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David Martin, 'The Decline of Traditional Methods
of Timber Framing in South-East England',
Georgian Vernacular, Georgian Group Symposium,
1995, pp. 27–33

THE DECLINE OF TRADITIONAL METHODS OF TIMBER FRAMING IN SOUTH-EAST ENGLAND

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Although methods of building in timber were continually evolving, the basic techniques developed in the late 13th and early 14th centuries remained constant over a surprisingly long period. Signs of change are to be found in the 17th century, but it was during the first half of the 18th century that traditional techniques of timber-framed construction were largely abandoned in favour of new methods, though the change was gradual, and some times very erratic. This study attempts to summarize the decline of traditional timber-framing in the south-east of England. The area covered by the study is the ancient administrative region known as the Rape of Hastings, the easternmost of the six rapes of Sussex, but the techniques of construction which are discussed here apply to much of the south-eastern corner of England.

Timber-framing was, not surprisingly, the principal method of construction adopted within the Rape of Hastings being a heavily wooded area poor in good building stone. From the late 16th century onwards brick began to be introduced for external walling, but the use of timber was not seriously challenged until the first half of the 18th century. Even then, out of a sample of 233 new houses and extensions built during the first two-thirds of the 18th century 121 (a little over half) were entirely of timber-framed construction and a further 51 mixed timber-framing with brick. At this time timber remained the principal material used in small houses and cottages, roughly three-quarters being fully timber-framed whilst only 14 of the 101 buildings of that status excluded the use of external timber-framing altogether.

In those buildings where the external walls were built of brick or stone, timber construction was normally used for the internal cross-partitions. Brick internal partitions were utilized throughout at Cralle Place, Warbleton, built by Sir John Lade between 1722 and 1724, whilst in one or two mid-18th-century houses the wall dividing the lean-to outshot from the main range is of brick, but usually this too is of timber construction.

From the late 13th and 14th centuries onwards the basic skeleton of a typical Sussex timber-framed house consisted of a simple box frame comprising a series of trusses linked along each side by a wallplate at the head, a soleplate at the base, and a bressummer or 'girding beam' set part way up to coincide with the level of the first floor. The wallplates and soleplates run continuously along the length of the building, whereas the girding beams are jointed between the trusses (Fig. 1). Each truss incorporates a pair of principal posts linked at the head by a tiebeam carried in 'standard assembly'. This term indicates that the tiebeam is dovetailed over the wallplate and both the wallplate and tiebeam are independently mortised-and-tenoned to the principal post beneath. The principal posts incorporate a swelling or 'jowl' (sometimes called a 'rootstock' or 'gunstock') at their head in order to accommodate the double joint (Fig. 2). It is this complex joint which gives the frame its strength. Into this basic frame were incorporated timbers of smaller scantling such as studs, braces and floor joists.

This design of basic frame was used with only minor variation until the closing years of the 17th century. During the first half of the 18th century some new forms were introduced. Even so, all but 17 of the 121 framed buildings within the sample erected between 1700 and 1750 made use of entirely traditional techniques.

