

Sir Christopher Wren, Edward Woodroffe, J. H. Mansart, and architectural history

by KERRY DOWNES

I THE NATURE OF THE PROBLEM*

In the high summer of 1675 building work finally began on the new Cathedral of St Paul, after nine years of drawings and deliberation by its architect, Dr (and by then Sir) Christopher Wren. The history of those nine years does not need recapitulation, but the reader may be reminded that after the making of several distinct designs and the First and Great Models Wren had become secretive and had privately obtained the sanction of King Charles II to make 'some Variations, rather ornamental than essential, as from Time to Time he should see proper',¹ that a royal warrant had notwithstanding been issued on 14 May 1675, approving the set of drawings now consequently known as the Warrant design, and that by a process of metamorphosis which can be only partly retraced, Wren distilled from that pragmatic but generally unloved design another, now known as the Definitive, on which work finally began.²

This much has been accepted as indisputable since Sir John Summerson showed, forty years ago, that the Warrant design differs so thoroughly from the actual building, even in its plan dimensions, that it can hardly have been used even to mark out the foundation trenches for the choir — the first part to be undertaken.³ The main piers of the choir, it is true, do stand within the area of those in the Warrant, but the crucial difference is in the thickening of the outer walls so as to exceed the area of the Warrant both inside and outside. While the earliest contracts and building accounts⁴ deal only in general terms with the digging of foundations and laying of rubble and mortar, it is difficult to imagine that if the plan had been changed after operations commenced the resulting extra work would not have found some mention there. But as none of the relevant drawings are dated, more than such simple and painless logic is needed if we are to establish exactly what Wren and the contractors had in mind as digging began.

Turning to what can be seen above ground, the first obvious difference between the Warrant and the Definitive is the introduction of the screen walls, so reprobated by

nineteenth- and early twentieth-century critics, which changed a basilican cross-section to an all-round two-storey elevation. Before Summerson's demonstration it was generally believed that work had started according to the Warrant design, and that Wren was slow to exercise his private licence, not conceiving the screen walls until some years later — even though a perusal of the building accounts up to 1685, published in 1936,⁵ would have shown that the coupled pilasters of the lower storey, absent from the Warrant, were an integral part of the walls.

It also became generally accepted that the first complete drawing to show the building with the screen walls is the fine south elevation at All Souls, certainly from Wren's own hand (II.29, Fig. 2)⁶ and patently identical in plan and close in elevation to the actual building as far as the roof-line, differing only in details and in the use of a second Corinthian for the upper pilaster order instead of a Composite.

Above the parapet, on the other hand, everything is indeed different: the drawing shows west towers based on Bramante's *Tempietto* and a dome indebted greatly to Michelangelo's St Peter's and also suggestive of certain features of Jules Hardouin-Mansart's *Dôme of the Invalides* in Paris (Fig. 3). Opinions varied as to the relevance of the latter, according to whether the similarities or the differences between the two were seen as the more significant, but since, on the basis of the supposedly late conception of the screen walls, the drawing was given a date in the mid-1680s or even the early 1690s, Mansart's design — begun in 1677 and published in 1683 — presented no problems of chronology.⁷

But Summerson dated to 1675 not only the Definitive design but the All Souls drawing as a record of it.⁸ Although other scholars were slow to accept this view of the drawing, Mansart was all but forgotten until January 1990 when, reconsidering the whole matter, Summerson published a recantation.⁹ The present article seeks, by re-examining evidence already known as well as some new material, to re-establish the date of 1675 for the All Souls drawing and to discount the relevance of the Invalides. But first of all it will be desirable to review the earliest stages of building and the time available to Wren, and to consider other early images of the Definitive design.

