wood assemblages (Plate 8b).[19] The most common ring-porous deciduous woods occurring in Viking Age and medieval wooden artefact and building timber assemblages in Iceland are oak and ash, making it highly likely that the timbers used to floor this entrance had been imported from Norway or the British Isles.[20]

In Viking Age houses in Iceland, it is not uncommon for houses to have two doorways, and for one of them to be distinguished in some way that marked it out as being

15 Murphy, *Thin Section Preparation of Soils and Sediments.*

16 The international standard follows Bullock and others, *Handbook for Thin Section Description.*

17 For example, see Canti, 'Aspects of the Chemical and Microscopic Characteristics of Plant Ashes'; Courty, Goldberg, and Macphail, *Soils and Micromorphology in Archaeology*; FitzPatrick, *Soil Microscopy and Micromorphology.*

18 See the discussion by Hansen and others, Chapter 9, this volume.

19 Personal communication, Dawn Mooney, University of Aberdeen.

20 Mooney, 'The Use and Control of Wood Resources in Viking Age and Medieval Iceland'.

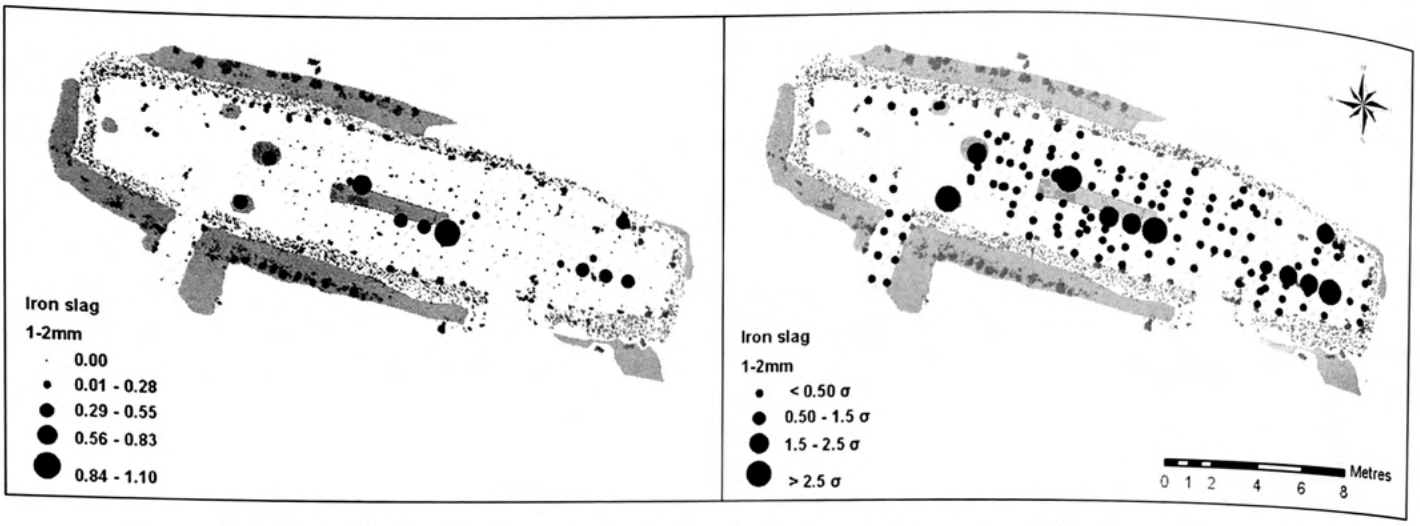


Figure 11.5a. Distribution of 1–2 mm iron slag, showing the data as counts per litre (left) and as standard deviations from the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

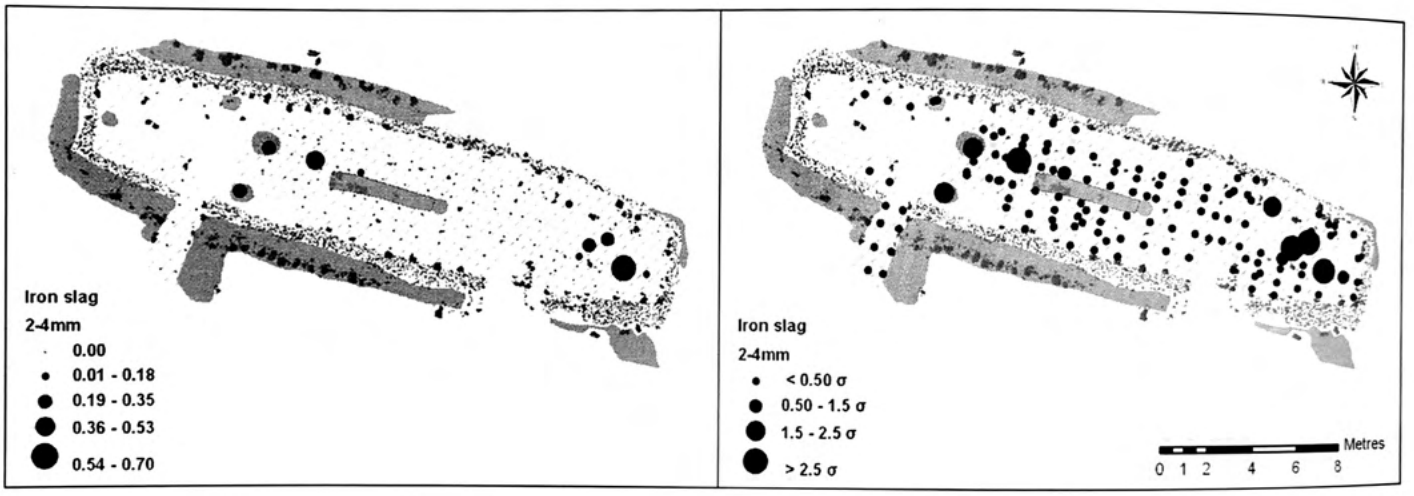


Figure 11.5b. Distribution of 2–4 mm iron slag, showing the data as counts per litre (left) and as standard deviations from the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