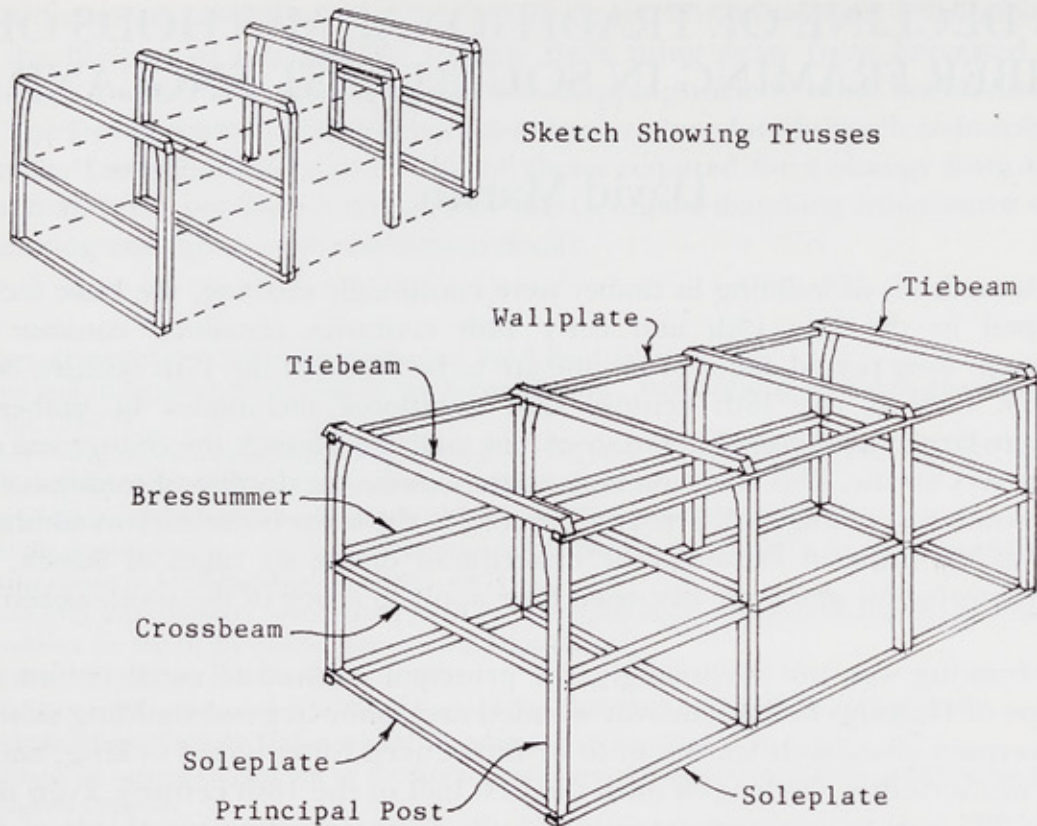


Fig. 1. Simplified sketch showing the principal components of a Sussex Timber-frame.

SIZE AND QUALITY OF TIMBER

The sturdiness of a frame is best gauged from the size of its principal posts. Most surviving houses in East Sussex built before 1570 have principal posts varying from 250-290mm in width, though usually of lesser depth. The survival of a significant number of 'permanent' houses of smaller size built thereafter is reflected by a dramatic increase in the number of houses with principal posts of between 200 and 240mm, though narrower posts were still rare before 1700. This was to change during the 18th century when, although the houses tended to be slightly taller than previously, about half those surveyed had posts of 172-200mm in width. Except where the frame was to be hidden from view, their depth was not effected.

This narrowing-down of the posts reflects an increased concern for economy brought about by a scarcity of timber, a feature also recognisable in the quality of the timber used. Small houses and cottages survive in far greater numbers from the late 16th century onwards and it is therefore inevitable that material of poorer quality will be more often

Fig. 2. Typical joint at top of principal post.

encountered in later buildings than earlier ones. However, even if small houses and cottages are excluded, the same drop in quality is still recognisable. The use of second-hand material is virtually unknown in surviving medieval buildings, but from the late 16th century, and

particularly during the late 17th and 18th centuries, the inclusion of reused material became more common. This is also the case with timbers incorporating the soft outer layers of the tree (sapwood). It is true that sapwood is commonly found in early houses, but the frames of houses built from the late 17th century onwards show a far greater number of lost edges where sapwood has been eaten away or has rotted out. The inclusion of sapwood did not effect the quality of finish at the time of construction; it would have been a generation or so before the sapwood began to deteriorate. The need to economise, and the eventual move away from timber-framing, is almost certainly explained by the increasing scarcity of good timber locally and the resultant rise in its price.

VARIATIONS IN TOP-JOINT ASSEMBLY

Only two local houses pre-dating the late 17th century are known where standard assembly was abandoned for no obvious structural reason – level assembly was often used in association with overhanging gables. However, during the closing years of the 17th century and throughout the first half of the 18th century experiments were made into new methods of framing, almost certainly for reasons of economy. Even during this period few fully-framed houses departed from traditional techniques, only six examples of non-standard assembly being included within the sample of 121 fully-framed houses and extensions built after c.1700. Of these, four utilized level assembly throughout, a fifth used a form of reversed assembly with the wallplates carried within a deep trench cut into the upper surface of the tiebeam, whilst at the Old Post Office, Rushlake Green, the central truss was for some inexplicable reason reversed despite the use of standard assembly in the end walls.

