



The Evidence of Ironworking at Belmont, Shetland

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The production and working of iron and its alloys to produce artefacts was an essential and fundamental craft in early medieval societies. It can be argued that all other crafts relied on the skill of the smith, in particular arable and pastoral agriculture would benefit from high quality iron or steel tools. The evidence from Hafstodir, Iceland showed that people were smelting and smithing their own iron (McDonnell and MacLean 2009). Excavations at Simy Folds, Northumbria (Coggins et al 1983) produced evidence of small scale smithing from an excavation carried out before hammerscale was recovered. The evidence from Old Scatness Broch, Shetland, also revealed a Viking Age smithy (McDonnell and Fang 2009). The nature of the ironworking will depend on many factors: primarily the available natural resources, secondly the status of a settlement and thirdly the skills of the ironworkers. The characterisation of the ironworking evidence feeds back into the interpretation of the status and economic basis of a settlement site.

The slags recovered from the excavation were examined visually and classified based on morphology. The residues are divided into two broad groups: the diagnostic residues identifiable to a specific process e.g. iron smithing, and the non-diagnostic residues which may have been generated by one of a number of technological processes e.g. hearth lining.

The largest quantity of material recovered from the excavation was classified as ferruginous concretion. This material is normally thought to have formed post-

abandonment of a site, due to the corrosion of metallic iron, taking the iron oxides into solution and the subsequent re-deposition of these oxides in a solid form. However the concretion from Belmont differs in several ways, firstly in the quantity of the material (10.5kg); secondly by its colour which was grey with a black fracture; thirdly, numerous examples were distinguished by the presence of flat faces to the lumps; fourthly by its composition. More usually the quantity of concretion is small and dominated by red colours. The Pictish and later deposits at Old Scatness (McDonnell and Fang 2009) produced less than 100 grams of concretion, whereas the Iron Age contexts produced c 200 grams (McDonnell 2012). At Minehowe, Orkney, circa 3.5kg of concretion was recovered (McDonnell in prep). Belmont is therefore a naturally occurring iron-rich deposit that could have been exploited as an ore.

Table 1 lists the slag types present on the site ordered by Context Number. Both smithing slag lumps and hearth bottoms were recovered from the site and were present in eighteen contexts. The largest quantity (407 grams of smithing slag and approximately half of a hearth bottom weighing 101grams) occurred in [073] in the east extension, described as a floor deposit with a pit for smithing. It was noted that both the hearth bottom (X1008) and another piece (X1076) had liquated surfaces. This indicates high temperature smithing, either fire welding or possibly steel making. A small quantity of smithing slag (87grams) and a hearth bottom (95 grams) were recovered from [167] which was contemporary with [073] Overlying these deposits [040] also contained smithing slag (62grams) and a hearth bottom (95grams). These contexts account for 47% by weight of the smithing debris (smithing slag plus hearth bottoms) recovered from the site. Examination of the environmental samples revealed significant quantities of both flake and spheroidal hammerscale in both [073] and [167]. The remaining slags recovered from stratified deposits were distributed across the site, e.g. [126] (288grams of smithing slag), the interior of Structure [105] or in post-abandonment contexts, e.g. [021], including

topsoil (e.g. [006]). The majority of the remaining contexts contained less than 50 grams of slag.

Four hearth bottoms were recovered (Table 2), one was only partial (X1008, [73]), and they were all relatively small, indicating small scale smithing

There were four heavily corroded fragments of iron in the slag assemblage (X 801 [C040]; X 760 [C038] (2 fragments); X 847 [C288]). In addition there was a concentration of iron objects in the eastern extension with five objects in [040], three in [073] and seven in [167].

The assemblage was dominated by the ferruginous concretion and the iron working slags, in addition thirteen contexts contained examples of cinder, the largest amount occurring in X687 [C040] (weight 23grams), on a piece of hearth lining (X 864 [C185]), and a few fragments of fuel ash slag (X 711 [C021]).

In addition, four contexts (X299 [C071], X307 [C044], X334 [C015] and X390 [C127]) contained fragments of coal (one bag was recorded as possibly being jet).

The material recovered from the excavation at Belmont demonstrates that small scale iron smithing was carried out in the east extension. There is sufficient evidence in the form of the slags, the hammerscale and the iron objects to identify the building as a smithy. There was no evidence for iron smelting or non-ferrous working. Evidence of working at a similar scale was recovered from the excavation of a Viking farmstead at Simy Folds, Northumbria (Coggins et al 1983). Coal was present on the site, but would have had a domestic use rather than smithing. The assemblage was dominated by material classified as ferruginous concretion, normally thought to be formed post-abandonment of a site. However given the quantity it is probably local iron panning, (bog ore) much of it rich in manganese, which may have formed prior to the site occupation. There is no evidence from the excavation that it was used as an ore source.

Context	Smithing Slag Lumps	Hearth Bottom	Hammer Scale?	Hearth Lining	Iron Metal	Cinder	Fuel Ash Slag
6	69						
14						6	
18						15	
21	165						13
24	26						
35	16						
38	1				8		
40	62	95			9	23	
50		199					
53	39						
73	407	101	y			11	
78	6						
93	17						
126	288					9	
147	2		y				
156	11						
156						13	
167	87	95	y			9	
182	40		y				
183						2	
185				34			
192	9					5	
200						11	
202			y				
260			y				
268	8						
288					2		
9999	79						
	1332	490		34	19	104	13

Table 1 Belmont slag listing by context, weight in grams.

References

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