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Introduction: London to Cambridge

31 January 1989. Bankside, Southwark. Workmen excavating for an office complex near Southwark Bridge on the South Bank of the Thames strike an ancient chalk foundation. Archaeologists from the Museum of London order a temporary halt to the excavation. The world is amazed as newspapers and television report the discovery of the Rose theatre. For all the joy at finding the remains of an original English Renaissance theatre, however, academic experts are perplexed, even dismayed. The Rose, as it emerges from the mud, is not what they had thought it must be.

Also in 1989, under the leadership of the actor and visionary Sam Wanamaker, scholars are nearing the fulfilment of another life's dream: the reconstruction of Shakespeare's First Globe theatre in near-perfect detail. Theatre historians have consulted among themselves, academic conferences have been convened, books have been written, architects have been hired, and a funding drive is well under way. With the discovery of the Rose, however, doubts begin to creep in: fundamental principles of the reconstruction are thrown into question; confidence in architectural drawings wanes; funds which might have reconstructed the First Globe are diverted to saving the foundations of the Rose.[1]

In several respects the experts were vindicated by the Rose excavation. If it is possible to generalize from one playhouse to all playhouses, then Elizabethan and early Jacobean public theatres were not round, as they are shown in many contemporary drawings, but polygonal, as they are shown in other drawings. The polygonal shell, moreover, contained galleries in its sides, and the stage was located against one side of the interior yard.

In respect to certain general principles and numerous small details, by contrast, the experts had indeed erred. The theatrical polygon, many had argued and most agreed, had to have sides in multiples of four, probably a total of sixteen or twenty-four; but the Rose evidently had fourteen sides, or perhaps only thirteen. The polygon had to be completely regular, its sectors highly uniform; but the sides of the Rose were far from uniform, and reconstruction within a decade of its first construction turned an

irregular 'O' into a mis-shapen 'D'. The internal dimensions must have been established by the medieval *ad quadratum* geometrical method; but no unequivocal geometrical or mathematical relationships are discernible in the foundations as uncovered. The stage had to reach from the inside of the polygon to near the centre of the yard; but this stage was shallow and reached only about half way to the centre. The stage platform must be rectangular and large; but the stage platform of the Rose was not only shallow, but narrowed toward the front in the manner of a trapezoid or squashed hexagon.[2]

This was the Rose, of course, and not the Globe, but more was known about many other theatres than about either the First or the Second Globe, which meant that the Globe had to be reconstructed not so much from physical, pictorial, or archival evidence as by hypothesis. Since the foundations of the Globe have now been discovered in part, it is possible that evidence necessary to a faithful reconstruction will yet surface; in any case, Sam Wanamaker's dream is now being realized as the Globe rises bay by bay on Bankside.[3] Clearly, however, reconstruction of Renaissance theatres by resort to abstract geometrical principles has suffered a hard knock.[4]

I propose to try an approach to English Renaissance theatre design which avoids appeals to abstract principles, and is as close as possible in nature to the excavations on the south bank of the Thames. Herbert Berry has already done something of this sort for the Boar's Head playhouse.[5] For my part, I propose to look at buildings which are known to have been used for plays and which for the most part survive intact; I propose to look at archival records and contemporary descriptions for evidence of construction of particular theatres; and I propose to devote my attention in the first instance to Cambridge rather than London. Cambridge – I hope – will shed new light on murky London territory, and test claims for priority on behalf of the capital.

Cambridge is not the only provincial town available for study, but it is a logical one at the moment, first because the extensive records of early Cambridge drama have recently been published, secondly because I myself am the editor of the records and am thus pretty familiar with them, thirdly because there is yet more to be learned than is contained in the records volumes, and fourthly because Cambridge has a vital connection with London drama, having supplied Christopher Marlowe, Thomas Nashe, and Robert Green (among many others) to the London stage.[6]

Marlowe, Nashe, and Green, being playwrights and not stagewrights, could well have supplied literary texts without making a concomitant impression on London stagecraft or playhouse construction. Furthermore, whereas Cambridge hall theatres provide a natural antecedent for indoor London theatres like Blackfriars, the connection to London's open-air amphitheatres is less obvious. I believe, nevertheless, that stage construction in Cambridge may tell us something about playhouse construction in London, particularly if I am right in my further belief that theatres in both locations were designed not by architects under the influence of classical and Italian models, but by carpenters applying century-old techniques of construction in timber.