DEBASED FRAMING

In this article the term 'debased framing' refers to a technique in which timber framing is present, but in a cheapened or imperfect form. With few exceptions the surviving examples of debased framing belong to the 18th century when the use of timber framing was on the wane. Whether these houses represent the introduction of a new type of inferior framing, or merely the more widespread adoption of methods which had previously been restricted to cheap, what we would consider 'impermanent' buildings, is unclear, for it is not known how the earlier houses of the poorest members of society were built.

In those houses within the sample which made use of brick or stone external walling the structure's stability was given by the external mass walling and the frame was therefore required only to support the floors, internal wall infill and roof structure. There was no need for

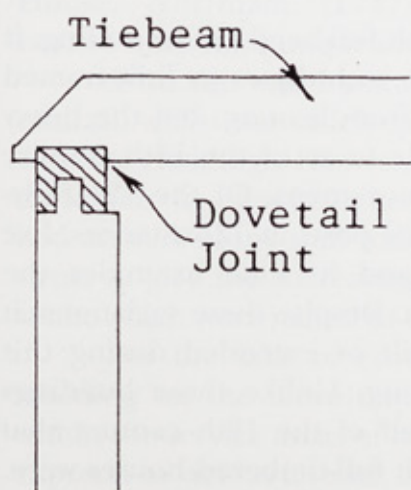


Fig. 3. Assembly and Wallplate level, Lower Standard Hill, Ninfield (1702).

traditional framing, though, despite this, it was used in all examples predating c.1700. At Lower Standard Hill, Ninfield (1702) the framed wall between the main range and the rear part of the house maintains standard assembly, but the principal posts lack jowls (Fig. 3). The walls dividing the double-pile ranges at Catsfield Manor, Catsfield (1710), Little Bucksteep, Warbleton (1717) and Great Crouches, Warbleton (1720x1723) show a further decline in the standard of framing, for in these the majority of the principal posts do not coincide with the crossbeams and tiebeams, but are set to one side (Fig. 4). The timbers of the main frame at Catsfield Manor and Little Bucksteep were intended to be visible, as too were the posts at Great Crouches, whereas at Crowhurst Park (c.1705 and 1725x1744), Kingsley Hill, Warbleton (1720) and Cowbeech House, Herstmonceux (1731), all timbers