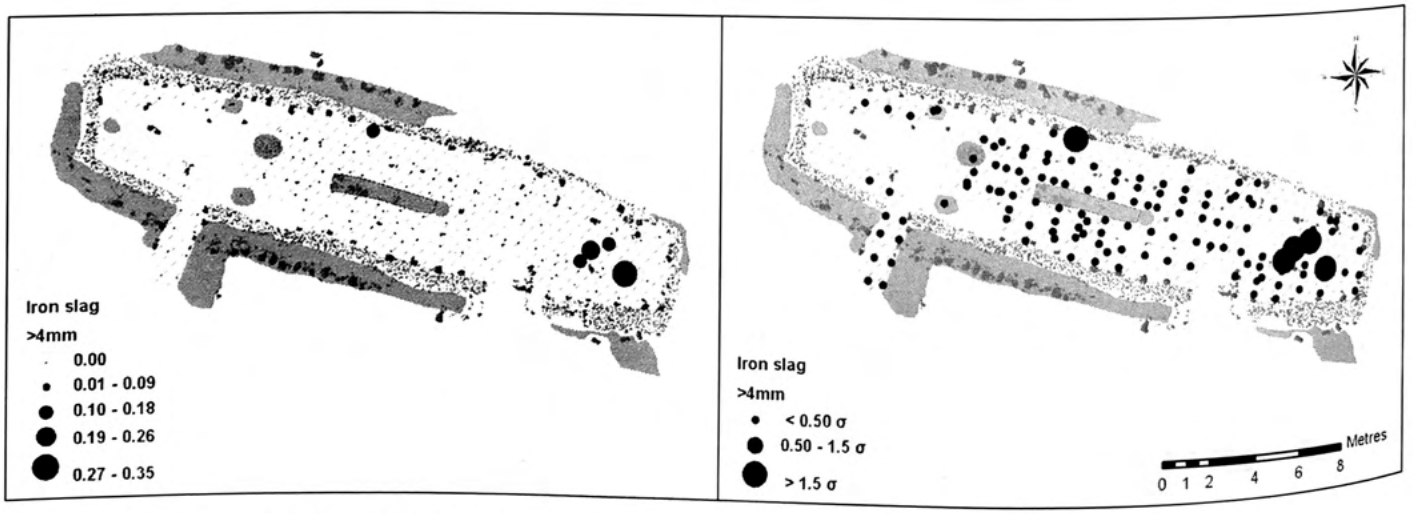


Figure 11.5c. Distribution of >4 mm slag, shown as counts per litre (left) and as standard deviations from the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

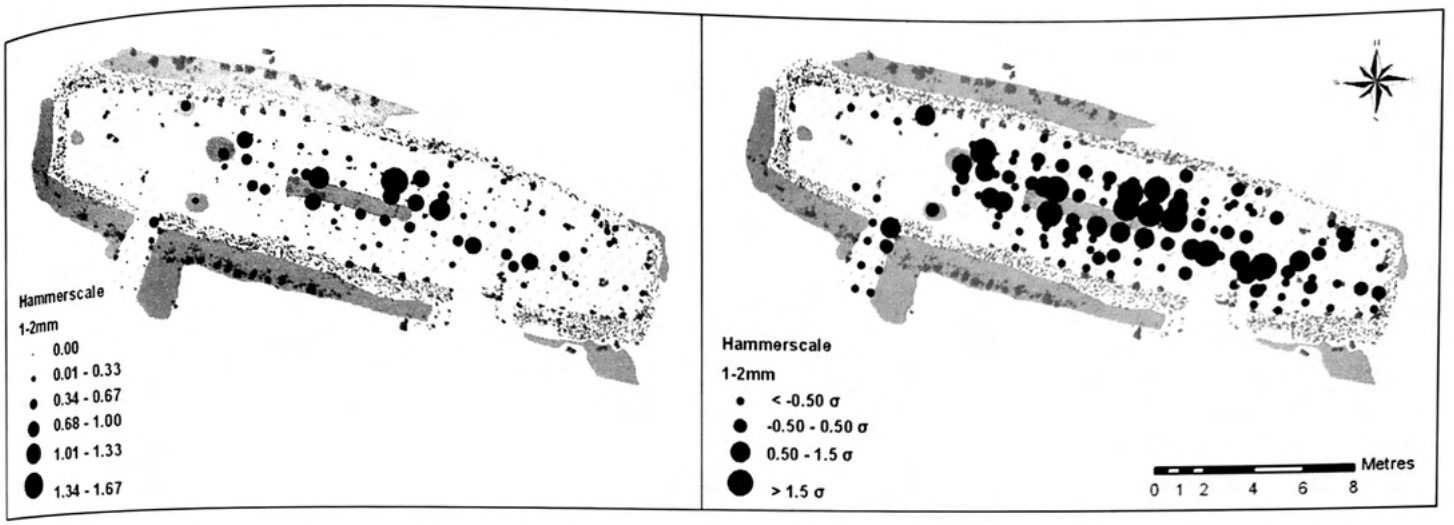


Figure 11.6a. Distribution of 1–2 mm iron hammerscale, showing the data as counts per litre (left) and as standard deviations from the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