2 THE COMMENCEMENT OF WORK

'There is no record of any foundation stone outside 19th-century legend'; these words were carefully chosen, but they can no longer be taken as literally true; moreover they say too little.¹⁰ There is a necessary distinction between a foundation stone — an object of ceremony — and a first stone — a logical inevitability in masonry. There is no longer room for doubt about either the reality or the date of the latter event;¹¹ of its nature and significance there is less certainty. The memoir of the Strong family, written by Edward Strong senior in 1716, states that his brother Thomas 'laid the *first* stone in the foundation with his own hands' on 21 June 1675.¹² The accounts show that night-watchmen were introduced on a regular basis from that date, and whereas a single account (totalling £602.17s. 0³/₄d.) was made up for the nine months from October 1674 to June 1675, from July (£931.18s. 11¹/₂d.) they became monthly. Clearly the pace had changed, but as far as we know no medals were struck, no poems composed. The stone was buried, and the action would be best — though not solely — remembered in the mason's own family.¹³

Parentalia states only that the first stone was laid 'in the Year 1675', immediately after the story of Wren's calling for a marker when he had 'set out, upon the Place, the Diameter of the great Dome', and being brought by a labourer a flat stone, part of a grave-stone, bearing the auspicious word RESURGAM.¹⁴ According to the building accounts the centre of the dome was set out only once, in the summer of 1673,¹⁵ when the Great Model had been designed but the model itself not yet made nor the design officially approved. The lengthy warrant of 12 November 1673 gave legal status to both design and architect.

Things were done differently thirty years later at Vanbrugh's Blenheim, where the first stone, 'eight foot square' (i.e. eight square feet, say 2 ft by 4 ft), was laid on 18 June 1705 by the architect himself assisted by six other gentlemen. A contemporary journalist recorded that the ceremony was brightened by music, morris dancing, cakes, wine, and ale, and that the stone was polished with an inscription inlaid in pewter.¹⁶ The Duke of Marlborough, on service abroad, was not present to see his house begun, and Vanbrugh wrote to him four days later to spell out the realities of a building campaign. Although 'there are yet few stones lay'd one upon an other ... we have not been Idle. This time has been Spent in Digging Foundations, making of Contracts, perfecting the Design, and getting Materials'. Perfecting the design included, of course, 'The only alteration worth mentioning ... in the first entrance of the House, where by bringing the break forwarder, the Hall is enlarged, and ... a Portico added'.¹⁷ St Paul's and Blenheim are not too dissimilar in scale or complexity, and while a design may be remade overnight the organization of men, materials, and mud takes considerably longer.

At the cathedral the Commission established by the warrant of 12 November 1673 was formally opened at Lambeth Palace on 11 May 1674;¹⁸ it was perhaps this occasion, recorded in Hooke's Diary for 19 May, that led Sir William Dugdale to give that year and month as the commencement of work.¹⁹ On 4 June the Commission, following the warrant, appointed Wren its Surveyor, Edward Woodroffe Assistant Surveyor, and John Tillison Clerk of Works. It was then inactive for nearly a year, until the much shorter warrant of 14 May 1675, with the Secretary of State's order 'forthwith to proceed according to the said Designe, beginning with the East End, or Quire', cancelled *a fortiori* the Great Model design. Hooke noted the receipt of the Warrant on 15 May, and on the following Wednesday (19 May) it was read to the Commission meeting at the House of Lords. It was thereupon ordered that 'the Surveyor with his Assistants, & Officers, should immediately sett out the Ground, & cause the ffoundacon to be laid of as much of the Designe, as lies East of the Cupola, or Tower, & pursue the Work with all Diligence, as long, as the season of the year shall permitt'.²⁰ Various site works such as clearing and tidying had been going on spasmodically ever since the summer of 1673, but we do not know how well prepared either Wren or his preferred contractors were for this signal to proceed. A business meeting was held on Friday 18 June,²¹ the week-end before Strong placed his stone in the graded rubble.

Labourers appear in the October 1674–June 1675 account for digging foundations, and also for the supply of mortar.²² The number of diggers and drugmen began to fall off in September 1675, and the next foundation digging, in the following spring, was for the foundations of the dome piers.²³ In July 1675 the masons Thomas Strong and

Joshua Marshall were first paid for work in the footings and in the plinth, the first course above ground and level with the impost of the crypt vaults.²⁴ Neither the accounting nor the works themselves were regular enough in the first few months for progress to be exactly measured, but it is not impossible that after the first symbolic stone no masons' work was carried out until the second half of July. The contracts for footings and plinth, though signed on 18 June, were not completed — and thus not legally binding — until 15 July, and life on site must have been considerably easier after the laying on of mains water on 17 July.²⁵

These details would concern no more than historical accuracy were it not for one question: how much time did Wren have to change his mind? Whatever the precise details of the elevation, by what date did he know — even if nobody else knew besides Woodroffe and William Sancroft the Dean — that the outer walls were to be two feet thicker, of two storeys, and buttressed by coupled pilasters?

