

Roof recording in St Thomas's Church

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Archaeology above ground

ALTHOUGH archaeologists are traditionally supposed to work below ground, now that the full significance and value of building recording has been recognised, they are increasingly found operating at a higher level. In January 1994, for example, a team from the Institute of Archaeology at University College London were working in the roof over St Thomas's church, Southwark (Fig. 1).

This report summarises the results of the first phase of that recording programme, which showed that the roof incorporated at least two major phases of construction. These could be related to changes



Fig. 1: measuring the main truss at the east end of the roof. (R. Bartkowiak, London Archaeological Research Facility)

in the use of the roof space from a herb garret to, uniquely, a surgical operating theatre, dating back before the advent of anaesthesia.

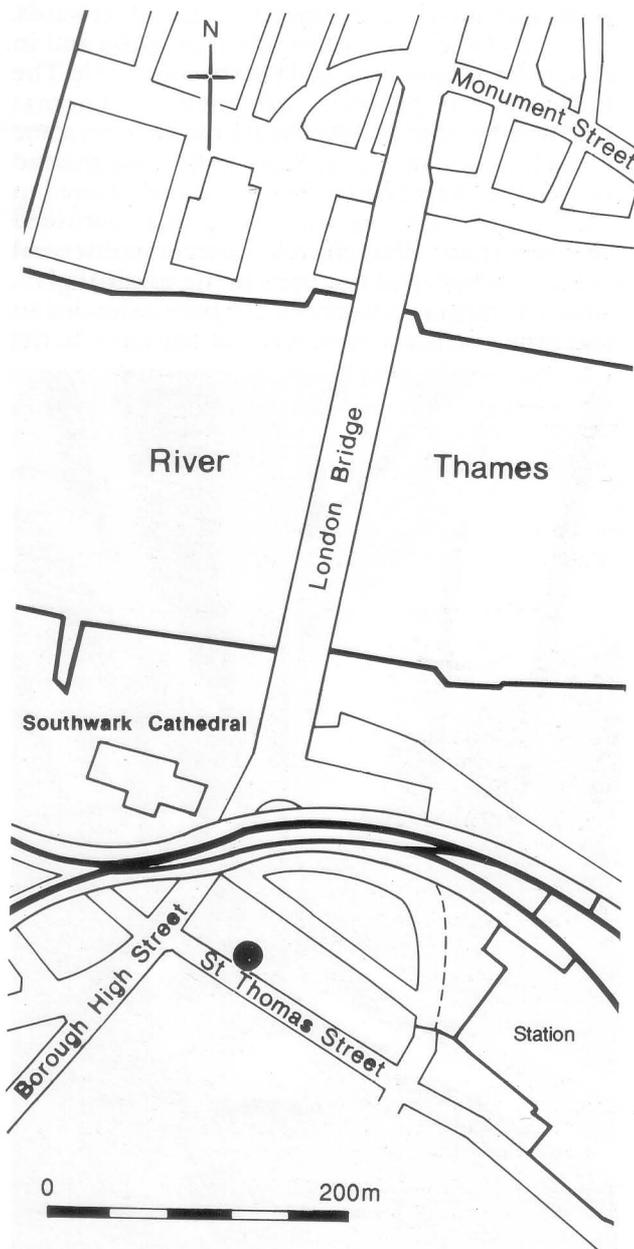


Fig. 2: plan showing position of St Thomas' church in relation to modern London Bridge (S. Hurman).

Hospital and Chapel

The earliest surviving documentary reference to St Thomas's Hospital is in 1212, when it seems to have occupied a site close to the priory of St Mary-over-the-River (now Southwark Cathedral). It was then described as 'an ancient spital, built of old to entertain the poor'. Following a major fire, the hospital was rebuilt in 1215 to the east of Borough High Street (Fig. 2) where it remained for over 600 years¹. A plan for the modernisation of the whole complex was drawn up in 1693 by Sir Robert Clayton, the newly-installed president of the hospital and rebuilding began shortly afterwards. The old chapel was pulled down in 1698-9 and in 1700 foundations were laid for the south aisle. The building was probably designed by Thomas Cartwright, who had previously worked on some City churches, such as St Mary-le-Bow. By the end of 1701 the chapel had been roofed and covered in lead, while plastering and fitting out continued through 1702-3. This church incorporated several features which had not been in the original plan, since the hospital buildings had been extended to meet the north and west walls of the church, the