Cambridge: an overview

Most of the historic town of Cambridge (fig. 1) lies within a bend of the river Cam: if the river's bend is imagined as an arc lying to the north-west, the market and the principal church, Great St Mary's, may be imagined as lying near the point from which the arc is swung. Backing on to the river or very near it lie all but one of the colleges which will concern us. Clockwise from the south-west, these are Peterhouse, Pembroke and Corpus Christi (both away from the river), Queens', King's, Clare, the college of Gonville and Caius (away from the river), Trinity Hall (which we shall largely overlook), Trinity, St John's, and Jesus. This leaves out only Christ's, south-east of the market near the suburb of Barnwell. Also inland but nearer the market are the Guildhall and (formerly) the Falcon Inn. Several miles down-river to the north-east are Chesterton on the left bank and the grounds of Sturbridge Fair on the right. Some three miles to the south-east lies Wandlebury Round, an Iron Age hill fort in the Gog Magog Hills.[7]

With one major exception, all the institutions relevant to my investigation were in place by 1520: the university itself, established in the early thirteenth century (and by 1520 beginning to rival Oxford); most of the early colleges, including St John's (the most recent), founded in 1511; the church of Great St Mary's, reconstruction essentially complete by 1520; the Guildhall, built in the fourteenth century; and the Falcon Inn, established by the early sixteenth century. The exception is Trinity College, which arose in 1546 from an amalgamation of three earlier institutions, including King's Hall, but which quickly established itself as the most active of play-producing colleges.[8]

Thanks to the active creation and preservation of records as well as to a flourishing tradition of drama, more performances and more general dramatic activity are recorded for Cambridge through the 1560s than for any other town or city in England, including London.[9] Professional players sometimes made use of venues such as the Guildhall and the Falcon, though information about the plays they performed is wanting. Some 300 individual college performances are known or can be inferred before 1576: beginning in 1456–7, burgeoning in the 1520s and 1530s, and reaching a veritable frenzy in the 1550s, with at least one and as many as five plays a year at Christ's, Corpus, King's, Queens', St John's, and Trinity.[10] The construction of stages, merely implied in late fifteenth-century records, is fully verifiable from the 1530s, while abundant details are available from the 1540s and 1550s. Later records give even more of the picture, down to 1640, the date of an elaborate stage inventory from Queens' College, and to 1671–2 at Trinity College, the final year of the pre-modern college playing tradition at Cambridge.[11]

Some sixty original Cambridge play texts survive from about 1540 onward (REED, Appendix 6): these include imitations of classical tragedies and comedies; translations of Italian comedy (usually into Latin but occasionally into English); farce, including the still-admired *Gammer Gurton's Needle* (c. 1551); and thoroughly domesticated satire, including the *Parnassus* trilogy (c. 1600–3), which includes important allusions