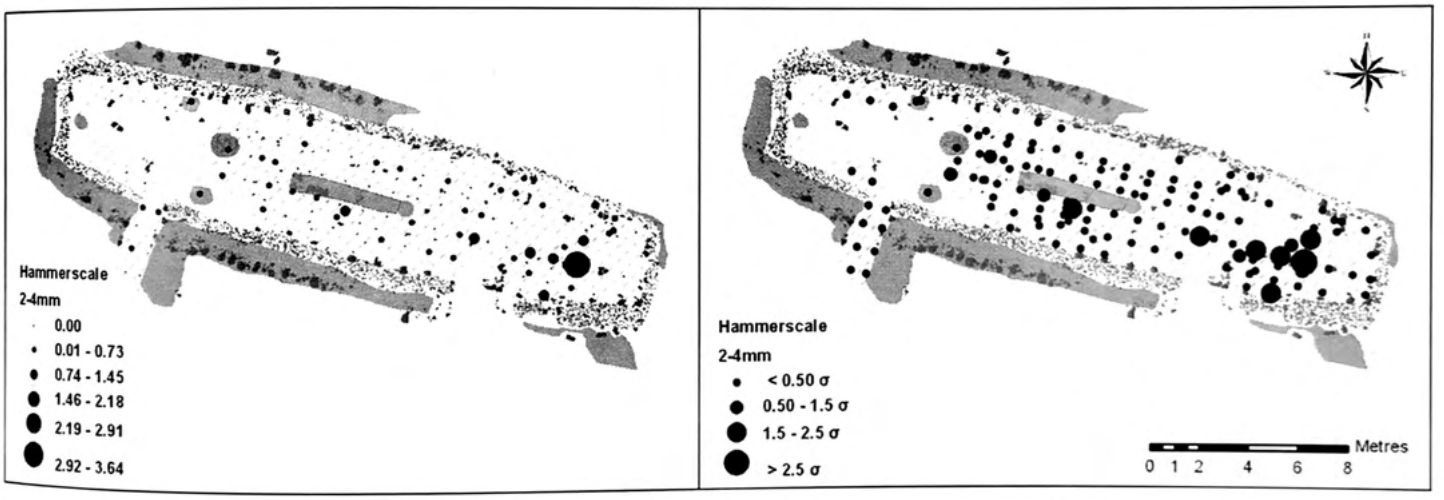


Figure 11.6b. Distribution of 2–4 mm iron hammerscale, showing the data as counts per litre (left) and as standard deviations from the mean (right) (Mosfell Archaeological Project, authors, and Óskar Gísli Sveinbjarnarson).

the main entrance to the house. Techniques for signifying the 'front door', for example, were to build a wider doorway, a larger porch or a stone pavement.[21] The house at Hrísbrú, however, is so far unique in having wooden floorboards in the main entrance, and the use of imported wood here would have been a very visible and bold statement about the wealth and prestige of the household.

The presence of burnt bones, charcoal and hammerscale, which travels with material from a hearth used for opportunistic iron working, is indicative of the deliberate dumping of hearth waste in the western entrance. This could simply have been a method of waste disposal, which would explain the higher concentration – especially of burnt bone fragments – closer to the threshold. However, it is also likely that ash was intentionally spread here in order to help keep the floors drier. Entrance doorways are particularly prone to wet and muddy conditions, which, at least in nineteenth- and early twentieth-century Iceland, was dealt with by the frequent dumping of ash.[22] A concentration of burnt bone fragments and ash was also found in the western entrance foyer of the Viking Age house at Aðalstræti 16, in Reykjavík, for example.[23]

21 For example, Skallakot, in Roussell, 'Skallakot, Þjórsárdalur', fig. 23; Aðalstræti 16, in Roberts, ed., *Excavations at Aðalstræti, 2003*, p. 18; Vatnsfjörður, in Ragnar Edvardsson, 'Archaeological Excavations at Vatnsfjörður 2005', fig. 1.

