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Thatching in the Outer Hebrides

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Abstract

Purpose – The purpose of this research is to report on the surveying of three vernacular thatched properties in the Outer Hebrides, Scotland, all run as Youth Hostels.

Design/methodology/approach – The case study buildings are compared with 42 Arnol, the blackhouse on North Lewis cared for by Historic Scotland. The paper compares plan form, roof structure, thatching material and securing methods using data collected during extensive field investigations in 2004.

Findings – The paper concludes that the more northerly property Garenin most closely resembles 42 Arnol and can be classified as "Hebridean" in structure, while Howmore to the south is typical of the "Skye" pattern. Berneray, the central of the three properties, exhibits construction techniques of both types, indicating that it defines the boundary between the two types.

Originality/value – The findings of this research will be useful to surveyors, owners and maintenance managers responsible for these unique vernacular structures.

Keywords Roofs, Scotland, Buildings

Paper type Research paper

Introduction

When we think of thatched roofing, the chocolate box image of the Devon or Norfolk cottage comes to mind. But to the north "Scotland has one of the widest ranges of traditional thatching techniques in Europe" (Walker, 1997). There was a time "when practically every building in rural Scotland, apart from the tower houses and the churches was roofed in some form of thatch" (Naismith, 1985).

Although Scotland has over 44,000 listed properties, most examples of thatched buildings "are neither listed buildings nor Ancient Monuments" (Holden, 1998). Historic Scotland has however undertaken extensive research of thatched buildings and produced a variety of Technical Advice Notes.

42 Arnol on the Isle of Lewis in the Western Isles is owned by Historic Scotland and is acknowledged as the traditional and most authentic thatched "blackhouse". The property represents the "final stages in the development of an ancient building type built to entirely different principles to those in general use today" (Walker and McGregor, 1996) (see Plate 1).

This paper looks at three case studies of thatched properties in the Outer Hebrides and compares them with the Historic Scotland property 42 Arnol. The Planning Act 1997 identifies "distinctive and regional variations in design and use of materials" (The Planning Act, 1997) as a key item in how listed buildings are chosen. Recording and surveying the properties identifies this, and forms an archive for future research. The paper then looks at maintenance, and adopts the aim "to protect the character of the heritage and to guard against unnecessary loss of damage"(The Planning Act, 1997).

Methodology of case study investigation

The three case study properties are basic vernacular buildings all used as hostels associated with the Scottish Youth Hostel Association. They are all of similar scale and

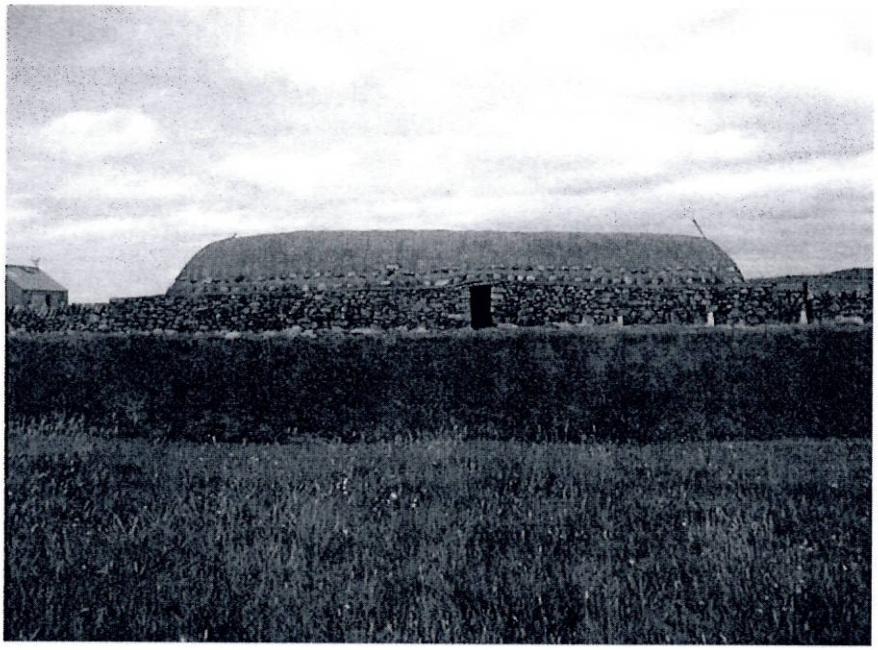

Plate 1.
42 Arnol

proportion, but have a variety of thatching representing distinctive regional variations (see Figure 1).

The hostels are leased by the Gatliff Hebridean Hostel Trust set up by Herbert Gatliff (1897-1977) in 1961. The trust "devoted itself to two principal activities: – the outdoor/youth movement and work in the Outer Hebrides" (Clarke, n.d.).

Garenin (Grid Ref. NB 195 443) on the Isle of Lewis consists of a single hostel, but is within a small community of similarly thatched properties, forming part of the Garenin Historic Village. This incorporates hostel, holiday cottages and museum properties (see Plate 2).

Berneray (Grid Ref. NF 931 814) on the Isle of Berneray, North Uist was opened as a hostel on 16 April 1997 and consists of two buildings used as a living/kitchen and dormitory accommodation. Both buildings are thatched and were consequently surveyed (see Plate 3).

Finally Howmore (Grid Ref. NF 757 364) on the island of South Uist was bought by the Trust in 1966 and consists of two buildings, a living/kitchen unit and a dormitory unit. Only the dormitory unit is thatched and consequently was surveyed (see Plate 4).

The author surveyed the properties in 2004, with assistance from Lynne Scott and Neil Wise. The survey work took the format of a measured survey recording plan form, roof structure and covering method. This produced floor and roof plans, elevations and cross-sections, along with identifying construction details (see Figure 2).

The recording was undertaken in accordance with guidance given by Historic Scotland in "Thatch and Thatching Techniques – A Guide to Conserving Scottish Thatching Traditions" (Walker *et al.*, 1996) identifying location, building type, recorded changes, visual record, current roof type, form and thatch.

