WOOD USE IN THE MEDIEVAL SCOTTISH BURGH: TIMBER SUPPLY AND BUILDING DESIGN

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Introduction

It almost goes without saying that wood was required for virtually every aspect of life in the medieval burgh. It provided building materials, it was the major source of energy for cooking and heating, and for the manufacture of a multitude of everyday articles, the most common of which were the varied containers required for food storage, preparation and consumption. So ubiquitous was the use of wood that this paper will focus on only one aspect - its use in buildings and in particular, what tree-ring analysis of building timber can tell us about source and supply.

A recurrent theme of Scottish woodland history is that of scarcity from an early date. The tree-ring evidence is beginning to flesh out this theme and provides a background for viewing the resourcing of building within the Scottish medieval burgh.

Native timber supply

Tree-ring analysis of timbers from a number of urban excavations has produced evidence for early burgh development. Assemblages from Aberdeen, Glasgow and Inverness were very much random samples in that they were not the result of systematic sampling at the time of excavation and represent what has survived after many years in storage. In the case of Aberdeen and Glasgow the timbers were redeposited and could, therefore, have been felled at any point in time prior to their burial. It is, therefore, all the more surprising that their analysis has produced such remarkably consistent results. Despite coming from contexts apparently spanning the late 13th to 15th centuries, all the dated timbers fall within a short timespan straddling the late 12th/early 13th century. We have exact felling dates of 1192 in Perth, 1191 in Glasgow and1185 in Aberdeen, while the Inverness timbers were probably felled in the late12th/early 13th century.

Thus, in four Scottish burghs we have evidence for roughly contemporaneous building activity in the last decade or so of the 12th century. All of these towns had been granted burghal status during that century and it seems likely that, in the dendrochronological results, we have identified the first major phase of building activity resulting from the new-found prosperity of the burghs.

Dendrochronology did identify an earlier construction phase in Perth, in 1150, but there is no evidence, in the dendro record at least, for building activity prior to this date, possibly because the type of structures being built did not require the large oak timbers needed for dendrochronological analysis – a point that I will return to later on. The main point here is that all the timber found so far in the early burgh excavations has proved to be native Scottish in origin.

Very few standing buildings in Scotland retain wooden structures of so early a date – Glasgow cathedral is an exception. The large timbers needed to build the roof of this massive structure were felled in the mid-13th century and were also native in origin. Clearly local woodlands could supply the needs of the developing burghs in the 12th – 13th centuries, both for prestigious structures and for the burgher's dwellings.

The burghs would probably have had access to local supplies granted through Royal decree. The quality of the timber available to the burghers is illustrated by the planking used to build the well found during excavations on the High St, Elgin. The

timbers were felled in 1301 for some other function, and were re-used in the construction of the well. The average length of the Elgin well timbers was 291 years, the longest being at least 355 years. The narrow, slow-grown ring-pattern observed on the planks is indicative of growth in a dense, mature forest.

The tree-ring sequences from the Elgin timbers compared most closely with those from timbers in the hammerbeam roof in Randolph's Hall at nearby Darnaway, built in 1387, and it is possible that they originally came from the Royal Forest there. While we would expect the Crown to have access to good quality timber it is perhaps surprising to find it used as rather crudely-made planking in a lowly structure such as a well.

Darnaway Forest almost certainly supplied the timber used in Randolph's Hall and probably supplied timber used at Stirling Castle in the early 15th century. In both cases the timber was of a similar quality to that from Elgin - timbers more than 400 years in age was used in Randolph's Hall and one of the timbers used in Stirling Castle was at least 342 years old.

Imported timber
Clearly north-east Scotland had plenty of good quality timber well into the 15th century. However, there are some slight indications that as early as the late 13th century, a shortage of timber may have been arising in other parts of Scotland.