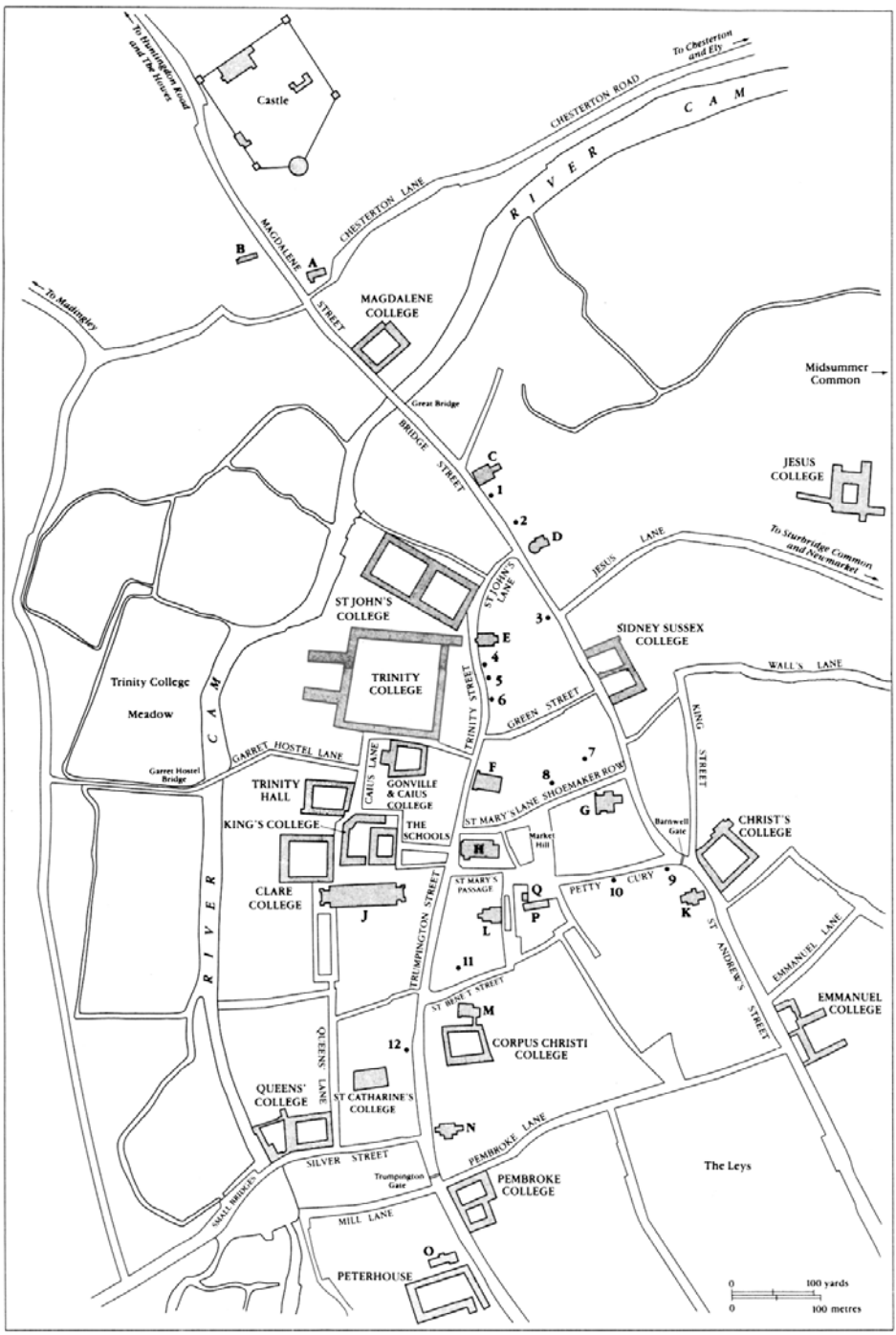

Fig. 1. Cambridge, c. 1615. H: Great St Mary's Church; J: King's College Chapel; P: Guild Hall; 2: Elephant (conjectural); 7: Bear; 10: Falcon; 11: Eagle. (Full key in REED, p. 838.)

to Shakespeare and Ben Jonson (REED, p. xiv). Taking a warning from scholars who have experienced qualified success at best in using play texts as evidence of London theatre construction, however, I have mostly (though not entirely) shunned texts as evidence of production techniques, trusting instead that documentary evidence will serve more successfully to shed eventual light on the texts.

The halls in which most college plays were performed were of a fairly uniform plan (see frontispiece, figs. 7, 20). All were substantial rectangular rooms with distinctive upper and lower ends.[12] In general, doors to the outside were provided at the lower end on both sides of the hall. These doors were often separated from the body of the hall by a light wooden wall called 'the screens', normally in three panels defining two openings. When the screens passage was covered, as was usually the case, the natural result was a gallery above, overlooking the hall. (Sometimes romantically styled 'minstrels' galleries' in modern times, such structures played a negligible role in early play productions.)[13] At the upper end of the hall was generally a single door through which persons of higher standing entered the hall, and a wooden platform – the dais – raised perhaps a foot above the hall floor. Upon the dais stood in normal circumstances the table for the master of the college, senior fellows, fellow commoners, and important guests. As a consequence of the hierarchical ordering of persons dining in the hall, the upper end came to be regarded as superior under all circumstances. Yet another feature of many college halls was an oriel, or large bow window, generally in the side wall at or near the upper end, intended to increase the amount of daylight entering the hall, and also perhaps to afford additional floor-space.

Moxon's 'Mechanick Exercises'

As a handbook for my investigation of the timber stage structures built in college halls and other Cambridge venues, I have chosen *Mechanick Exercises, or, The Doctrine of Handy-works*, written and published in parts beginning in 1678 by Joseph Moxon.[14] Parts I to III are devoted to 'Smithing'; Parts IV to VI to 'The Art of Joynery', or fine carpentry; Parts VII to IX to 'The Art of House-Carpentry'. The first English manual for the building trades, *Mechanick Exercises* was not superseded until 1733.[15]

Moxon's modern reputation rests almost exclusively on his second volume, *Mechanick Exercises, or, The Doctrine of Handy-works. Applied to the Art of Printing*, published in 1683.[16] The relative neglect of the first volume is to be regretted, for Moxon bears approximately the same relation to the carpenters who built Renaissance English theatres as to the printers who issued Renaissance English plays.