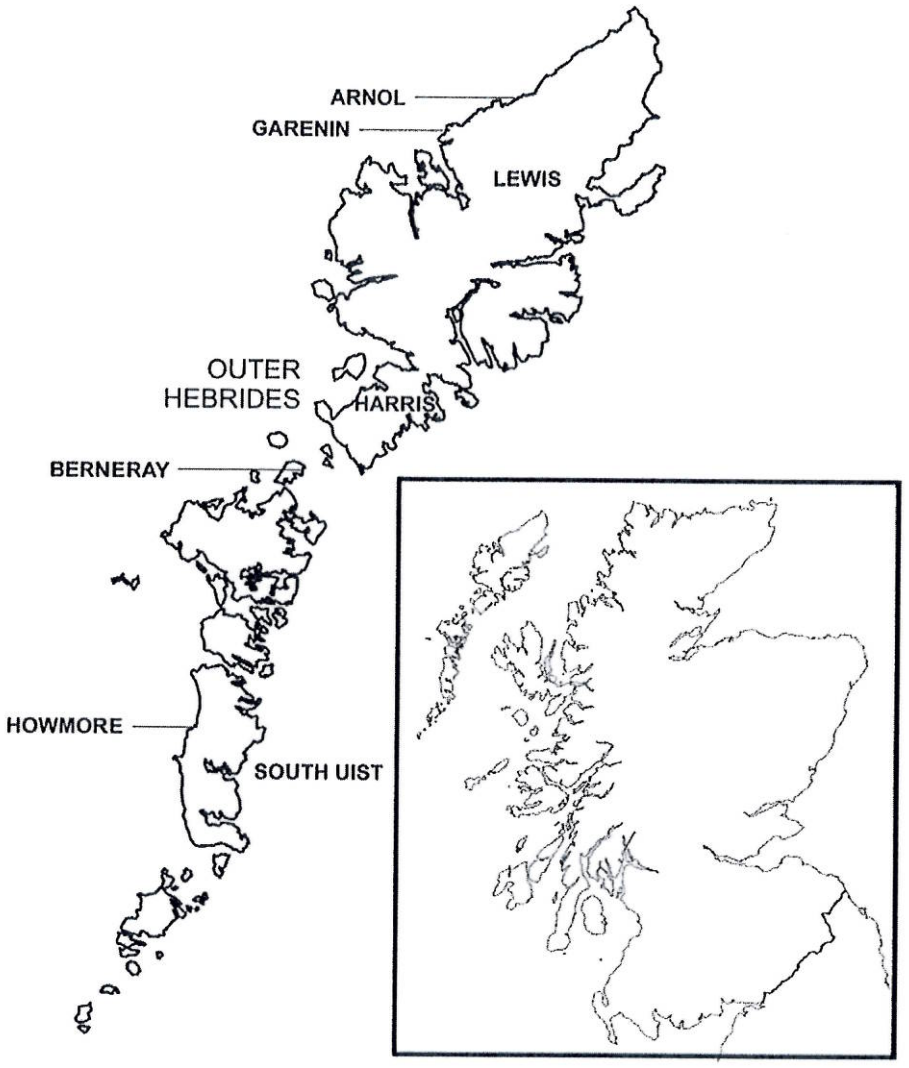

Figure 1.
Location map of Scotland and Hebrides

A structured interview was also undertaken with Matt Bruce (ARIBA) Chairman of the Gatliff Hebridean Hostel Trust. This identified the maintenance work undertaken by the Trust, a key item of recording changes, which can have historical significance in the conservation of thatch.

Other thatched properties were investigated in the Hebrides including on Skye and Lewis along with the Highland Folk Museum at Kingussie, which has a reconstructed thatched blackhouse.

The main comparison to the three case studies was Historic Scotland's property at 42 Arnol (Grid Ref. NB 311 494). This restored blackhouse and associated village has

Plate 2.
Garenin hostel

Plate 3.
Berneray, main building

Plate 4.
Howmore hostel

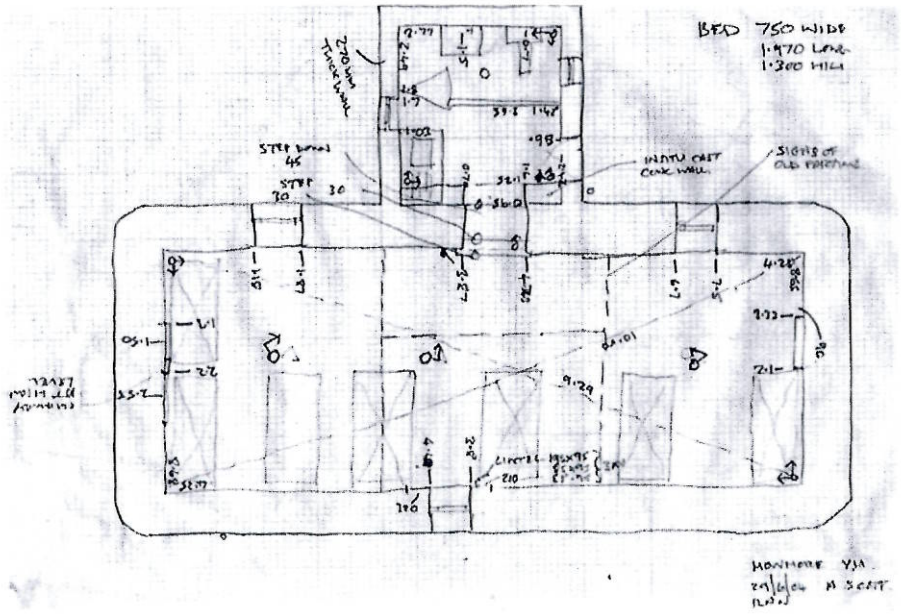

Figure 2.
Howmore site sketch

been extensively recorded by Historic Scotland and was inspected by the Author for comparative data with the three hostel case studies.

Conclusions on form and construction were made, along with advice on maintenance for the Trust to allow the thatching material and techniques to be conserved and retained for future generations to appreciate.