Fig. 3: recording details of the roof structure.
(R. Bartkowiak, London Archaeological Research Facility)

latter development requiring that the tower was re-sited in the south-west corner. It was also decided to make use of the roof space, adding a garret which later records state was used for the storage of medicinal herbs. It is not known for certain who was responsible for the redesigned roof: the surviving documentary records state that a 'friend of Mr Cooper's' undertook the work at a cost of 2 guineas, ie £2.10².

In 1821 that garret was converted into an operating theatre for female patients. Although it witnessed the advent of anaesthesia 25 years later in 1846, it was shut down and sealed off shortly after Florence Nightingale founded her school of nursing at the hospital in 1860. By 1862 the entire hospital was closed down in advance of the construction of the railway line to London Bridge station. It was redesigned and rebuilt on a fresh site opposite the Houses of Parliament, to which the patients were moved from their temporary quarters in 1871³. As for the old hospital chapel, it then began service as a parish church. The operating theatre hidden in the Southwark garret therefore represents a unique monument, the only such theatre in Britain which was not updated to take account of more modern surgical equipment and techniques. It was re-discovered in 1957 and subsequently opened as the Old Operating Theatre Museum, a fascinating display for those of a non-squeamish disposition.

Roof recording

The work was undertaken at the invitation of Cultural Heritage Resources, who manage the award-winning museum there. The aims of the project were to determine the form of the roof, identify areas of repair, suggest an order of construction, and finally to try and establish how the roof space functioned. The work was supervised by the authors for the London Archaeological Research Facility. On many building recording projects it is standard practice to make a sketch survey, to which particular measurements are added in the field, after which the working drawings are drawn up off-site. For the project at St Thomas' church, it was decided to mount a more detailed measured survey of selected areas and components *in situ*. The plan and main elevations were therefore drawn at 1:20, with selected details at 1:10 (Fig. 3), using a standard range of equipment including 30m-tapes, builder's levels, ladders and the extending staff

1. See *Old Operating Theatre, Museum & Herb Garret: a brief guide* (1994).
2. The detailed research summarised in this paragraph is taken from an unpublished paper by Paul Jeffery *The Parish Church of St Thomas the Apostle, Southwark*.
3. *Op cit* fn 1.