22 Milek, 'Floor Formation Processes and the Interpretation of Activity Areas', p. 125.

23 Milek and Roberts, 'Integrated Geoarchaeological Methods'.

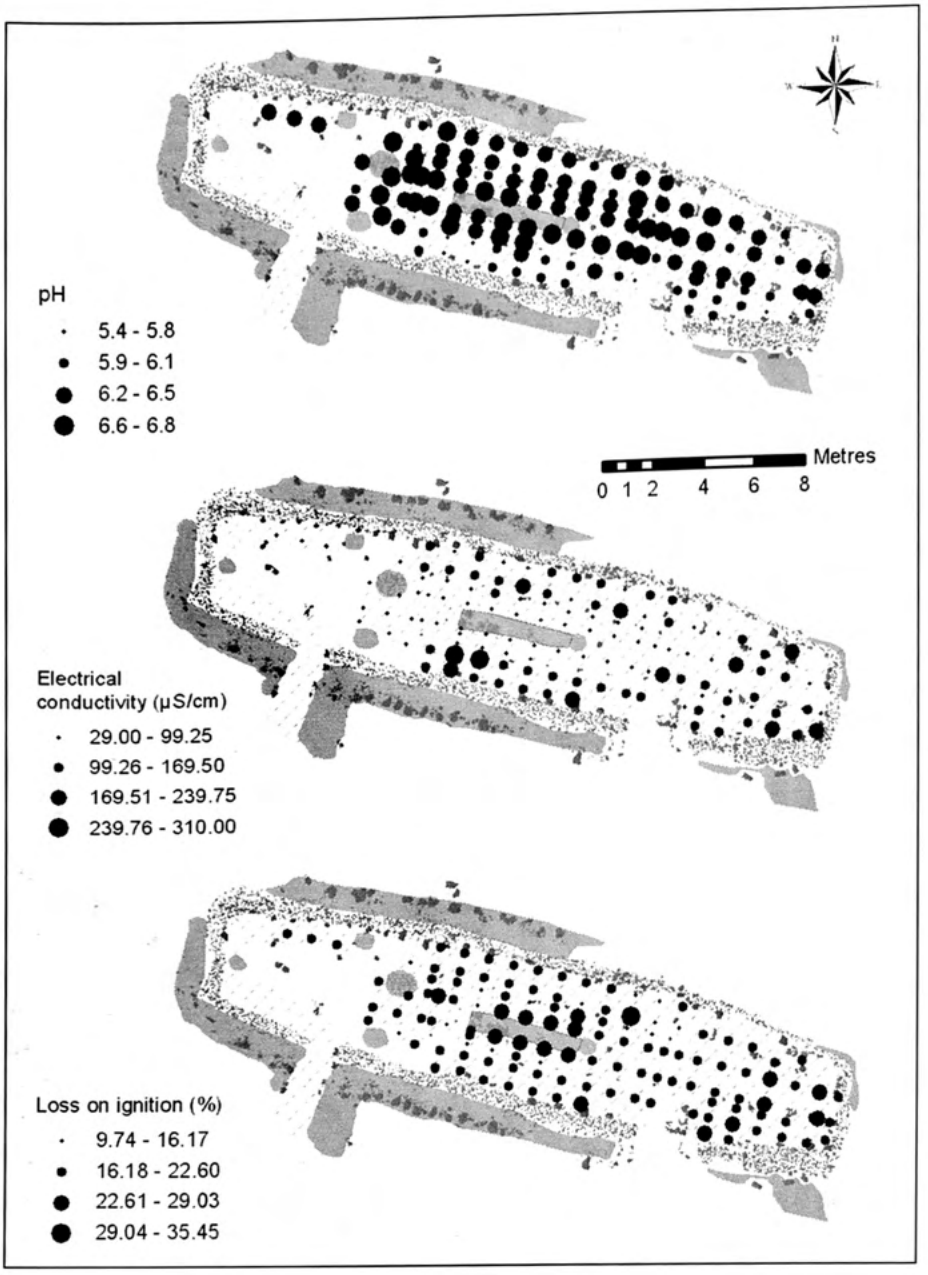


Figure 11.7. Distributions of (a) pH values, (b) electrical conductivity values, and (c) organic matter content estimated by loss on ignition at 550°C (Mosfell Archaeological Project and authors).

centrations of charcoal, burnt bone, occasional turf inclusions, and one iron fragment.

The most distinctive features in this room were two large storage pits. Directly opposite the doorway, against the north wall of the house, was a roughly rectangular pit with rounded corners, measuring *c.* 79 × 63 cm (C-200-186). The bottom fill of this pit consisted almost exclusively of decomposed organic material with a high density of phytoliths, suggesting that it had been filled with loose grass, mats, or basketry. In three layers above the organic basal fill there were five rounded, perforated stones, probable loomweights, and four additional probable loomweights were found in the collapse layers that sealed the pit. Such a concentration of stone weights makes it very likely that they were placed there deliberately, possibly for storage. It is also possible that they were tossed there when a nearby loom was dismantled, prior to the abandonment of the house.[24] The wall opposite the doorway would not have been a bad place to situate a loom, since it would have taken advantage of incoming natural light.

Another pit, against the western wall of the house, was sub-rounded in shape, and measured *c.* 73 × 58 cm. The base of the cut for this pit contained small wood fragments, which appeared to be from the bottom of a barrel, suggesting that this had been a barrel pit used for food storage. Four matching beads were found in the lower levels of the pit fill, which could either have been hidden and forgotten, lost accidentally, or intentionally placed there as a closing deposit when the building was abandoned.[25]

Western Gable Room

The central aisle in the western gable end of the house lacked a floor layer, which, along with the presence of wood remains, strongly suggests that this end of the house had been surfaced with a timber floor as well. The floor layers in the side aisles, which were slightly elevated above the central aisle, were very thin, patchy, and undulating, and they may also have had some sort of organic covering (for example, wooden planks, sheep skins). In the southern side aisle the occupation deposit, C-2008-208 was a homogenous, dark brown colour suggestive of organic pigmentation of the soil, and contained a knife blade. In the northern side aisle the occupation deposit, C-2008-209, was more heterogeneous, containing blackish-brown and reddish-brown silt with high con-

[24] For a more detailed discussion of the loomweights, see Hansen and others, Chapter 9, this volume.

[25] Hansen and others, Chapter 9, this volume.

Microrefuse analysis revealed no unburnt bone in the western gable room, but there were low concentrations of burnt bone microrefuse in the two side aisle occupation deposits (Figures 11.3a–b), and a high concentration of larger burnt bone fragments in the fill of the rectangular pit opposite the western entrance (Figure 11.3c). Likewise, this rectangular pit was the only part of the room to contain a very low quantity of iron hammerscale (Figures 11.6a–b). This hammerscale, like the burnt bone, is likely to have been deposited as a component of deliberately dumped hearth waste. The loss on ignition values, which were only determined for the north side aisle of the western gable room, were low, indicating very little organic matter input compared to other parts of the house, but the slightly elevated pH values (6–6.5) suggest that there was a minor input of calcareous ash here (Figure 11.7). Viewed together, the colours of the occupation deposits in the north side aisle, the scattering of small burnt bone fragments, and the slightly elevated pH, all point to a minor input of hearth waste in the northern side aisle, but none of the substantial dumping that had been visible in the threshold of the western entrance.