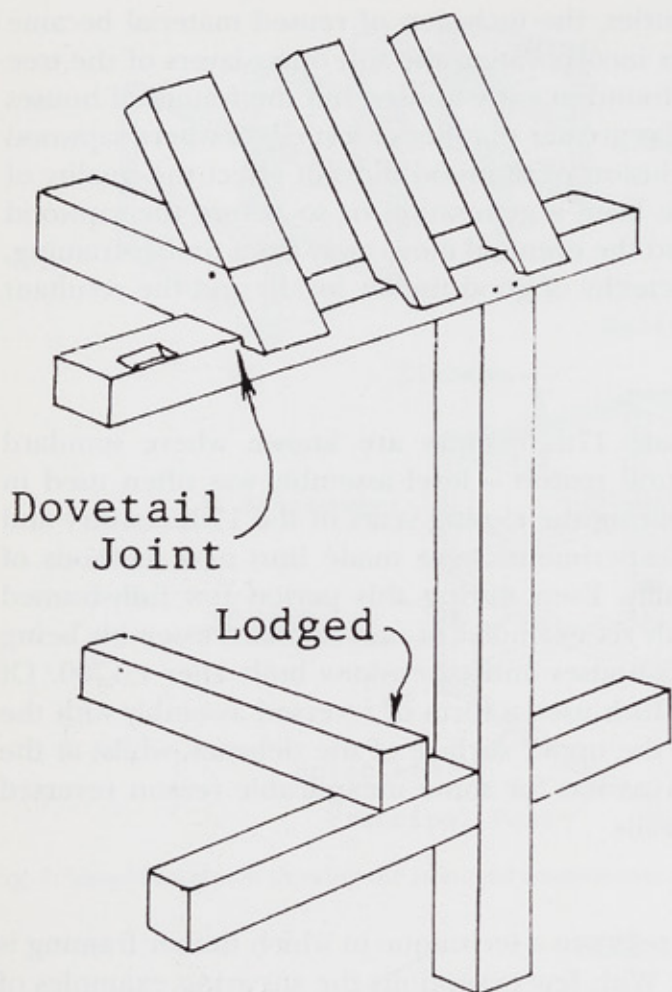


Fig. 4. Debased Framing

innovation in the early 18th century. Only two local houses built before c.1700 are known which incorporate this combination, and only two others (both traditionally framed) can with any certainty be attributed to the period 1700-1725. However, 17 houses of this type are datable to the period 1725-1750. Of these, nine (over half) make use of traditional first floor framing. Those which use debased techniques appear to belong to the end of the period.

Once debased framing had been introduced into houses with full-height mass walling, it was not long before some carpenters began to employ the same techniques in fully-framed houses. These houses had no mass walling to prevent the frame from leaning, but the heavy straight raking struts which became popular after the first decade or so of the 18th century more than adequately triangulated the frame against sideways movement. Of the 121 fully-framed houses in the sample, jowls were omitted from all principal posts in 12 instances, five houses made use of level or reversed assembly throughout, and in nine examples the crossbeams and tiebeams do not coincide with the principal posts. Despite these variations, it should be stressed that roughly 80% of fully-framed houses built or extended during this period still made use of entirely traditional techniques of framing. Unlike those buildings which incorporated mass walling, it was not until the second half of the 18th century that traditional methods became uncommon, by which time newly-built full-timbered houses were, in any case, rare. Even as late as 1800 traditionally-framed houses were still very occasionally being built.

(including the main frame) were masked from view to give the rooms a 'modern' appearance. All these latter houses are of gentry status, but masked framing is also to be found in a non-gentry dwelling at Stonebridge Cottage, Crowhurst (1725x1744). However, this cottage was almost certainly built for an estate worker by James Pelham, Esq. at the same time as he was enlarging his nearby mansion within Crowhurst Park. In all probability the same craftsmen were used for both. Of the 23 houses built during the period 1700-1760 which incorporate both full-height mass external walling and longitudinal internal framed partitions, all but five made use of debased framing. Two of the five which maintained traditional techniques (Stunts Green Farmhouse, Wartling and Cross Inn, Ewhurst) are dated 1727 and 1736 respectively: none is of later date.

Bearing in mind the much reduced stability afforded by mass walling when confined to the lower storey, with timber framing above, it is perhaps not surprising that there was a greater reluctance to abandon traditional methods in such buildings. Houses of this type, with brick or stone ground floor walls, were still a new

WALL DESIGN

Infill framing of the 18th century can be divided into one of three forms – large-panel framing, small-panel framing and stud walling.

Large panel framing was the earliest and cheapest of the various wall designs and comprised a series of widely spaced studs set into the basic frame. Until c.1470 large-panel framing held the monopoly, but increasingly thereafter and for roughly the next hundred years most who could afford it used close studding within the principal, more public elevations of their houses. The already waning popularity of large-panel walling was still further reduced by the widespread introduction of small-panel framing during the last quarter of the 16th century. The decline of large-panel framing continued throughout the 17th century. By the early 18th century its use in external walls had become rare even at cottage level, though still quite commonly used for internal partitions.

Popular in the West Midlands since the 15th century, small-panel framing, with its distinctive rail midway up each storey was very rare in south-east England before 1560, but thereafter its adoption became increasingly popular. It should be regarded as the standard type of wall design used throughout the 17th century. During the late 17th century and more particularly the early 18th century the type was itself largely superseded by stud walling, a design more suited to claddings and masked framing. This is not to say that small-panel framing precluded the use of external claddings – it did not; but there was little point in retaining a midrail once frames were masked both internally and externally. Even so, small-panel framing in external walls remained relatively popular as late as 1725 and beyond. Dated examples of its use survive at Tott Cottages, Burwash (1733), Divers Cottage, Brightling (1735) and Byre House, Northiam (1747). The last two houses were tile hung from the outset.