It is hardly possible that even Wren, who was an exceptionally fast worker, could have evolved the new scheme between the issue of the Warrant on 14 May 1675, and the signing of the contracts with Marshall and Strong on 18 June. The changes must have been already in his mind, and in all probability already set down on paper.

Even Margaret Whinney's judicious summary of 1971²⁶ carries when read in context the implication of a change not merely of design but of vision. To give him until mid-July would be to give him another month but, going backwards, he may have had much longer. If Whitehall moved in the seventeenth century at anything like its pace in the twentieth, the Warrant drawings could have been on the Secretary of State's desk for up to a year, having been made in the first half of 1674 and having, for their author, passed out of sight and out of mind at one and the same moment.

Wren's son recollected that 'in private Conversation [he] always seem'd to set a higher Value on [the Great Model] Design, than any he had made before or since'.²⁷ Whether or not he wept at its rejection, as legend would have it, the disappointment must have been bitter, and determined him 'to make no more Models, or publicly expose his Designs, which (as he had found by past Experience) did but lose Time, and subjected his Business many Times, to incompetent Judges'.²⁸ The early minutes²⁹ show that the Commission's authority was routinely delegated to a sub-committee established on 4 June 1674, of which Wren was a member and in which he could count on the support of Dean Sancroft. The absence of any official starting ceremony may have been more by deliberation than by default, and Wren could have claimed with literal truthfulness that the dome had already been staked out in the summer of 1673.

3 THE AUTHORIZED ENGRAVINGS OF ST PAUL'S

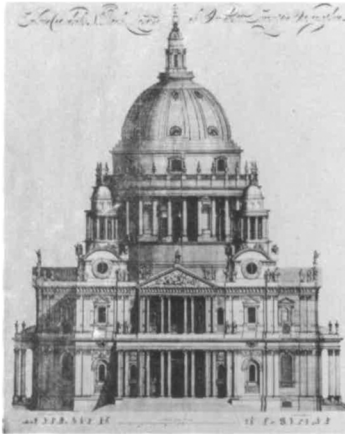
For the best part of two decades after work began, the London public had very little idea of how the new cathedral was going to look. The only two prints known from this period are highly misleading. The view offered by Godfrey Richards as a selling point for the 1676 edition of his *First Book of Architecture* (after Palladio) was a brave attempt to adapt the Great Model elevation to a Latin cross plan. The other image, a south elevation appended to William Morgan's 1681–82 map of London and Westminster, was on his own admission the product more of hope than of knowledge of anything

higher than the church floor.³⁰ Even at the end of ten years' activity nothing had risen above the first order, and the work was virtually hidden by the wattle weather-screens attached to the wooden scaffolding; the most conspicuous structure was Inigo Jones's west portico, not yet demolished. But after a further nine years, in the summer of 1694, scaffolding began to be struck from the choir; Sutton Nicholls's exterior view (dated 1695) of the choir, with the north transept still in scaffolding is, although naïve, accurate as far as can be checked. St Paul's was becoming a very public monument, and the slowness of its construction was becoming a matter of parliamentary concern. The remedy, however, lay with Parliament itself, and in 1697 the coal tax was renewed, which did much to alleviate doubts about the eventual completion of Wren's design.