Plan form and structure

"The smoke-infested thatched blackhouse which lumped humans and cattle together in conditions of appalling filth was the most primitive and deprived form of dwelling in the whole of Europe"(Cooper, 1985)

The typical blackhouse form is a long linear dwelling containing the byre and living areas with adjoining barn areas connected by passageways through the wall. "This forms distinctive to North Atlantic and Arctic region building characterised by narrow bodied interconnecting parallel ranges with individual roofs resting on mutual walls" (Walker and McGregor, 1996).

Alterations to the basic plan form occur and in some cases these have been instigated by paternalistic landlords "Lord Seaforth was, for example instructing his tenants on Lewis to erect partitions between themselves and the cattle and to introduce more light into the buildings" (Holden and Baker, 2004).

"The walls of the blackhouse are constructed as two masonry faces to a tempered earth core" (Walker and McGregor, 1996). The walls do not contain throughs and vary in thickness from 1.5 m to 2.1 m. The top of the wall is 1.5 m to 1.8 m high and is slightly sloping to the outside face to discharge rainfall away from the thatch.

To the top of the wall a platform (*tobta*) is formed which serves two functions. Firstly it deflects wind away from the base of the thatched roofing so protecting the thatch, and secondly to form a platform giving access to the roof for annual maintenance of the thatch. At 42 Arnol protruding stepping-stones to the external face provide easy access to this platform. The top core of the wall is protected at 42 Arnol by blue clay, excavated from the base of peat cutting and then overlaid by turf, cut and maintained by Historic Scotland (see Plate 5).

Garenin on Lewis is not only the geographically closest to Arnol, being less than 20 miles away, but most closely resembles the plan form. Like Arnol it was built in the late 19th century after the 1886 Crofting Act allotted land. (Gearrannan Trust, n.d.). The building measures internally 19 m by 4 m with an average wall thickness at ground level of 2 m, reducing at head height to 1.6 m. Internally walls are vertical meaning that the reduction in wall thickness is contained within the external batter.

To the rear of the main building is the outline remains of what would have been the barn, again of linear form measuring approximately 9 m by 2.76 m with a passage connection to the main building and now forming the rear exit.

The walls of the main building vary in height from 1.85 to 2.3 m to the frontage, although this is reduced to the rear due to rising ground levels. The whole site however, slopes down to the northwest and the bay of Geodha Ruadh and the general siting of the black houses at Gearrannan is such that the byre is lower than the living quarters within the dwelling. This is typical of blackhouse construction and was designed to allow smoke from the peat fires to rise to the living quarters and not affect cattle within the byre (see Plate 6).

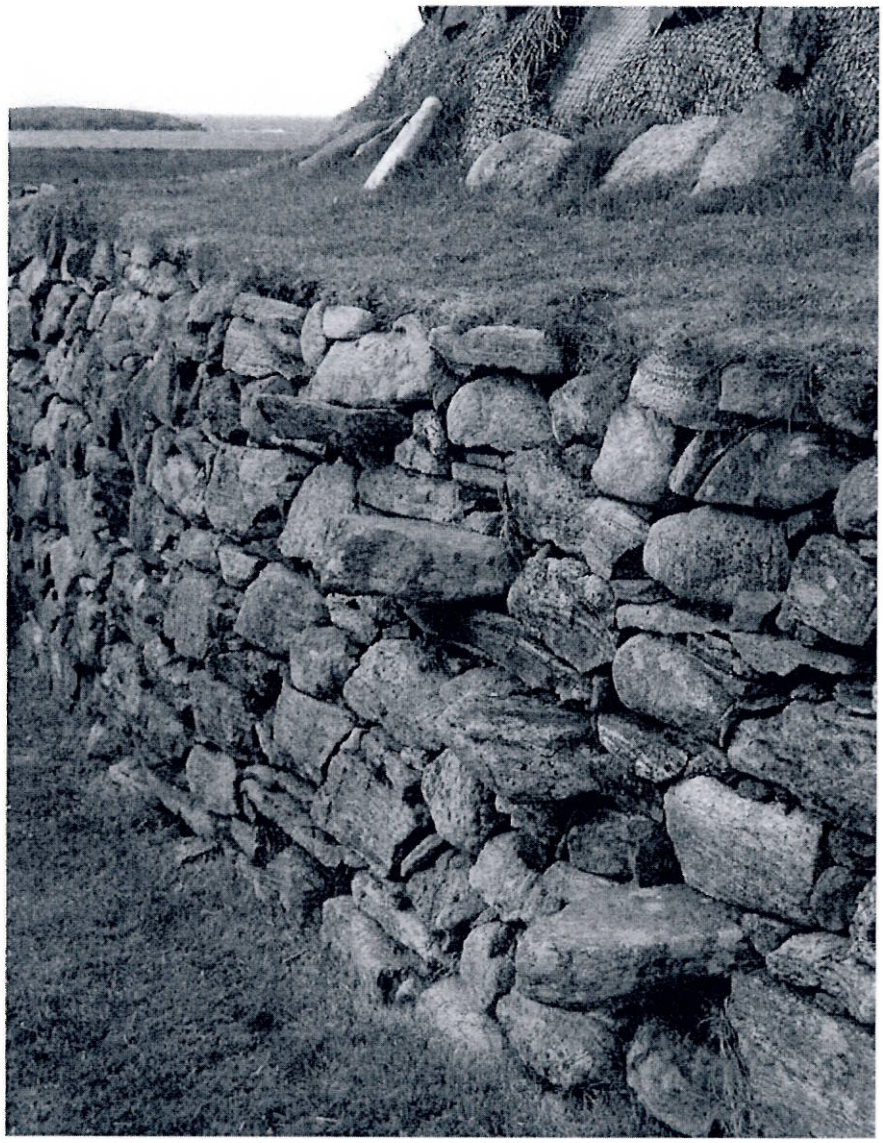

Plate 5.
42 Arnol, access steps

Stonework externally is of a random rubble pattern with dry jointing, although to the southeast section of the building this has been pointed. Lintels are of flagstone type matching Arnol. The southeast gable has been rebuilt, possibly after the Second World War (Gearrannan Trust, n.d.) and externally pebble dashed. The wall here is only 750 mm thick and incorporates a sliding sash window, obviously in an attempt to improve living conditions.