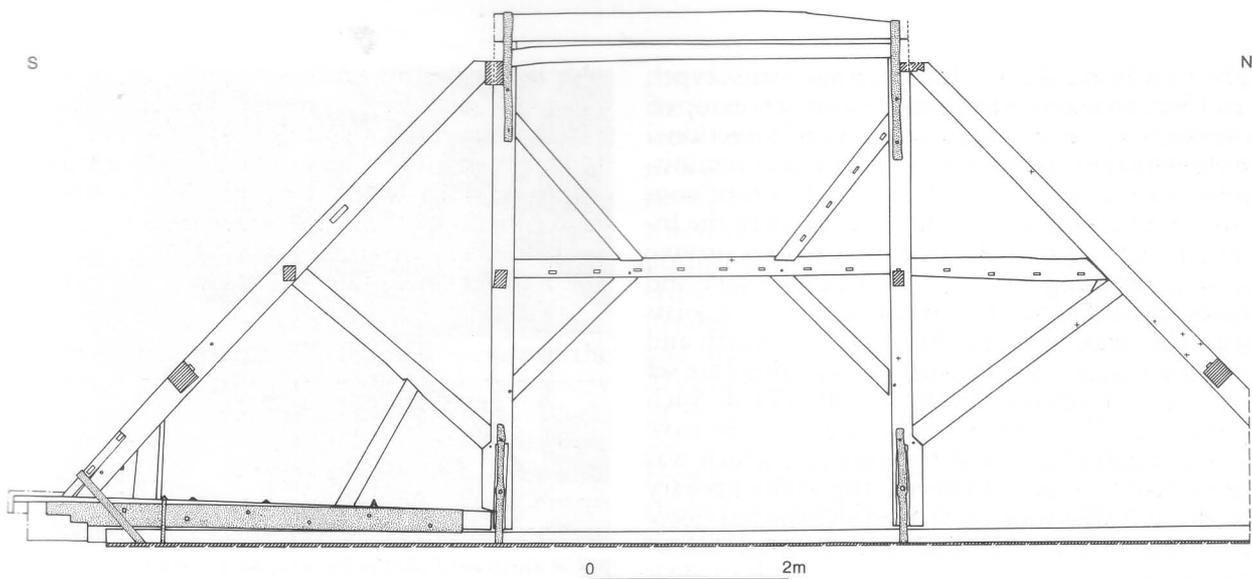


Fig. 4: east-facing elevation of main truss at east end of roof. (S. Hurman)

from a surveying set to facilitate the taking and reading of measurements high up in the roof space.

Once the main structure of the trusses had been recorded, attention turned to investigating details. This included probing the junctions of the timbers with a thin blade to ascertain which types of joints had been used to tie the roof together, trying to determine how individual timbers had been cut

from the parent tree, and if any tool mark survived which would help to explain which tools had been used to shape them. In addition, study was made of empty mortises and similar housings which presented evidence for reused or reset timbers. Although it was not possible to complete all these tasks in the single week available to the Institute team, a positive start was made in the first season.

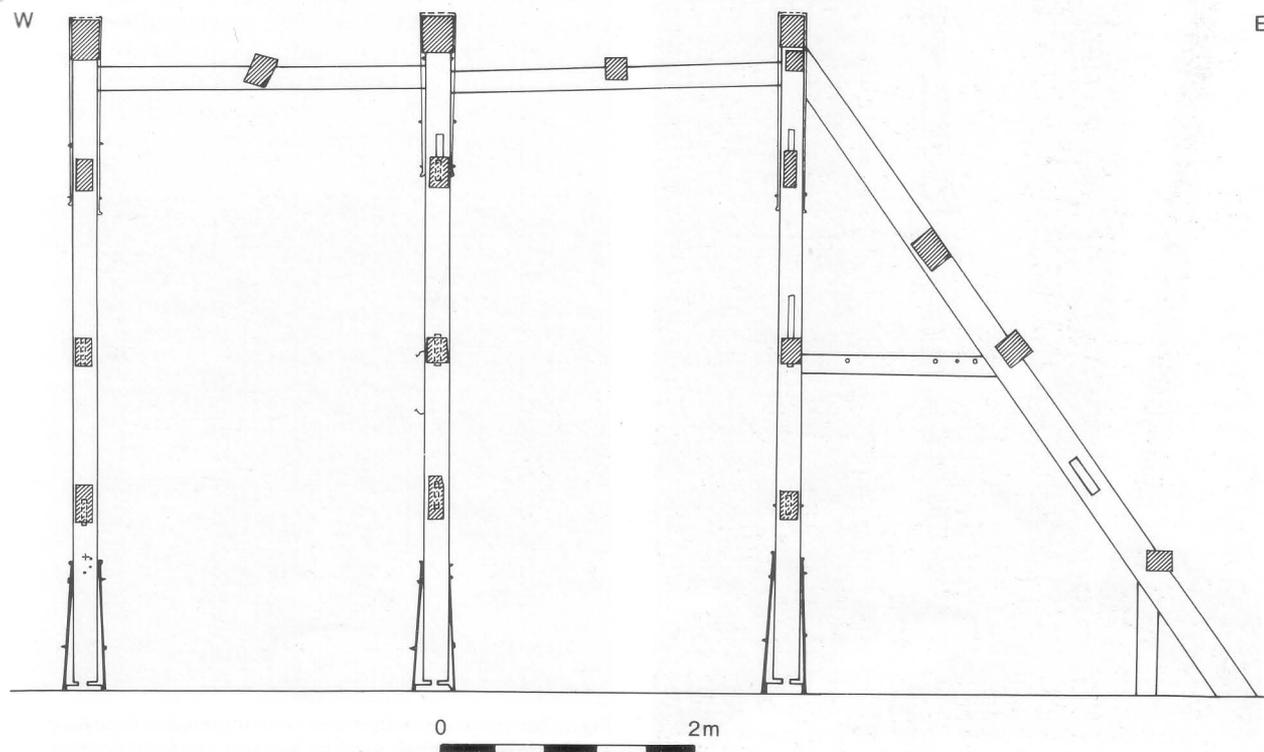


Fig. 5: south-facing elevation of arcade or aisle posts on north side of roof (S. Hurman).