The scant documentary evidence records that, from the late 13th century Scotland began trading with the Hanseatic ports in the Baltic and latterly, with Scandinavia. The documents record that for much of the 14th century Scottish trade was with Germany and the ports of the western Hansa, such as Lubeck and Hamburg but when the Sound between Sweden and Denmark opened up in the late 14th century the merchants of the eastern Hansa, in particular Danzig and Konigsberg, eagerly developed trading relationships with the new markets beyond the Sound, such as Scotland.

There are few documentary references to specific types of imports into Scotland until the late 15th century but small amounts of timber and wood products were certainly being imported during the 14th century - tree-ring analysis has identified two such examples.

The earliest example to date comes from Queen Mary's House, in St Andrews. Timbers from this house were felled at the turn of the 14th century and came from a source in the eastern Baltic, possibly Poland. A barrel found during excavations in the Gallowgate, Aberdeen, and dated to the mid-14th century, came from northern Poland, from the coastal region known as Pomerania.

By the late 15th century the evidence suggests that Scotland was increasingly dependent on imported timber. For instance, the hammerbeam roof of the Great Hall, at Edinburgh Castle was built of imported oak, felled in 1511, as was the ceiling of the Queens bedchamber, in the Royal Palace at Stirling Castle, felled in 1538.

Some Scottish timber was used in the King's Bedchamber at Stirling Castle and it is the character of this material which gives some clue as to why the Royal builders were becoming reliant on imported timber. Much of the timber was young and fast-grown, between 50 and 80 rings, so short that in many instances they could not be dated.

Similar material was used at Alloa Tower, one of the few towerhouses where the

frames of the original roof are still intact, and supposedly also late 15th century. The timbers were all very young and fast-grown, only 40 to 50 years at most and could not be dated. It is possible that as local supplies of mature oak timber became depleted the woodlands became more open, allowing the rapid growth of young maiden trees, of the type used in Alloa Tower.

Sources of imported timber

All the imported timber mentioned above came from one particular region - Scandinavia. In the case of the Royal Palace at Stirling the tree-ring evidence points specifically to the countries of Denmark and/or Sweden. The tree-ring evidence corroborates the slight documentary evidence. In the accounts of the Masters of Works and the Lord High Treasurer of Scotland, records of Royal expenditure, both Denmark and Sweden are mentioned as sources of timber. On one occasion, in 1539 (a year after building began on the Royal Palace) a Charles Murray is recorded as being paid for buying timber in Denmark, specifically for the works at Stirling.

Although the royal accounts only very occasionally mention Scandinavian timber the Dundee burgh records testify to the volume of timber being brought in on Danish, Swedish and Norwegian ships from the mid-16th century onwards. Indeed, the Scottish demand for building oak was so great at this time that, for a period Denmark prohibited its sale to Scottish traders, presumably to conserve its own resources.

Both dressed and undressed timber was imported and it is noticeable that all the Scandinavian timber surviving in Scottish buildings consists of squared baulks, be it whole, halved or quartered. Scandinavia was clearly the supplier of the standard timber needed for most types of joinery.

However, when thin, fine-grained board which would not warp or twist was required for doors, windows, ceilings and wall panelling the major supplier was not Scandinavia but the eastern Baltic countries. The most frequent reference to timber in the Royal accounts during the 15th and 16th centuries is to 'Estland board', a description which indicates that it was imported ready prepared as cleft planking. Dendro-provenancing has now identified a number of examples of 'Eastland board'in Scotland, at the Guthrie Aisle, in Angus, where the painted ceiling was constructed of Estland board in about 1468, and a group of carved wooden panels which were found in the stores of Perth Museum and which were carved in the early 16th century.

Estland board was exported via the ports of Riga, Memel and Konigsberg, in what were the Russian Baltic states and it was always assumed that the timber was felled in the hinterlands behind these ports. However, correlations between the Estland board chronologies and those from log-boats from the river Dneiper indicate that the source of this type of timber probably lies even further east in the modern states of Ukraine and Belarus.

Timber supply and its impact on building design

A brief summary of the tree-ring evidence for changes in timber supply through the medieval period was presented above. We now consider briefly the impact this may have had on building types throughout that period and, in particular on the development of a timber-framed building tradition in Scotland.