Plate 6.
Garenin hostel, stonework to bell end

Internally the Garenin hostel has been sub-divided by a 750 mm thick wall taken up to roof line level and forming the support for the central chimney stack. This appears part of the post World War Two improvement work. Secondary partitions of block and timber are formed for separation of toilet, living and bedroom areas and are of modern construction.

Berneray hostel on the Isle of Berneray consists of two units, both thatched and measuring internally 10.5 m by 4.4 m to the main building and 10.6 m by 4.4 m to the annexe. Although these are of linear plan form they do not represent the elongated pattern of Arnol and Garenin.

Wall thicknesses vary from 1.68 m at low level in the annexe to 1.28 m at high level. Within the main building wall thicknesses vary, ranging from 1.2 m to 1.5 m. The walls are batted, but not to the same extent as Garenin.

A platform is formed at eaves level for thatch access as at Garenin, but no access steps are formed as at Arnol. The top of the wall appears to have been rendered, although no exploratory destructive testing was undertaken. External walls have window openings approximately 1 metre by 1 metre, giving good light levels internally with windows having stone and concrete lintels. Again this is not typical of 42 Arnol, which does not have windows, or Garenin having a window incorporated as a later alteration (see Plate 7).

Externally the walls have been pointed and subsequently painted white. Chimneys are formed to the gable walls, being a combination of stone and rendered block work. The annexe has a stone cross wall and both buildings have block and timber partitions for sub division.

Plate 7.
Berneray, main building showing eaves platform

Howmore on the island of South Uist measures internally 8.65 m by 4.25 m and is consequently less like Arnol than the other buildings. The walls are 900 mm thick with an external batter of approximately 200 mm. Internally the walls are generally around 2 m high. No platform is formed at eaves level as the thatch overhangs the eaves by approximately 200 mm. Windows are formed to either side of the front porch giving a symmetrical appearance. Another window is incorporated to the rear. Generally lintels are of timber and externally stonework has been pointed and then limewashed. Internally the building is a single unit with no partitions to the main area. Fireplaces are sited to the gable walls, externally culminating in stone chimney stacks with concrete copings (see Figure 3).

Howmore has an incongruous front extension incorporating porch and toilet facilities. These walls are of *in situ* cast concrete being approximately 270 mm thick,

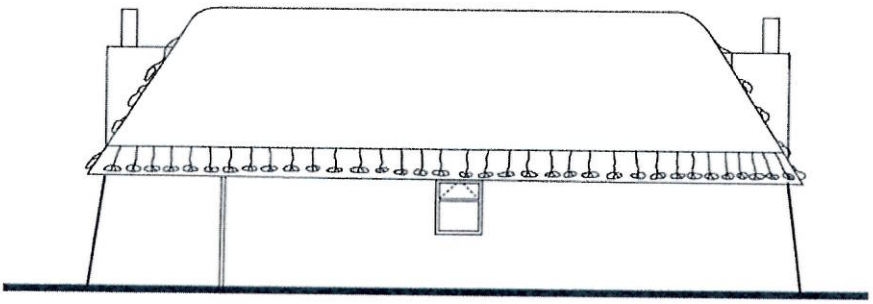

Figure 3.
Howmore rear elevation sketch

and include a retaining wall built against the original structure. This later extension is covered with corrugated iron sheeting and presents detailing problems at the junction of the thatch roofing (see Figure 4).

Roof structure

The Western Isles experience some of the most extreme storm conditions in Scotland and have a basic wind speed of 54-56 m per second, the highest in the UK (Walker *et al.*, 1996). The resultant windswept landscape is devoid of trees and consequently unable to provide indigenous timber for roof structures. Vernacular properties used driftwood or shipwrecked timbers producing irregular sized timbers. "Whale bones, particularly shoulder blades, were incorporated in some of the structures" (Walker and McGregor, 1996).

All of the three properties have new roof structures, but even 42 Arnol has been restored. The Arnol roof consists of "a series of A-frame trusses rising from the inner skins of the wall" (Walker and McGregor, 1996). The trusses support purlins located below and above the tie. The tie to the truss is bolted and then purlins and ridgepoles are lashed together with coir yarn (see Plate 8).

At low level between the wall head and first purlin, near vertical slats of driftwood are formed to support the turfed wall head. Driftwood slats are then laid between lower purlin and the ridge overlaid with heather turf to form a base for the thatch. Especially within the living areas the timberwork is very smoke stained from the continually burning peat fire.

To Garenin the roof structures are formed by two methods of construction, although the roof pitch is continuous at 45 degrees. Within the south-eastern section over the living room and gable bedroom the roof structure consists of 130 mm by 50 mm sawn rafters at 460 mm centres with a high level tie of 75 mm by 38 mm. The rafters are overlaid with 175 mm rough sawn boards, closely packed.

To the north-west bedroom area, three pairs of A-frame trusses of 150 mm by 47 mm timbers carry five purlins per elevation. The chord to the A-frame truss measures 100 by 50 mm and is bolted to the principal rafter section. Purlins measuring 75 mm by 47 mm are lashed to the principal rafter, but unlike Arnol the roping is 12 mm diameter plastic rope, not coir yarn. To the bell hipped gable seven principal rafters span from ridge level to rest on the internal wall structure. All of this part of the roof is overlaid with 19 mm chipwood painted white (see Plates 9 and 10).