The microrefuse and geoarchaeological evidence contribute more information about floor maintenance practices than the use of space in the western gable room. However, based on the presence of the storage pits, the space at least partially functioned as a storage room, possibly as a *búr*, or pantry, where food was stored, and secondary products were prepared. It is also possible that there was a loom opposite the entrance, close to the pit that contained the nine stone weights. The fact that the floor of the central aisle and possibly also the side aisles was covered is interesting, because these floor boards could have served several purposes. First, it would have been easier to keep the room clean – mud- and dust-free – if the dirt floor were covered. Importantly, it would also have been impressive, and immediately visible to anyone entering the house – especially if the wood were imported oak or ash, as suggested for the wooden floor in the main entrance. The decision to place the household storage room in such a prominent location, visible from the main entrance from the house, may have been intended to display the wealth of the household. Similar tactics seem to have been employed at Grelutóttir, where a barrel pit for food storage was situated against the western wall of the house, just to the left of the front door, and at Skallakot, where a large barrel pit was located directly opposite the main entrance.[26]

Antechamber to the Central Hall

East of the main entrance there was a small antechamber to the central hall, which contained several clear floor layers that could be divided into two phases of use. The lower phase was associated with a rounded pit (C-2008-187) lined with *in situ* burnt soil and a fill of ash, charcoal, and burnt bone, which was probably a cooking pit. The upper phase of use in this area was associated with a round, flat-bottomed pit, *c.* 1 m in diameter (C-2007-46), which contained tightly packed stones and was probably used for the placement of a barrel. Barrels were traditionally used to store dairy products or meat preserved in sour whey, which would suggest that in its second phase this area served as a *búr*, or pantry. Contemporary with the barrel pit, the upper floor layer in the room (C-2007-95) was very heterogeneous, consisting of blackish-grey sediment with patches of grey ash (probably wood ash) and red ash (probably peat ash), and inclusions of burnt turf, charcoal, burnt bone, and small pebbles. There were few finds in this room, but they included a fish hook, a possible net sinker, a whetstone, a spindle whorl, a bead and an iron knife blade,[27] which could be taken to suggest that some practical work besides cooking and food storage was done in this room, and that it (or its rafters) were used for the storage of fishing tackle.

Microrefuse analysis revealed moderately high concentrations of burnt bone in all size categories on the southern side of the barrel pit, where quantities reached 0.5–1.5 standard deviations above the mean (Figures 11.3a–b). Minute fragments of iron slag were concentrated next to the barrel pit and close to the southern wall in this room (Figures 11.5a–b), while iron hammerscale in moderately high concentrations was spread relatively evenly around the barrel pit and up to the southern wall (Figures 11.6a–b). All of this material could have been derived from the dumping of hearth waste, either from the combustion feature in this room, or from the central hearth, but the concentrations of small slag fragments against the southern wall suggest that this material could actually have been created *in situ* here. The elevated pH levels, which reach 6.6–6.8 in this room, can be explained as the result of the deposition of calcareous ashes, and the elevated loss on ignition values, which reach up to twenty-five per cent, may be attributed to the charcoal inclusions observed in the field, which would have travelled with the ashes and burnt bones (Figure 11.7). In

[26] Guðmundur Ólafsson, 'Grelutóttir', pp. 33–34. Roussell, 'Skallakot, Þjórsárdalur', fig. 23.

[27] Hansen and others, Chapter 9, this volume.

micromorphology sample MS-2008-1, floor C-2007-95 was discoloured slightly by organic pigmentation of the fine soil material (the groundmass), but there were no significant vegetal inclusions, only an abundance of charcoal up to 4 mm in size (Plate 8c–d).

The most unusual characteristic of the antechamber to the central hall is the concentration of unburnt bones in this location. While a couple of larger bones were found close to the southern wall, an unusually high concentration of 2–4 mm bone fragments, reaching over 2.5 standard deviations above the mean, was found on the south side of the barrel pit in context C-2007-95 (Figure 11.2). A large number of small unburnt mammal or bird bone fragments – but not fish – were independently identified in micromorphology sample MS-2008-1, which was taken in the same location, and in thin section it was possible to see that many of these bone fragments had a smooth, straight edge that could only have been created by the chopping of the bone (Plate 8e–f). This concentration of unburnt bone fragments was probably created by the *in situ* chopping of cuts of meat in this antechamber, lending further supporting evidence for the importance of this room as a food storage and preparation area.

There might be several reasons for the placement of the barrel pit for food storage close to the main entrance of the building. Some of these reasons could be practical; for example, to give people carrying joints of meat or milk from the outside direct and ready access to the barrel. However, it is more likely to have been a way of advertising the wealth of the household, and showing all visitors that food was plentiful in this house. As mentioned above, barrel pits were located in similarly prominent, visible locations close to the main entrance at other contemporary sites such as Grelutóttir and Skallakot.

Central Hall

The central room of the house, which measured nine and a half metres long and five metres wide, contained the only hearth, the thickest and most abundant floor layers, and the largest number and variety of finds. The hearth feature extended 5.37 m along the central axis of the hall, and was lined by rows of cobbles placed upright in a line. On the northern edge the stones had been removed, leaving a narrow trench. The eastern end of the hearth abutted a round depression with holes and void spaces measuring 0.7–0.75 m in diameter, which may have held a barrel or some other container. There is considerable variation in the size, form, and construction technique of Viking Age fireplaces, but the elongated shape, the location in the centre of the floor, and orientation of the long axis of the fireplace with the long-axis of the Hrísbrú house fit well with the current conception of the classic Viking Age long-fire.[28]

The sunken central aisle had been dug down to an underlying gravel, leaving the natural soil on the north and south sides of the house to serve as raised living platforms or benches. The fact that the raised soil of the platform areas had remained sharp-edged and intact indicates that the side aisles were lined with wooden planks placed on edge. Twelve separate, heavily compacted floor layers were excavated around the hearth, most of which were black or grey, and consisted of ash, charcoal, and domestic artefacts such as burnt and unburnt bones, jasper fragments, iron nails, whetstones, spindle whorls, and glass beads (Table 11.1). However, there were also spreads of sterile, orange silty clay soil between the central hearth and the northern bench (C-2008-157 and 167), which must have been brought into the house and spread intentionally to resurface the floor in this area. If these bright orange spreads were confined to the northern half of the floor intentionally, they might have signalled special events, or a special sitting/sleeping place on the northern side of the hearth.