As historians of printing have long appreciated, Moxon is a model of descriptive clarity. His use of specialist terminology, rather than being obscurantist, lends an air of sturdy eloquence to his prose:

> At the heighth of the first story in this Principal Post, must be made two Mortesses, one to receive the Tennant at the end of the Bressummer that lies in the Front, and the other

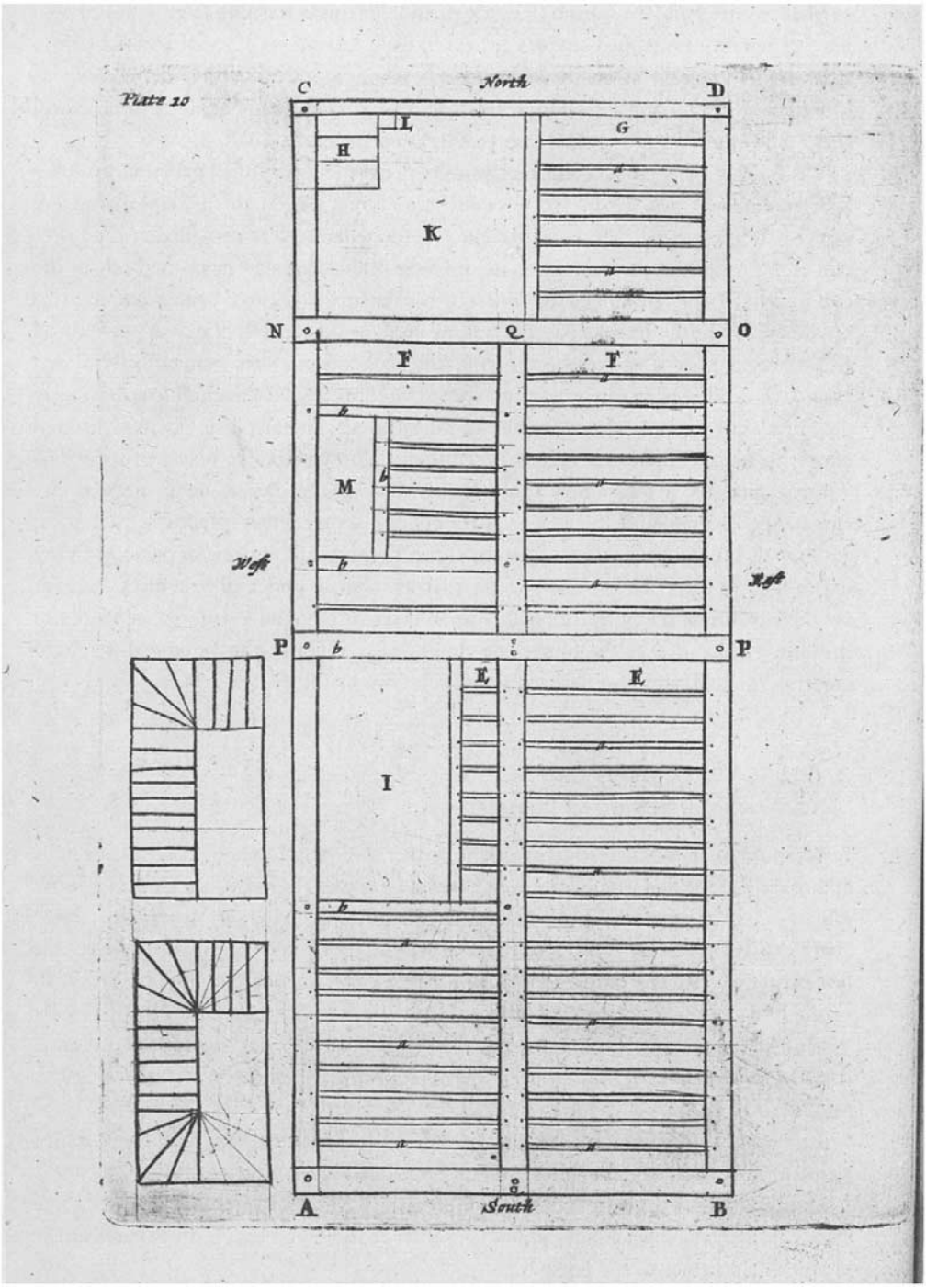

Fig. 2. Plan of shopkeeper's house, from Joseph Moxon, *Mechanick Exercises* (Wing, M3013), plate 10.