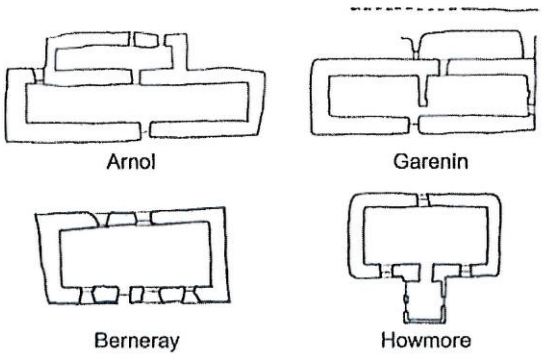

Figure 4.
Plan form sketch

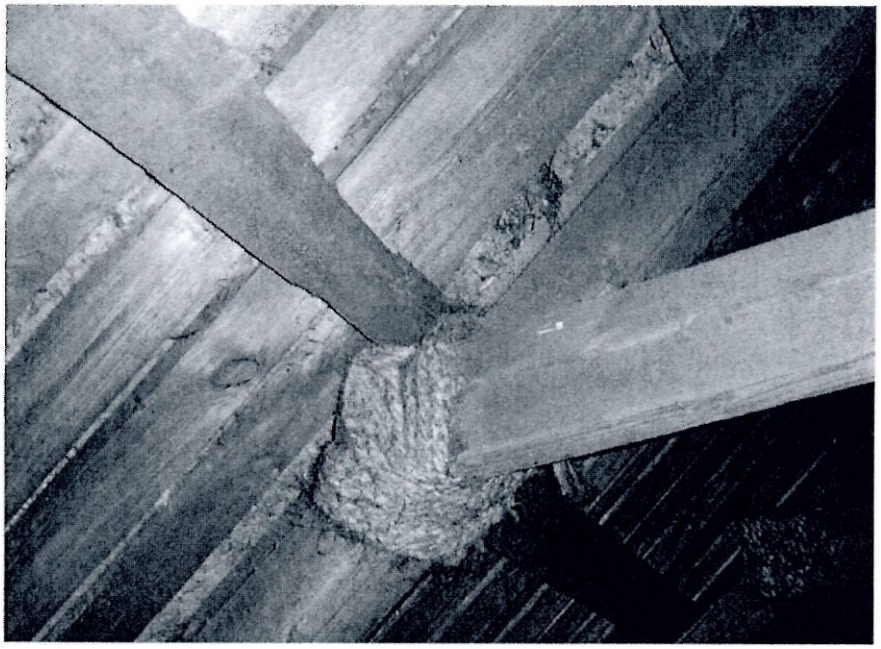

Plate 8.
42 Arnol, binding of roof truss members

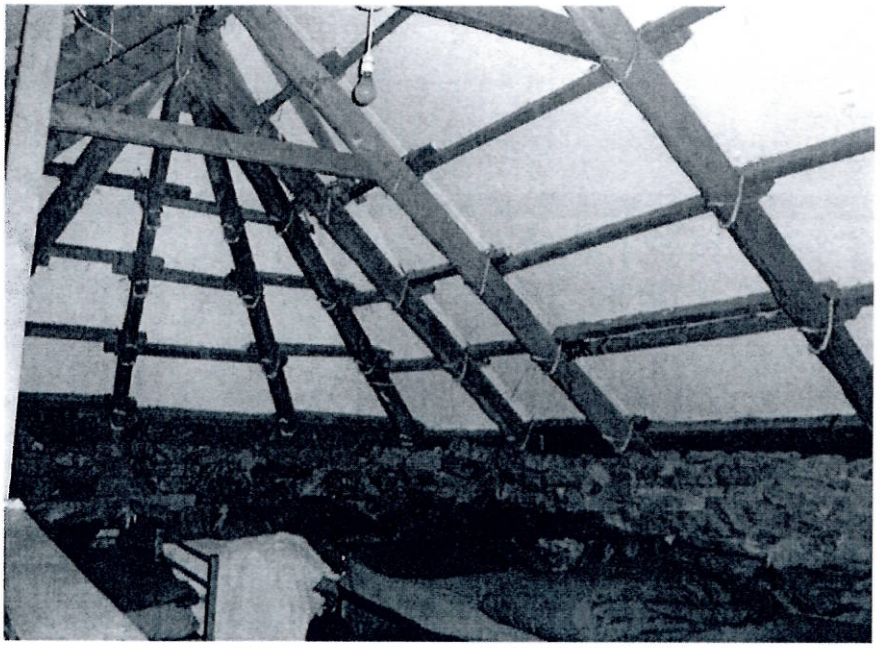

Plate 9.
Garenin, roof structure to bell end

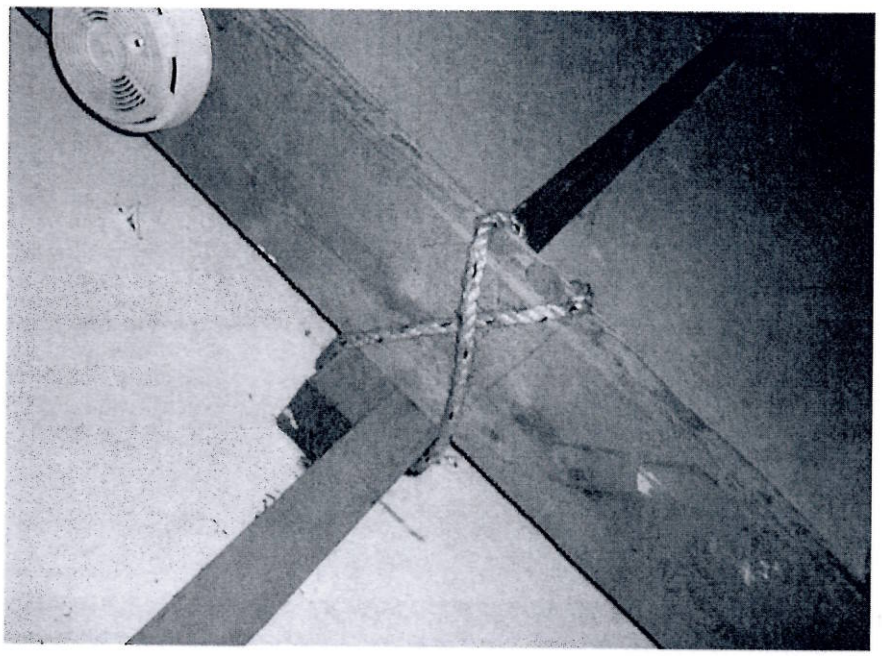

Plate 10.
Garenin hostel, binding to roof timbers

Not visible internally, but seen externally at eaves level is a bonded bitumen felt. Although it cannot be confirmed without exploratory work it appears that this felt may be taken over the whole of the roof structure as recorded within "The Gearrannan Blackhouse" guide.