I mentioned earlier that the reason we have no tree-ring evidence for pre-12th century building in the burghs is possibly because the type of structures that were built did not employ the large oak timber necessary for tree-ring analysis. The archaeological evidence indicates that between the 12th and 14th century the bulk of

the urban population lived in single-storey houses of post-and-wattle type. In general the uprights were driven directly into the ground, although occasionally, they were set in sillbeams. These are clearly the kind of simple structures that the people of Lanark were describing when, after a fire had burned down the town in 1244, they made light of it 'saying that with six or eight stakes they would soon have new houses…'. These structures are characterised by the absence of elaborate carpentry and the abundant use of relatively small undressed roundwood. Small amounts of dressed timber were occasionally used in these buildings and it was primarily oak, all of which displayed evidence of re-use. This timber may have been scavenged from the demolition of the more prestigious buildings which lay along the frontages of the plots.

None of the excavated buildings in the early burghs have revealed any antecedents for the development of timber-framing, although there are examples of post-and-sillbeam construction from the High St, Perth which could perhaps be seen as such. However, building in timber is considered to have been the norm in Scottish towns until the second half of the 16th century; certainly urban stone buildings prior to this date appear to have been unusual enough to draw comment. This is surprising given the growing deterioration in the quality and quantity of local wood resources and the increasing reliance on foreign imports that becomes apparent towards the end of the 15th century.

Unfortunately, the evidence needed to track the development from timber to stone building is not presently available, although it may lie hidden within the buildings of later periods. The roof of a 17th century house on the High St, Brechin contained re-used 15th century timbers which had come from a timber-framed building. The redundant mortice- and peg-holes observed in the timbers are characteristic of a box-framed construction.

The earliest known illustration of Scottish urban housing is the view of Stirling Castle with the burgh below in a 15th century version of the *Scotichronicon*. It depicts jettied buildings but whether these are entirely timber-built or a mixture of stone and timber is not evident. The only surviving examples of timber-framing date from the late 16th century and these are built mainly in stone with timber frontages.

For example, Kinnoull's Lodging, in Perth, dated to *circa* 1600 and dismantled in the 1960s, consisted of a timber-framed frontage built over a masonry wall at ground level while the other three load-bearing walls were entirely of stone. This seems to have been a peculiarly Scottish fashion, a visitor to Edinburgh in 1598 commenting on buildings 'faced with wooden galleries, …', a style which can still be seen today at John Knox's House, in Edinburgh.

Edinburgh retained a number of almost wholly timber-framed houses of late 16th century date, such as the building which existed on the corner of the High St and the West Bow but which was unfortunately demolished in the late 19th century. The profligate use of so much timber in a building of this late date is seen as an imitation of English and Continental fashions rather than a continuation in a Scottish building tradition.

Partial timber-framing was probably a response to the diminishing availability of suitable timber but records of fires in many Scottish burghs throughout the 17th century and the consequent attempts of burgh councils to enforce building in stone show that timber continued to be a major component in urban buildings.

Even roof coverings were of wood. The roof of the Canongate Tolbooth, Edinburgh,

built in 1591, was covered in shingles of radially-split oak and documentary references suggest that this was the preferred roof covering for many high status buildings until slate began to be quarried in the 18th century.

Conclusions

The study of wooden structures can provide valuable information on the nature of the timber resource as well as on the development of architectural traditions. There are still many gaps in our knowledge of the latter in Scotland but as the example of the Brechin house shows, some answers probably lie hidden in many of the standing buildings which do survive in Scotland's towns.

As a final example - analysis of timbers from St Johns House, home to the History Department at the University of St Andrews revealed oak timbers which were felled in the late 13th century, nearly 300 years earlier than the existing 17th century building. St Andrews is rich in historic buildings and analysis of their timber fabric may enable a reconstruction of building episodes in the town's development, as well as contributing to the emerging picture of timber source and supply.

Further reading

More detailed information can be found in the following references;

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