> to entertain the Tennant at the end of the Bressummer that lies in the Return side. (p. 138)

Typical is Moxon's use of 'entertain' as a delightful double for the more literal-minded 'receive': here as elsewhere, he conducts his parallel constructions like a skilled rhetorician, and varies his language like a poet.

Moxon is fully a man of his time and place in his equivocal attitude toward design:

> Being now come to exercise upon the Carpenters Trade, it may be expected by some that I should insist upon Architecture, it being so absolutely necessary for Builders to be acquainted with: But my answer to them is, that there are so many Books of Architecture extant, and in them the Rules so well, so copiously, and so completely handled, that it is needless for me to say anything of that Science: Nor do I think any man that should, can do more than collect out of their Books, and perhaps deliver their meanings in his own words. Besides, Architecture is a Mathematical Science, and therefore different from my present undertakings, which are (as by my Title) Mechanick Exercises: yet because Books of Architecture are as necessary for a Builder to understand as the use of Tools; and lest some Builder should not know how to enquire for them, I shall at the latter end of Carpentry give you the Names of some Authors, especially such as are printed in the English Tongue. (p. 119)

At the close of his third and final part on carpentry, proving as good as his word, Moxon names seven 'Titles of some Books of Architecture':

> *Sebastion Seirlio*, in Folio.
> *Hans Bloom's* Five Collumns, Folio.
> *Vignola*, in Folio.
> *Vignola*, Or the *Compleat Architect*, in Octavo
> *Scamotzi*, Quarto.
> *Palladio*, Quarto.
> Sir *Henry Wotton*'s Elements of Architecture, Quarto.
>
> These Books are all Printed in English: But there are many others extant in several other Languages, of which *Vitruvius* is the chief: For from his Book the rest are generally derived; as *Philip Le Orm*, *Ditterlin*, *Marlois*, and many others, which being difficult to be had among Book-sellers, and these sufficient for information, I shall omit till another opportunity. (p. 162)

More eloquent of Moxon's true attitude toward design is his shopkeeper's house (figs. 2–3), which owes nothing to books on architecture, and everything to centuries-old north European traditions of construction in timber. With a full knowledge of Vitruvius, Serlio, and Palladio, and having himself published *Vignola, Or the Compleat Architect*,[17] Moxon in practice limits his application of architectural principles to an occasional surface feature, like wainscoting.[18] Like the designers of English Renaissance theatres – Inigo Jones is the classic exception – Moxon was concerned not with architecture, but with carpentry.[19]

Moxon will serve in the first instance as a guide to contemporary nomenclature. He provides, in an alphabetical list cross-referenced to his illustrations of the shopkeeper's