To Berneray hostel the main building consists of 100 mm by 50 mm rafters at 400 mm centres with a high-level tie and 150 mm by 25 mm ridge board. At gable ends the roof structure is formed to a hip including jack rafter details. Rafters are overlaid with plywood sheeting all with a stained decorative finish. Externally to the south-west corner thatching in missing and here a section of sarking felt and timber boarding is visible over the plywood sheeting (see Figure 5).

The annexe at Berneray is similarly constructed although timbers vary in size. The rafters are 150 mm by 50 mm at 400 mm centres, slightly deeper than the main building, although ridge boards and hip rafters at 150 mm by 25 mm are similar. A 100 mm by 50 mm raised tie is again used and the structure overlaid with plywood and

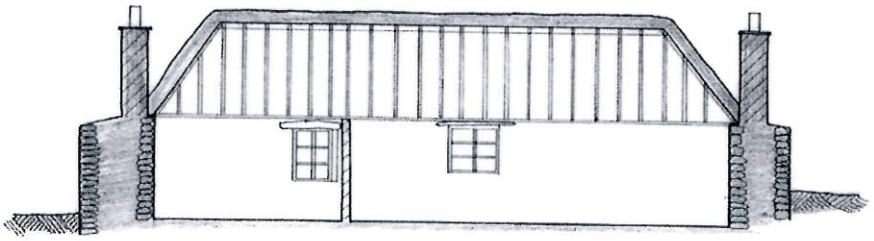

Figure 5.
Berneray cross section plan

decoratively stained. The annexe has the roof structure secured with galvanised tie down straps at two metre centres.

Howmore on South Uist again uses sawn timbers indicating an imported roof structure. The roof consists of eight A-framed trusses consisting of 125 mm by 50 mm timber, which to six of the eight trusses have been doubled up with two rafter sections. Hip rafters are formed to the gables, and around the raised chimney section rafter and trimmer timbers are constructed. Three purlins per elevation are installed ranging in size from 75 mm by 50 mm to 125 mm by 50 mm (see Plate 11).

Overlaying the roof structure are half split log cabers, naturally finished. The logs are approximately 150 mm wide at 200 mm centres and between the laths turf is visible, which during storm conditions deposits a light dust into the dormitory. At the junction with the porch/toilet extension the corrugated steel sheeting is turned up to form a valley detail.

Thatch and sub-strata

"When it comes to the building industry, thatch is often perceived as a standardised vegetative roofing material which does not require detailed examination, analysis or description. This situation is highlighted in many building condition surveys where a surveyor describes the roof with a single word "thatched" (Walker, 1997). Within the four properties in the Hebrides inspected in detail during this research, sub-strata, materials, netting and finally roping all vary considerably. The Surveyor therefore needs to be more analytical in the description of the material in order to be accurate in his or her identification of the vernacular origins of the thatch.

At 42 Arnol the Historic Scotland property has "the roof timbers covered with heathery sods, *sgrathan*, laid from eaves to ridge and overlapping like scales of a fish" (Fenton, 1995). The thatch is of oat-straw, imported from Inverness and laid in a

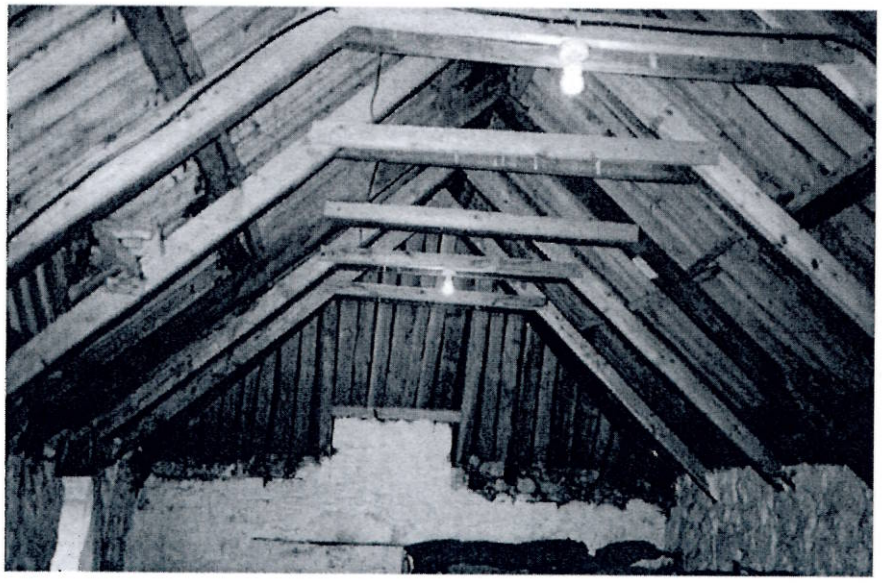

Plate 11.
Howmore, roof structure

random pattern from eaves to ridgeline level. The thatch is laid loose and to prevent it from being blown away is covered with nylon netting.

At Garenin bitumen felt is visible as a sub-base at eaves level and the traditional laying of sods does not appear to be installed. The thatch is vertically laid straw, not fixed, but secured by 50 mm square plastic knotted netting. The thatch shows considerable evidence of unevenness and some compression.

At Berneray the sub-base is visible to the south-east corner where the thatch is missing to reveal a sarking felt and 50 mm by 50 mm battens formed to a framework. The marram grass thatch is covered with wire netting and at eaves level the wall head is exposed and decorated. The thatch is of variable thickness and shows areas of compression with the outline of timber battens visible (see Plate 12).

At Howmore the thatch overhangs the wall head by approximately 200 mm in the "Skye" pattern, unlike the three other buildings. The roof has cabers, split 150 mm diameter logs at 200 mm centres, overlaid with heather turfs and the roof is covered with randomly laid heather thatching to a general thickness of 300 mm. The thatch is then secured with 30 mm hexagonal wire netting.

All of the three hostel properties are covered with netting. While this has benefits in stopping birds entering the thatch, its primary reason is to secure the thatch, which is randomly laid without fixings.