The roof is broadly of the raised aisle-truss type⁴, in effect, an aisled barn-like structure set on top of the church. It was built in a robust and functional style which although had few features reminiscent of the great medieval traditions of roof construction, nevertheless seemed earlier than the Industrial Revolution. At least three trusses survive (Fig. 4), defining a garret with a central nave and aisles to north (Fig. 5) and south. Bridging joists span the space between the top of the north and south walls, into which paired arcade posts are set with iron straps and forelock bolts (Fig. 6). Such fixtures are known from the east end of the nave at Winchester Cathedral for example, which was re-roofed in 1699⁵. However, the contemporary works at in the roof of St Paul's Cathedral (1696-1706) seem to have used the more advanced screw-threaded bolts⁶.

4. N. Alcock et al, *Recording Timber-Framed Buildings: an illustrated glossary* (1989) 20.
5. C. Hewett *English Cathedral and Monastic Carpentry* (1985) 71, fig 67.
6. *Ibid*, 68-9.

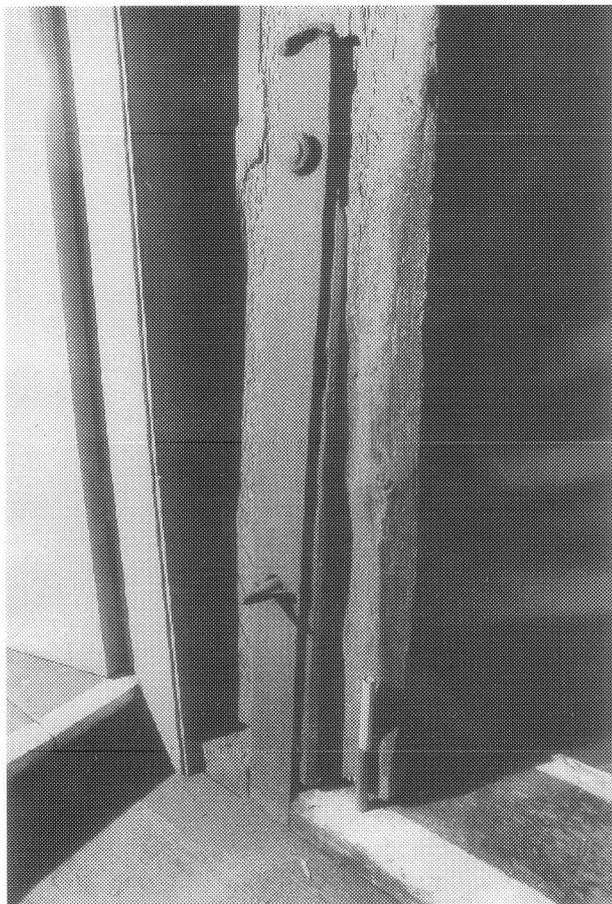


Fig. 6: detail of base of arcade post showing forelock bolts and iron straps.
(R. Bartkowiak, London Archaeological Research Facility)



Fig. 7: horizontal purlins in primary position in roof.
(R. Bartkowiak, London Archaeological Research Facility)

The arcade posts at St Thomas' church are braced with a horizontal strainer beam, while the heads of the arcade posts articulate with a tiebeam (N-S) and an arcade plate (E-W). The principal rafters run from the head of the post to the eaves, while purlins run horizontally between the principal rafters (Fig. 7).