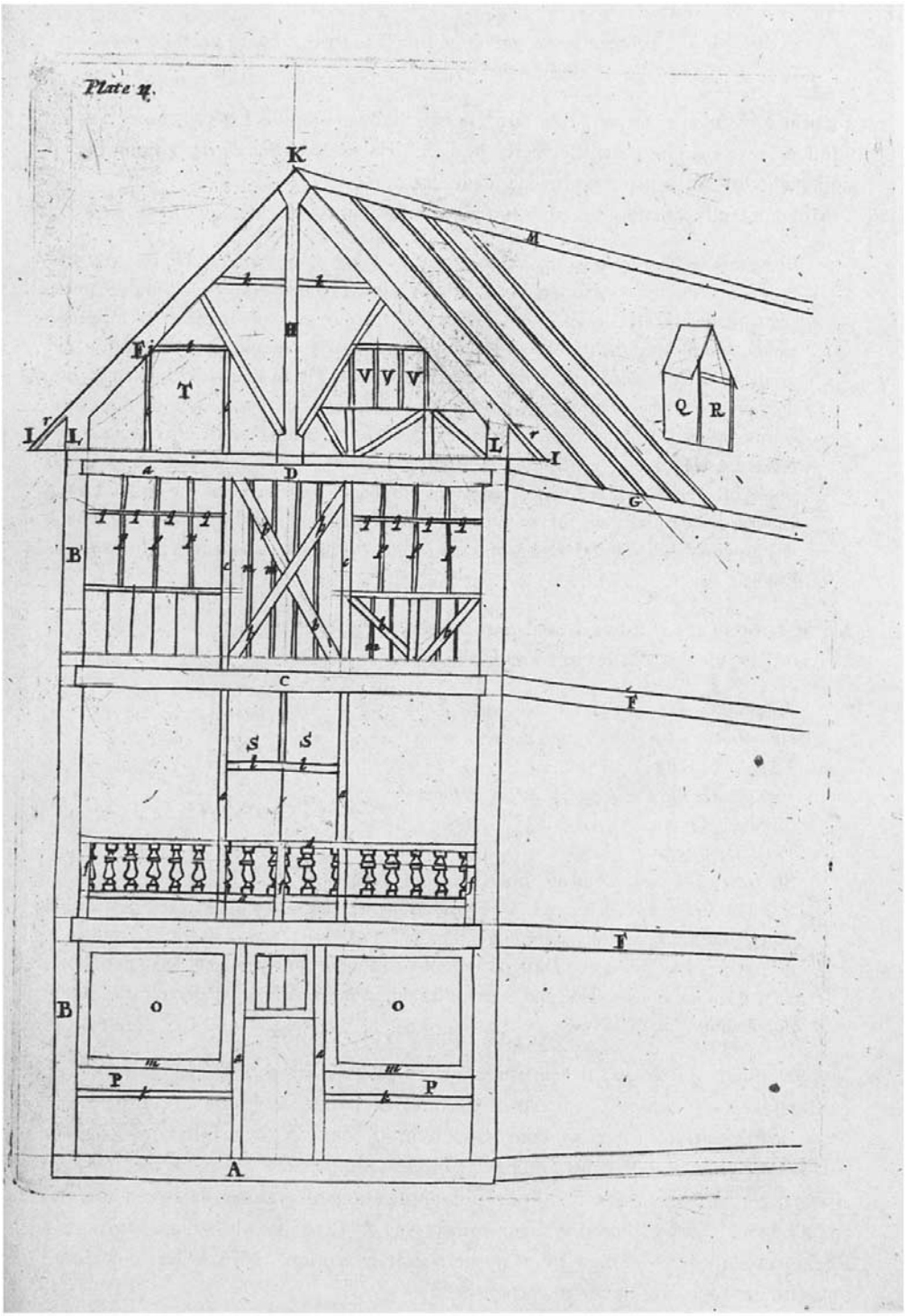

Fig. 3. Elevation of shopkeeper's house, from Joseph Moxon, *Mechanick Exercises* (Wing, M3013), plate 11.

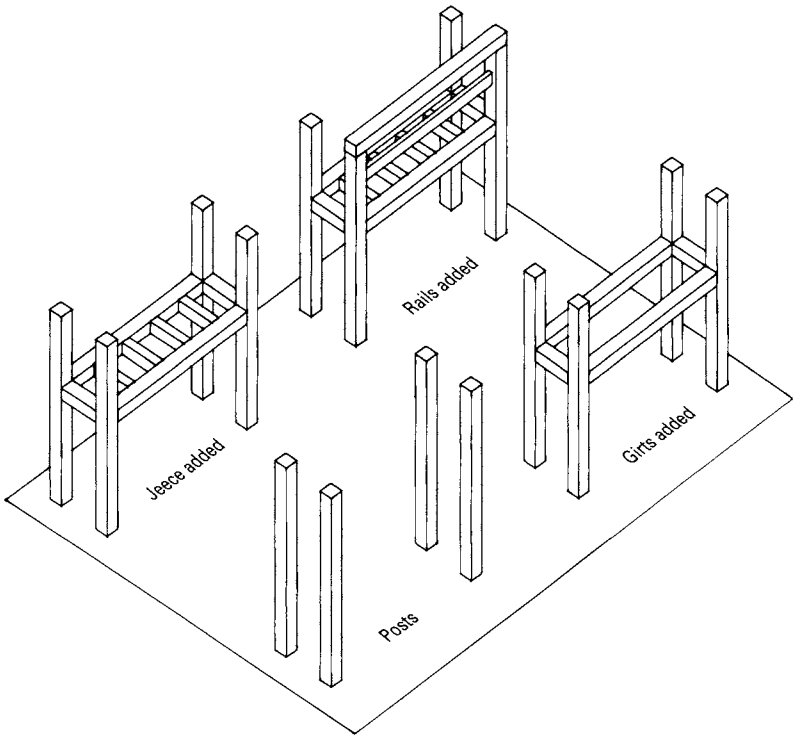

Fig. 4. Demountable stage construction, typical disposition of essential timbers.

house, 'An Explanation of Terms used in Carpentery' (pp. 163–73): thus we learn that a 'Carcass, is (as it were) the Skelleton of an House, before it is Lath'd and Plaistered', and that 'Principal-Posts' are 'The Corner Posts of a Carcass'.