Stones and securing roping

Roping is used to tie down the thatch with the ropes secured by stones. This technique is visible throughout the Hebrides and is evident on all of the case studies. Osgood

Plate 12.
Berneray hostel, missing thatch to hip

Mackenzie on a trip to St Kilda in 1853 recorded "Straw ropes, like a network put across to keep the wind from blowing away the thatch" (Mackenzie, 1921).

"Each community has its own method of roping the hips" (Walker and McGregor, 1996) and this is the major variable between the case studies. Heather was used for roping, but "coir became popular after the First World War when it became cheap and easy to procure" (Walker and McGregor, 1996).

At Arnol, the prime exemplar, the thatch was "fastened down by fishing nets and ropes formally of heather, now of coir yarn. The ends of the ropes go around anchor stones about 250 mm by 300 mm long lying about 300 mm up from the wall head" (Fenton, 1995). Stones are also placed at the junction of thatch and wall head.

"At the apex of each hip a protruding "Raven Stick" or "*Maide Feannaig*" serves as an anchor for the ropes that hold the thatch on the hip (Fenton, 1995) (see Plate 13).

"As a finishing touch an additional rope was generally run right round the roof, just above the row of stones" (Grant, 1995).

At Garenin, the property closest to Arnol, both physically and in construction terms, stones are placed at the junction of the thatch and wall head, measuring 450 mm by 250 mm. Suspended stones approximately 300 mm by 200 mm are secured by 15 mm diameter rope, twisted to the stone to prevent loss. To the previously rebuilt southeast gable the roping is taken over the verge in a laced pattern and secured to 25 mm square timber pegs (six per elevation) fixed into the masonry and protruding about 160 mm (see Plate 14) and Figure 6).

The roping to the roof is laced vertically over the ridge and to the hipped end is twisted around the "Raven Stick" in the manner of Arnol. Above the suspended stones a horizontal rope is run around the roof to secure the position of the stones.

Plate 13.
Arnol bell end showing stone and rope securings

Plate 14.
Garenin, bell end showing stone and rope securings

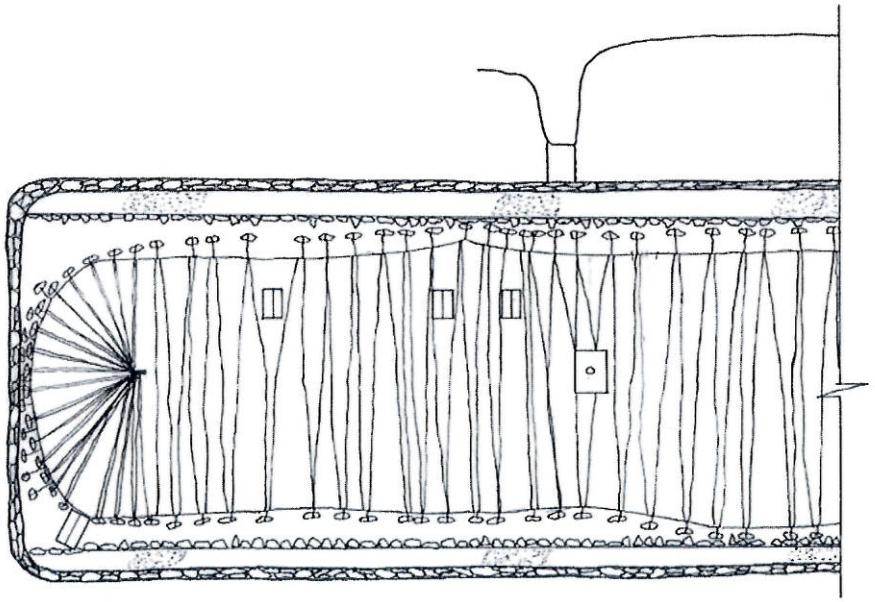

Figure 6.
Garenin roof plan sketch

At Berneray no vertical ropes are incorporated and hanging stones are secured by 12 mm diameter blue plastic rope passing around the perimeter of the roof and securing the stones approximate size 300 mm by 200 mm. Timber driftwood also assists in the securing of stones, particularly over door openings. Bizarrely old bricks are partly used in lieu of stones (see Plate 15).

At Howmore the thatch overhangs the wall head as previously discussed and the roping consists of 12 mm diameter roping run around the perimeter of the roof and fixed adjacent to chimney stacks with 25 mm diameter silver birch pegs. A total of 85 stones are suspended to the perimeter of the roof with additional stones suspended to the chimney stacks and valley areas. The stones, measuring approximately 250 mm by 170 mm, are fixed to the perimeter of the roof with 5 mm diameter green plastic rope (see Plate 16).

Repair and maintenance

"Thatch by its very nature is a semi-permanent material, subject to natural degradation and therefore to eventual renewal" (Walker *et al.*, 1996). While life expectancy may be "Eighty to one hundred years in Norfolk" it may be less "than five years on Skye" (Walker, 1997). Annual maintenance is to be expected and at longer intervals, removal and replacement. When this occurs "Every effort should be made to retain and repair traditional roofs on vernacular buildings" (Walker *et al.*, 1996).

Arnol the prime exemplar, has maintenance undertaken on an annual basis "Each year the ropes and net must be removed from the thatch and the whole roof top dressed

Plate 15.
Berneray, securing stones to eaves level

Plate 16.
Howmore, stone securing

with two inches (50 mm) of fresh straw. Complete re-thatching should be undertaken every 10 years or when the thatch fails" (Walker and McGregor, 1996).

At Arnol it is also stipulated in the Custodian's contract that the peat fire should be maintained for six days in the week to ensure the preservation of the thatch by the peat smoke.

The Gatliff Hebriden Hostels Trust undertakes annual maintenance of the properties, amounting to approximately £5,000 per property per annum to maintain functional operation, but does not undertake annual re-dressing of the thatch as at 42 Arnol. The three leasehold properties are intended to be re-thatched within the next five years and the trust is very specific in its choice of material and that local specialist contractors undertake the work.

To Garenin parts of the thatch have collapsed, especially to the rear elevation beneath the ropes and stones and this can lead to water penetration as the natural loft and therefore water shedding ability is lost. The property was last fully re-roofed in 2002 using straw imported from mainland England.