Study of the structure showed that some purlins had been cut and others moved to allow for the insertion of the windows (Figs. 8 & 9). This shows that the windows were not an original feature of the garret, but were an addition, probably inserted in 1821 during the conversion to an operating theatre. There was also clear evidence that the trusses had all been strengthened on the southern side of



Fig. 8: horizontal purlin reset over inserted window: the 2 x 10mm scale stands next to mortise marking former position of purlin: see Fig. 9.
(R. Bartkowiak, London Archaeological Research Facility)

the building, when iron plates with threaded bolts of early 19th-century-type were added. Why only one side of the church should have been so treated requires further study. There is also some evidence for re-used timber at the eastern end of the roof, but these are not characteristically medieval in style.

Conclusions

As a result of this first phase of study, it was possible to suggest that much of the carcass of the roof is of early 18th-century date. In its primary phase, it seems that the Herb Garret was a dark, commodious room which was not lit by windows, at least not at the east end. This presumably would have helped to maintain a stable environment within which the herbs would have been stored and dried. There was evidence of a rack set some 2m above the floor at one end of the building, for example.

The second phase saw the removal of many of the purlins (and therefore presumably the cladding of

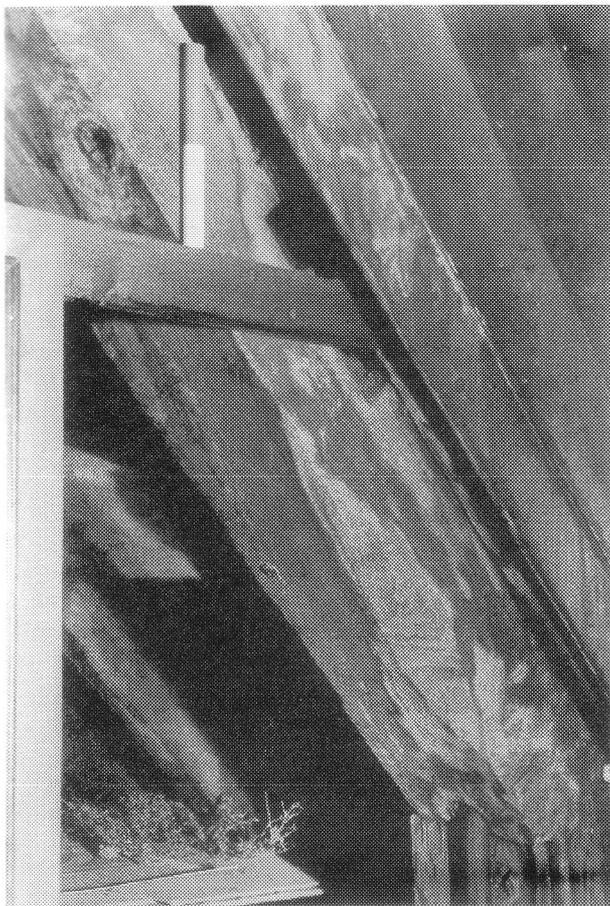


Fig. 9: the 2 x 10mm scale rests on modern batten which partially obscures the empty mortise marking original position of the purlin (cf Fig 7).

R. Bartkowiak, London Archaeological Research Facility)

the roof as a whole), the insertion of windows in the east end, after and above which the purlins were replaced. It seems therefore that the conversion of the garret into an operating theatre saw a substantial rebuilding of the roof, ultimately with a new skylight over the theatre itself and smaller dormer windows set into the northern and southern sides. The eastern end was now opened up, the drying racks had been removed, a new roof laid and windows set between the trusses. All this development would seem to be to allow greater use of the space, which no longer seems to have been solely for bulk storage. The area may even have been used as a recovery ward with beds laid out in the bays defined by the trusses. The parapet on the southern side may also have been rebuilt at this stage to shield the windows.

This modest recording exercise has therefore tried to extend our knowledge of a part of a building for which little documentation survives. Such projects are thus of considerable value, not just because they increase our understanding of London's historic buildings, but because they represent a type of valuable archaeological exercise which local societies can undertake with profit, at a time when there are conspicuously few 'below ground' excavations to participate in. Our ancient buildings are always at risk of drastic repairs, vandalism or, in the case of St Ethelburga's in Bishopsgate, even worse: it is a matter of regret that the medieval belfry in the latter church had not been recorded before it was blown up in April 1993. There is a wealth of buildings in the London area which would benefit from detailed study: like the roof of St Thomas' church, there will be surprises in store.

Acknowledgements

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