Moxon also explains the relative disposition of each sort of timber:

> It is to be remembred that the Bressummers and Girders are laid flat upon one of their broadest sides, with their two narrowest sides perpendicular to the Ground-Plot; but the Joysts are to be laid contrary: for they are framed so as to lie with one of their narrowest sides upwards, with their two broadest sides perpendicular to the Ground-Plot. The reason is, because the Stuff of the Bressummers and Girders are less weakned by cutting the Mortesses in them in this position, than in the other position; for as the Tennants for those Mortesses are cut between the top and bottom sides, and the flat of the Tennants are no broader than the flat of the narrowest side of the Joysts; so the Mortesses they are to fit into, need be no broader than the breadth of the Tennant, and the Tennants are not to be above an inch thick, and consequently the Mortesses are to be made with an Inch Mortess-Chissel ... for great care must be taken that the Bressummers and Girders be not weakned more than needs, least the whole Floor dance. (p. 139)

This information will prove highly useful to us, particularly the observation that joists (Cambridge: 'jeece') are traditionally mortised into the girders (Cambridge: 'girts'), rather than lying over them as in modern frame construction.[20]

The inventory of Queens' College stage in 1640 – the single most important

document which we shall be analyzing – tells us virtually nothing about the scantlings (= cross-sectional dimensions) of the stage timbers, but we may rely on Moxon as a guide to carpenters' practice.[21] The inventory tells us where but little about how timbers were joined: as we have just witnessed, Moxon describes standard conventions for cutting mortise-and-tenon joints.

In the timber-frame construction described by Moxon, as it applies to Cambridge stage construction, the primary verticals at the corners and junctions are called posts (see fig. 4); intermediate verticals may also be called posts but are more properly called studs. The primary horizontals at the level of a raised floor are called girts. These horizontal timbers carry jeece, which intersect at right angles. The jeece carry floor-boards (not shown in fig. 4, but easily imagined). Stability is provided by braces of various kinds, and by binding-jeece (lying in the same plane as regular jeece, but mortised into vertical timbers). Running from post to post above the level of a floor were rails, serving to protect against falls, as well as to provide additional strength and integrity to the structure.

Royal Cambridge: Elizabeth's visit of August 1564

Late July 1564. Cambridge. Lewis Stocket, Surveyor from the royal Office of Works, arriving in advance of a royal visit scheduled to begin on 6 August, inspects two academic stages erected by town carpenters. The stage for college plays in King's College hall fails to impress: although it has long suited private college performances, it will not do for a royal visit. Not only is the stage too lightly built for the anticipated crush, the hall itself is too small. Fortunately, the college has a suitable space: the western bays or antechapel of its capacious Chapel, built by the grandfather and father of the queen. Stocket orders the dismantling of the hall stage and construction of a new stage in King's College Chapel at the expense of the royal treasury (REED, pp. 233–4).

The second of the two stages annually transforms Great St Mary's, then as now known as the University Church, into an auditorium for the granting of M.A. and higher academic degrees. This stage passes muster; it will, however, be supplemented by galleries over the side aisles, and by a raised enclosure within the chancel to carry a throne for the queen (Appendix 1).

The visit of Queen Elizabeth in 1564 was a landmark in the history of Cambridge University. Not since 1522 had a monarch paid a formal visit to the university and town.[22] During the forty-two year interval the university had been caught up in the first stirrings of the reformation; the divorce controversy which cost the life of John Fisher, instrumental in refounding Christ's College and in founding St John's, and a leading officer of the university in various capacities from 1501 to 1535; the disestablishment of the religious houses which nearly resulted in the disestablishment of the colleges and thus of the university itself; the reforming reign of Edward VI; the reign of Catholic Mary with the consequent martyrdom of several members of the university; and the accession of Elizabeth in 1558.[23]