To Berneray in 2004 areas of thatch where missing, especially to the front hip detail with the timber framework exposed, and the water tightness of the roof relies on the under felting. Especially to the annexe roof, bricks are used to hold down the securing netting and in future these should be retained "all replacements should be in character with the rest of the roof no matter how bizarre" (Walker *et al.*, 1996). Berneray was last re-thatched in 2000 with the Macair (local sand dunes) providing the marram grass.

Howmore was re-roofed in 2003 using locally sourced heather and included the renewal of cabers forming the sub-strata. The use of wire netting, as seen at Howmore and Berneray presents problems if annual re-dressing was undertaken. Selective repair and replacement may be necessary to allow annual re-dressing, or the use of nylon netting as at 42 Arnol or plastic netting as at Garenin could be considered.

Table I presents a comparative analysis of the three case study buildings and 42 Arnol.

Conclusions

All of the properties inspected, including Historic Scotland's 42 Arnol have had their roof structure replaced. Consequently the original form and fabric of the roofs is unable to be established with certainty, and it is necessary to look at the plan form and wall structure to establish the buildings' origins.

Sinclair identified variations of thatched housing in the Highlands "From a certain diversity of architectural form and structural character, I have found it possible to classify them into three groups...for identification these types are described as 'Hebridean', 'The Skye' and the 'Dailraidic', names chosen arbitrarily, but with a certain significance in regard to origin and location" (Sinclair, 1953)

The Dailraidic type is typified by gable walls and found to the south of the Outer Hebrides, including on Jura and Islay, and is not reflected in the case studies.

In the Hebridean type "the distinguishing feature of the houses of this group is the exposed broad ledge of wall-top (*tobta*) which extends around the house (Sinclair, 1953). Consequently the two northerly properties of 42 Arnol and Garenin can be classified to this type. The elongated plan form, as exampled by the ratio of length to depth, also confirms its origin. Garenin has only the outline of the barn to the rear and the parallel cells with mutually supporting walls is not evident.

It is more problematic to identify the origins of Berneray. Wall thickness and the exposed wall- head indicate a "Hebridean" type, but in plan form, lack of roping to the roof, windows and gable stacks are more indicative of the "Skye". Its central location of the three main hostels may mean that it adopts features from Garenin and Howmore and consequently is a hybrid of the "Hebridean" and "Skye" types, and may mark the geographical borderline of the two types.

The "Skye" type "is not unknown in certain other isles...and the distinctive features are the hip-ended roof and the overhanging eaves of thatch" (Sinclair, 1953) Consequently Howmore fits comfortably in this category with the overhanging eaves being the distinctive element. The plan form, with thinner wall thicknesses and symmetrical window openings also exemplify this type and this is confirmed by Sinclair "the house of the "Skye" type have usually a window on each side of the door and a smaller one to the back" (Sinclair, 1953). This is exactly the layout of Howmore.

"Because of the winter gales the houses had to be freshly covered each year" (Fenton and Walker, 1981). The Historic Scotland property of 42 Arnol has the benefit of annual re-dressing of the roof together with a near permanently burning peat fire continuing the original smoke filled environmental conditions, all under the supervision of a custodian.

The three hostels used by the Gatliff Hebridean Trust are not maintained to the same original standard as the Historic Scotland property. At the time of the inspections areas of missing and compressed thatch was visible at Garenin and Berneray. Previous repairs, especially the use of bitumen felt and wire mesh are a pragmatic response to maintenance and have not tried to follow authentic thatching techniques. The trust does undertake maintenance and re-roofing is planned on all properties within the next five years, undertaken by specialist contractors.

Table I.

	42 Arnol	Garenin	Berneray	Howmore
Location	Lewis	Lewis	Berneray	South Uist
Present use	Museum	Hostel	Hostel	Hostel
Wall structure				
Internal length	21 m	19 m	10.5 m	8.65 m
Internal depth	4 m	4 m	4.4 m	4.25 m
Ratio length/depth	5.25:1	4.75:1	2.38:1	2.03:1
Wall thickness	2.1 m > 1.5 m	2.0 m > 1.6 m	1.68 m > 1.28 m	1.15 m > 0.95 m
Wall height	1.8 m > 1.5 m	2.3 m > 1.85 m	2.1 m > 1.8 m	2.0 m
Eaves platform	Yes. Blue clay/turf	Yes. Bitumen/render	Yes. Painted render	No
Roof structure				
Renewal	Yes	Yes	Yes	Yes
Truss type	A-framed	A-framed and rafter/tie	Rafter and tie	A-framed
Lashed trusses	Yes. coir rope	Yes. 12 mm plastic	No	No
Lining	Slatted driftwood	175 mm boards and chipboard	Stained plywood	150 mm half log cabers
Roofing material				
Covering	Oat straw on grass turfs	Straw	Marram	Heather on heather turfs
Netting	Nylon netting	Plastic netting	Wire netting	Wire netting
Roping	Vertical and perimeter eaves	Vertical and perimeter eaves	Perimeter eaves	No
Overhang	No	No	No	Yes
Stones/details				
"Raven stick"	Yes (2 no)	Yes (1 no)	No	No
Eaves stones	Yes	Yes	Yes	No
Suspended stones	Yes	Yes	Yes	Yes, below thatch line
Chimney	No	Yes, central and gable	Yes, gables	Yes, gables
Maintenance				
Annual maintenance (general)	Not identified	£5,000	£5,000	£5,000
Expected expenditure in next five years	Not identified	£15,000-20,000	£15,000-20,000	£15,000-20,000
Proposed work in next five years	Not identified	Re-roofing	Re-roofing	Re-roofing
Last re-roofing	Annual	2002	2000	2003
Source of roofing material	Morayshire and Invernessshire	Mainland England	Local Machair	Local area

Although all three properties are "thatched", they are all very individual in their roofing techniques. This uniqueness is part of the buildings' historic significance, and one which should be conserved for future generations. The hostels do represent good examples of vernacular buildings and the care and maintenance of the properties is essential to ensure that their cultural significance is not diminished.

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