The benches in the side aisles of the central hall had similar thin surface layers composed of firm black to grey silt composed mainly of ash, soot, and charcoal, and inclusions of calcined bone (C-2008-11 and 12). These layers contained a very high density of artefacts, including spindle whorls, jasper strike-a-lights, glass beads, whetstones, mussel skins, and, on the northern bench, an iron rove and a broken rotary quern stone.[29] Before the surface layer accumulated on the southern bench, a 0.5 m diameter cooking pit was located in this area, which was filled with ash, charcoal, and large pieces of burnt bone (C-2008-236). Around the time of the abandonment of the house there was a different type of burning event on the eastern end of the southern bench, which created a patch of large charcoal fragments, possibly derived from wood panelling that had lined the inside of the southern wall (C-2008-137).

The central hall contained a number of unburnt bones, especially south of the hearth, where microrefuse analysis of the uppermost floor layers identified an unusually high number of 2–4 mm bone fragments (Figure 11.2). The area around the hearth also contained by far

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28 For example, Stenberger, ed., *Forntida Gårdar i Island*; Bjarni Einarsson, *The Settlement of Iceland*.

29 Hansen and others, Chapter 9, this volume.

the highest concentration of burnt bone in the entire house, with quantities of 2–4 mm burnt bone reaching over 2.5 standard deviations above the mean on the southern bench (Figures 11.3a–b). The concentrations of small iron slag fragments and iron hammerscale in the sunken floor deposits surrounding the central hearth (Figures 11.5–11.6) strongly suggest that not only cooking and bone disposal but also iron working took place in the central hall, making use of the open fire. However, it is interesting to note that the input of iron hammerscale changed over time, with moderate concentrations spread in the upper floor layers (C-2006-14, C-2008-145, 147), and only a few light concentrations in older floor layers on the north side of the hearth (C-2008-157, 158, 163). Flint and jasper fragments of all sizes were also scattered across the central floor area, but the 1–2 mm and >4 mm sized flint was far more common on the north side of the hearth (Figures 11.4a–c), up against the north bench, which may provide a hint about where the fire tended to be lit, or where flakes were swept aside.

The micromorphology samples taken from the central aisle provide more information about the composition of these thick, multi-layered floor deposits (Plate 9a–d). Although the blackish layers were dominated by finely comminuted wood charcoal, larger, horizontally oriented charcoal fragments and burnt bone fragments up to 4 mm in size, they also contained a significant component of plant matter, usually in the form of long, horizontally bedded strands that were in such an advanced state of decomposition that they could not be identified. They also contained charred seaweed, including *Ascophyllum nodosum*, and possibly also *Fucus spiralis* (Plate 9d),[30] indicating that seaweed had been burnt in the house either as a fuel or to produce 'black salt', an effective food preservative.[31] The 'clean' orangey silty clay soil layers that were occasionally spread over the black floor deposits derived from the local andosols (soil of volcanic origin that is the most common soil type in Iceland).

The central floor surfaces and the thinner occupation deposits on the side aisle benches had significantly different chemical signatures (Figure 11.7). Although all had somewhat elevated pH levels, the highest pH levels (6.6–6.8) were in the central floor area, where, like the floor layers in the antechamber, the increase in alkalinity was probably due to the input of calcareous ash. Very high loss on ignition levels, providing an estimate of 30–35% organic matter content, also characterized the central aisle, where they can be attributed to the high charcoal content of the floor layers. The opposite pattern can be seen in the electrical conductivity distribution, however; the benches in the side aisles contain an order of magnitude higher concentration of soluble salts, or nutrients. Although this technique on its own cannot determine the source of the ions, judging from the composition of the occupation layers in thin section MS-2008-7, which was taken from the northern bench, they are likely to be phosphates and nitrates derived from decomposing organic matter.

Significant differences in the composition of the floor surface layers in the central aisle and the side aisles were clearly observed in the micromorphology samples from the central hall. The surface layer on the northern bench (C-2006-11) consisted of horizontally bedded charcoal, vegetal lenses containing phytoliths, and lenses of decomposed (amorphous) organic matter, with occasional burnt bone inclusions. Therefore, although some of this material might be derived from sprinkled hearth waste, a significant proportion appears to be uncharred organic matter, suggesting that the benches had had organic coverings, including hay. Moreover, there was a very thin lens at the bottom of the occupation layer that could not be seen in the field because it was less than 1 mm thick, which was composed purely of horizontally bedded phytoliths and decomposed organic matter – clearly a thin hay or grass layer that had decomposed *in situ* (Plate 9e–f).

The presence of herbaceous bedding material on the platforms in the side aisles supports the interpretation that they were used as sitting and sleeping areas. Overall, this central room appears to be a multi-functional living room, where food preparation, cooking and some metalworking took place, and where people sat, worked at a variety of domestic tasks such as spinning, ate meals, and slept. Since the central fire was the only well-built and formalized fireplace in the house, and the central hall is the only area with clear sitting and sleeping areas, this must have been where much of the socializing, hospitality, and entertaining took place as well. We may surmise that this was a public room in addition to a domestic living room.

The Eastern Gable Room

Like the central hall, the eastern gable room had a three-aisled structure, with distinctive deposits in each of the three aisles, but here the side aisles were level with the central floor area, rather than being raised, and although the abundance of artefacts embedded in the floor lay-

[30] Dawn Mooney, personal communication.