With the wall framing increasingly hidden from view there was no reason to include a midrail, whilst the widely-spaced studs were masked from view behind either lath-and-daub or external claddings. Heavier, more neatly cut staves were used to support the laths, and by c.1700 these were in a few cases becoming indistinguishable from the widely-spaced studs. The stud wall had arrived. Many stud walls, particularly those at first floor level, incorporated straight raking struts to give the increasingly flimsy frame additional stability (Fig. 5). These interrupted the studs, which were nailed to them.

For the sake of economy many of the smaller houses and cottages only masked the studding on the more important face of their internal partitions, and this was the case too within the service areas of some more fashionable houses. Despite the number of examples now exposed to view as a result of 'restoration', stud walling was originally always intended to be clad externally.

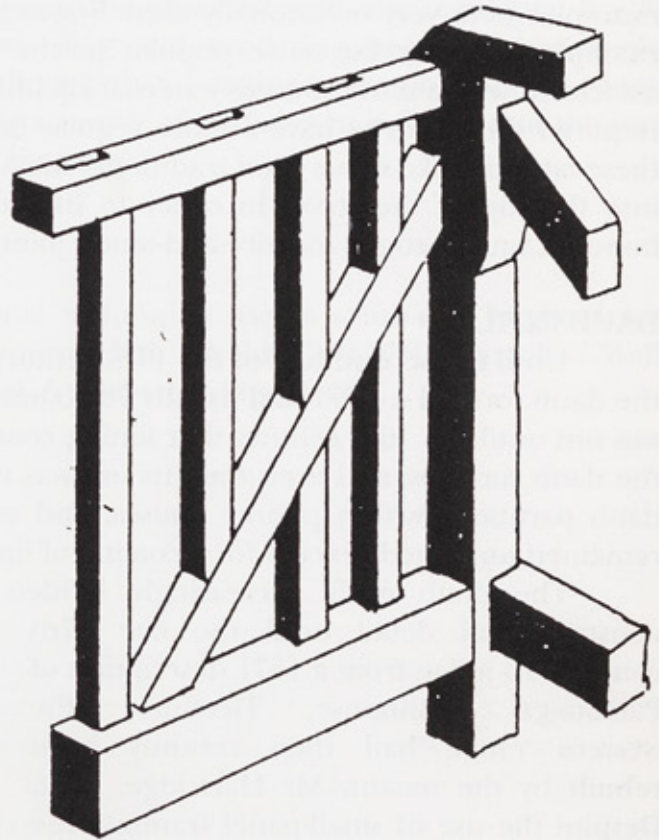


Fig. 5. Detail of stud walling.

INFILLS AND CLADDINGS

STAVES

Traditionally the lath-and-daub infill to the timber frames was supported by spindly vertical lengths of oak inserted into the frame. Called staves, these were trimmed to a roughly oval cross-section at the head and had a 'V' shaped base. They were fitted into the frame after erection by inserting the oval heads into small round-ended mortises (called stave-holes) which had been cut into the soffit of the frame during fabrication. These mortises, usually about 50-80mm long x 20mm wide, were formed by drilling two adjacent holes and chiselling out the intervening space. At the base of the panel the staves were tapped into a roughly-cut 'V'-section groove in the upper face of the frame.

Prior to the early 18th century most staves were only roughly cleft, though neatly sawn examples were very occasionally used. Staves of this new type, though thicker than the earlier examples, became far more popular in the decades around 1700, where their use can be associated with a move towards external claddings and much thinner daub infill. Such coverings required the staves to have a more regular face than could be achieved by cleaving. Some of these late stud-like staves used traditional methods of fixing, thin round-edged tenons being cut into the top of the staves in order to fit them into the round-ended stave-holes. Normally, however, square-edged mortice-and-tenon joints were used.

DAUB INFILL

Until the second half of the 17th century daub was used exclusively as a mass infill: that is the daub formed a solid wall usually 70-100mm, and occasionally up to 150mm in thickness. It was not until the 16th century that setting coats of lime and hair plaster began to be applied to the daub surfaces, and even then its use was restricted to the houses of the local gentry. Many daub partitions within poorer houses, and even within the service rooms of gentry houses, remained untreated (except for a coating of lime-wash) even during the 18th century.

The daub infill, increasingly hidden beneath skim coats, remained unaltered in constructional detail until the late 17th century. To judge from a 1671 description of Parsonage Farmhouse, Ticehurst, the western range had then recently been rebuilt by the tenant, Mr Hartridge, gent. Despite the use of small-panel framing, the infill to this range is of hollow-wall type (Fig. 6) with daub internally and external tile cladding. There are a few other 17th century upper-class examples of the same technique, but lower down the social scale the method of infilling with solid daub panels remained unchanged until the early 18th century, during which period thin daub panels became popular in these houses too. Attic partitions and walls exposed within service or store rooms often had laths nailed to one face only, with the studs left exposed and projecting on the reverse side. The same technique was used within the tile-hung stub-gables of the parlour range at Slivericks,

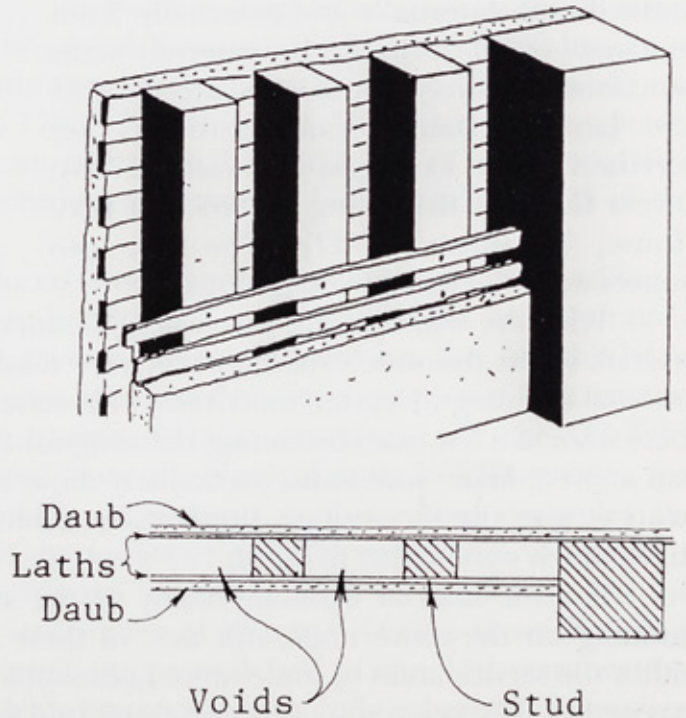


Fig. 6. Detail of thin daub infill with voids between the studs.

Ashburnham (1700x1721) where thin daub was applied direct to the tile battens leaving the studs projecting well clear of the daub internally. Some small cottages incorporate the same feature within their principal rooms and chambers.

EXTERNAL CLADDINGS

Sketches of the town of Rye made by Van Dyke in 1633 and 1634 show external cladding on some of the buildings: apparently tile-hanging. At gentry level external claddings dating from the 17th century are not uncommon and there are a few examples of similar date amongst the houses of the wealthier yeoman, as well as amongst the houses of the tenantry on large gentry estates. The stud walling to the gables above the modest brick crosswing of 1673 at Chant Stream, Westfield, has always been tile-hung. Examples at this social level at such an early date must have been exceptional. Certainly it was not until the second quarter of the 18th century that stud walling indicative of external claddings can be observed with any regularity. It was during this period that tile-hanging, weatherboarding and rendering became increasingly popular on timber-framed middle-class houses, though they remained rare on cottages. Many local rural houses are today tile-hung, but there is a wealth of evidence to indicate that the vast majority of this dates from the late 18th and 19th centuries.

For a detailed analysis of the constructional techniques use in south-east England see Martin, D & B; 'Domestic Building in the Eastern High Weald 1300-1750, Part 1 - Wall Construction' *Historic Buildings in Eastern Sussex* Vol. 5 (Robertsbridge, 1989).