[31] Shetelig and Falk, *Scandinavian Archaeology*.

ers suggests that the room was well used, the lack of a fireplace indicates that the room was not designed to be a living room. This room could have been accessed by stepping up from the central hall, probably over a sill beam (there was a twenty centimetre sterile gap between the central floor layers of both rooms) or by entering through the eastern entrance of the house. At 1.94 m, this was an unusually wide entrance. On the doorway's eastern edge there was an unusual find: a large flat stone with a rounded, polished wear pattern, indicating where there had been a rotating door post.

The floor layers in the eastern gable room were much thinner than in the central hall, and they were also more variable, smaller and more localized. They were confined to their respective aisles, indicating that each aisle had been used differently. The main floor deposit in the central aisle (C-2007-94) was very compact and uneven, consisting of mottled black, grey and orange silty loam containing frequent inclusions of charcoal and calcined bones. This layer contained a particularly dense concentration of artefacts, including seven glass beads, eight jasper and flint flakes, three pieces of iron slag, a whetstone, a loom weight, seven iron nails, and two knife blades. It also contained by far the highest concentration of microrefuse of all the occupation deposits in the eastern gable room. Several unburnt bones were found in the eastern end of the central aisle, for example (Figure 11.2), and although few burnt bones were found during microrefuse analysis, in thin section, charred and calcined bone fragments were identified up to 1 mm in size (Plate 10b). There was also a very high concentration of flint flakes in the central aisle (especially 1–2 mm and over 4 mm in size; see Figures 11.4a–b), and these, along with the charcoal and calcined bone inclusions, are likely to have been deposited along with refuse from the central hearth that was carried into the room and sprinkled over the floor. It is important to point out that there were very significant quantities of large iron slag and hammerscale fragments in this central aisle as well, with much higher concentrations than anywhere else in the house (Figures 11.5–6). For this reason Hansen, Zori, and Byock (Chapter 9, this volume) suggest that iron smithing could sometimes have been done *in situ* in the eastern gable room, if a portable hearth were available. As also stated in Chapter 9, it also remains possible that the large slag and hammerscale fragments were simply redeposited here along with waste from the central hearth.

In the northern and southern side aisles of the eastern gable room, the deposits were characterized by their unusually high organic content – first identified in the field and then subsequently confirmed by geoarchaeological analyses. Across from the eastern entrance, against the north wall, there was a separate alcove measuring 1.52 x 1.42 metres, which was outlined by several large foundation stones. This alcove did not contain any finds, but it did contain two discrete floor layers that were confined to this space (C-2007-120, 203) the uppermost of which was very soft and organic, with minute white flecks visible to the naked eye, subsequently confirmed under the microscope to be phytoliths. This is therefore interpreted as a hay layer, and the alcove is interpreted as a place where hay was stored, and possibly an animal. To the east of the alcove, the northern side aisle contained a very organic floor deposit (C-2007-88), which was described in the field as 'greasy' with a 'greenish grey' lens on top and a 'purplish grey' lens on the bottom. The high organic content of the sediments in the eastern gable room is especially evident in the high loss on ignition values for the central and southern side aisles, where organic content was estimated at twenty-five to thirty per cent (Figure 11.7c). The electrical conductivity values are also exceptionally high in this end of the house, as they had been in the side aisles of the central hall (Figure 11.7b), suggesting that the higher elevations of nutrients were derived from decomposing organic matter. The micromorphology samples taken from this deposit (MS-2008-10 and MS-2008-5), revealed that this floor layer contained a high concentration of horizontally bedded, articulated phytoliths and decomposed, unidentifiable organic matter, which was so palatable to soil fauna that in some areas it was completely reworked by bioturbation (Plates 10c–f). This material appears to have been composed of herbivore dung and/or vegetal bedding material, and/or hay fodder. Micromorphological analysis therefore supports the hypothesis proposed on the basis of the field observations that the side aisles in the eastern gable end of the house were used as animal stalls.

Although it was not at all unusual for animal stalls to be located on one end of the house in Iron Age and Viking Age Scandinavia,[32] making these dwellings true 'longhouses', the practice was very uncommon in Iceland. Few Viking Age or medieval animal buildings have been found, and those that have been, at Herjólfsdalur and Þórarinsstaðir, for example, had byre buildings attached to the original house, rather than byres constructed as an integral part of the original house, as at Hrísbrú.[33]

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32 Myhre, *Gårdsanlegget på Ullandhaug I*; Schmidt, *Building Customs in Viking Age Denmark*.

33 Kristján Eldjárn, 'Eyðibyggð á Hrunamannaafrétti'; Margrét

The one exception to this rule is the tenth century house at Aðalstræti 16, in Reykjavík, where concentrations of decomposing vegetal matter with phytoliths were also found in the side aisles of a gable end, and were interpreted as originating from herbivore dung and/or hay fodder or bedding materials.[34] Even though the dominant use of the eastern gable end of the Hrísbrú house may have been as an animal byre, the density and diversity of finds indicates that this room was in fact multifunctional, and, when animals were not present, it may have been used for ironworking.

Discussion: Social Space and Social Status at Hrísbrú

This chapter used a suite of integrated, interdisciplinary approaches to improve our understanding of how the house at Hrísbrú functioned as a social and economic space, and to explore the possibility that daily practices embedded in social space were one way in which the inhabitants of the Hrísbrú house expressed their social identity – particularly their social status. The exceptional preservation of the floor deposits at Hrísbrú and the unusually large number of well-preserved artefacts meant that the close observation of the sediments in the field, and a careful consideration of the find contexts of the artefacts, were already rich sources of evidence for these interpretations. The microrefuse and geoarchaeological analyses integrated into this study provide still greater detail about the compositions of the floor layers and the distributions of the smallest artefacts, and therefore expand the interpretation possible from standard field work alone. This additional level of detail, and a perspective that incorporated the most minute residues of human occupation, made it possible to test hypotheses that were developed in the field, and in some cases provide entirely new insights into how social space at Hrísbrú had been used.

The first thing to note is that the ubiquitous presence of minute burnt bones, charcoal, iron hammerscale, slag, and flint flakes throughout the house is an indication that hearth waste was regularly removed from the central hearth and deliberately dumped on nearly every floor and bench surface, from the eastern gable room to the western (main) entrance. Far from being a sign of unhygienic behaviour, this everyday practice, which has been observed in numerous Viking Age houses as well as in ethnographic studies of nineteenth- and early twentieth-century turf houses in Iceland, could have been a way of filling holes in earthen floors, or coping with wet and muddy conditions.[35] Although these minute residues of hearth waste are therefore more indicative of floor maintenance practices than social or economic activities taking place in different parts of the house, they are interesting if one considers that this particular way of recycling a waste product may have been considered the 'proper' or 'appropriate' way of maintaining a clean, dry, and smooth-floored house. The white-grey colour of floors rich in wood ash (before they are leached of white calcium carbonate by percolating rainwater) might in fact have been a way of signalling that a house was being well maintained.

The interdisciplinary evidence integrated in this paper also highlighted a number of other possible signals or visual cues about the social status of the inhabitants of Hrísbrú, which were embedded in the way that social spaces in the house was constructed, elaborated, and used. The unusual size of the house, for example, is one way in which the residents of Hrísbrú might have intentionally expressed their wealth in labour and building materials. At 25.2 m long internally (29 metres externally), Hrísbrú is substantially larger than the average fifteen-metre house, and the third largest Viking Age house in Iceland. However, the evidence presented here suggests that the eastern ten metres of the house were at least partially used to stable domestic animals, which could just as easily have been housed in a separate turf dwelling. The choice to include animal living space in the house may have had a number of practical repercussions, but it also had the effect of enlarging the size of the house and making it appear more impressive. In addition, by housing animals close to the eastern entrance, the inhabitants of Hrísbrú could have shown off their stock – their wealth on the hoof – to anyone entering from that side of the house.

The western entrance and the western gable end room also seem to have been elaborated in an atypical way. Unusually for Icelandic Viking Age houses, both of these spaces seem to have been floored with wooden timbers, and thin section analysis of residues of decomposed timbers in the entrance (the only place they could be sampled) revealed that they were probably oak or ash – wood species that had to be imported from Norway or the British Isles. The use of so much wood – and par-

Hermanns-Auðardóttir, 'The Early Settlement of Iceland'; Berson, 'A Contribution to the Study of the Medieval Icelandic Farm'.

34 Milek and Roberts, 'Integrated Geoarchaeological Methods'.

35 Milek, 'Floor Formation Processes and the Interpretation of Activity Areas'.

ticularly the use of imported wood – would have been a highly visible and bold statement of wealth and prestige. Several thirteenth-century Icelandic sagas tell of cargoes of timber for building material brought back to Iceland from Norway, sometimes as gifts from the Norwegian King.[36] Within the house itself, the locations of post pads along the walls of the central hall, and the discovery of burnt wood on the southern bench, which appears to have been from timber panelling or wainscoting, suggests that wood lined the inside of the building's walls. The wood panelling lining the inside walls of the rooms was also an architectural necessity to hold in place the cobble stone component of the walls piled as high as one metre immediately on the other side (see Figures 1.2, 1.5, 1.6, and Plate 1).[37]

Finally, it is important to note that the residents of Hrísbrú made a conscious decision to place the household store room and pantry immediately inside the western entrance, in the western gable end room and in the antechamber to the central hall. The evidence for storage and food processing activities was provided by both large features such as storage pits and barrel pits, and by microscopic residues – in particular the minute bone fragments clustered around the barrel bit in the antechamber to the central hall. These minute bones were identified in the microrefuse analysis as well as in the micromorphology sample taken next to the barrel pit, where their smooth, straight edges showed clearly that they had been chipped off bone as it was being chopped. The placement of the house's larder in such a prominent location, where everyone would see it the moment they walked into the house, could have been intended to showcase the wealth of the household and the fine housekeeping skills of the matron of the house.

At Hrísbrú, the results of this interdisciplinary study have shown that the elaboration and use of social space in Viking Age houses could have been used to express social identities and in particular the social status of those who dwelled in them. Social space is just one way in which status could have been signified in this period, and the evidence presented here stands alongside the artefactual evidence for long-distance trade, historical evidence, the evidence for feasting that can be inferred from the zooarchaeological and archaeobotanical evidence, and the archaeological evidence of the early timber church at the site.[38] Viewed together, the high status and social significance of Hrísbrú is clear. This detailed study of the internal social space at Hrísbrú, which integrated an unprecedented range of geoarchaeological and microrefuse techniques that even individually are rarely used in Viking Age or medieval settlement studies, dramatically improved our understanding of a remarkable Viking Age house. The study has implications reaching far beyond Iceland and the study of Viking Age houses, exemplifying innovative ways of analysing, interpreting, and thinking about social space.

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36 *Laxdæla Saga*, ed. by Einar Ól. Sveinsson (chaps 13, 22, 29, 68, 74), *Egils saga Skalla-Grímssonar*, ed. by Sigurður Nordal (chap. 78), *Hávarðar saga Ísfirðings*, ed. by Björn K. Þórólfsson and Guðni Jónsson (chap. 24), and in *Víga-Glúms saga*, ed. by Jónas Kristjánsson (chap. 18). Mooney, 'The Use and Control of Wood Resources in Viking Age and Medieval Iceland'.

37 See Byock and Zori, Chapter 1, this volume.

38 See Byock and others, 'A Viking-Age Valley in Iceland', pp. 195–218. Zori and others, 'Feasting in Viking Age Iceland', 150–65.

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