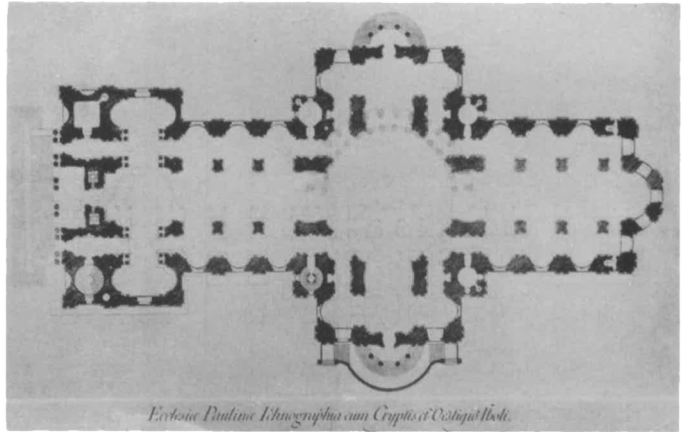
It seems also to have been gradually borne in upon both architect and Commission that publicity was no bad thing. In 1698 engravings of another venture, the Royal Naval Hospital at Greenwich, were commissioned by the body charged to build it, with the intention of stimulating public interest and thereby raising funds. The subsequent train of events unintentionally but significantly prefigured what happened at St Paul's, for Wren was about to change his design, and had done so well before the plan and two perspectives were ready to present to William III on 3 April 1700.³¹ St Paul's Churchyard was the centre of the book and print trade, and during the 1700–01 season the Commission, increasingly concerned about income from the coal tax, decided to follow suit. The accounts for April–June 1701 include £10 to John (Jan) Kip 'For Engraving the Copper Plates of the plan & north Prospect of the Fabric', and £2. 16s. reimbursed to the clerk for printing 213 copies of the prospect and 211 of the plan.³² Comparing the price with later plates, Kip's would have been no more than about 25 x 30 cm, but none of the 200 or so copies has been traced, and we can say with confidence no more than that they represented the 'Designes of the whole Fabrick' which Wren by request had showed the Committee on 1 February 1699/1700.³³ The plan can hardly have shown anything new, and the 'prospect' would have revealed only by its external implications the crucial decision Wren had made some time earlier, to taper the whole inside drum uniformly from the Whispering Gallery above the crossing arches up to the springing of the internal dome.³⁴ The floor of the Whispering Gallery had been reached early in 1698, and by the end of 1699 some 16ft of the tapering drum was built.

The death of William III on 8 March 1702 necessitated the appointment by Queen Anne of a new Commission, which was not opened until 4 March 1703. During the interval Wren and the Dean, William Sherlock, were effectively in charge, and it looks as if in stepping up publicity Wren's hand was forced by the presence of a mole in the office. Some time after the accession of Queen Anne and before the end of 1702 William Emmett, nephew of the eponymous master carver, produced west and south elevations (dated) and, either then or soon afterwards (undated), a plan, east elevation (Fig. 17), a long section and an imaginative and very skilful interior of the choir, transepts, and dome.³⁵ Up to the roof-line he could by this time rely on the standing fabric, although a recently discovered drawing suggests that he did not (see Appendix and Fig. 16).

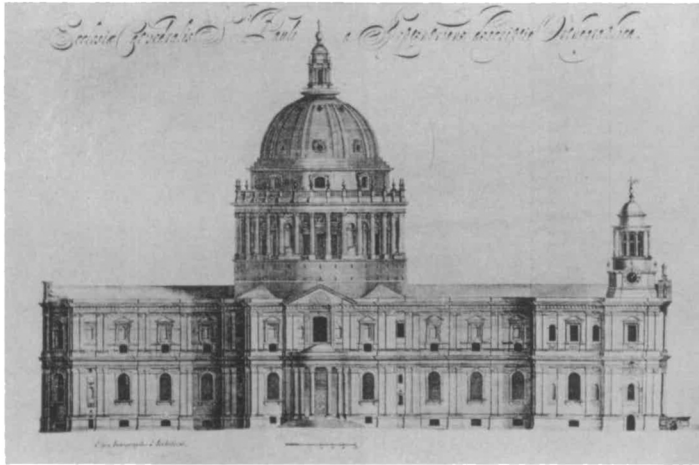
Thus it was that in May 1702 and June 1703 Simon Gribelin was paid, in two instalments, for two copper plates and for engraving them with 'the Designes of the West End of the Church'([A], Fig. 1a).³⁶ His signed two-plate print, inscribed 'Ex



a



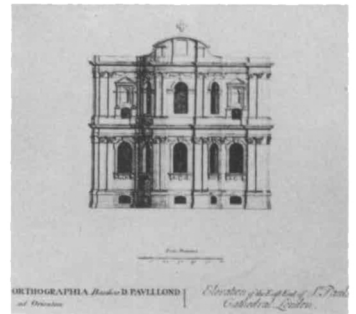
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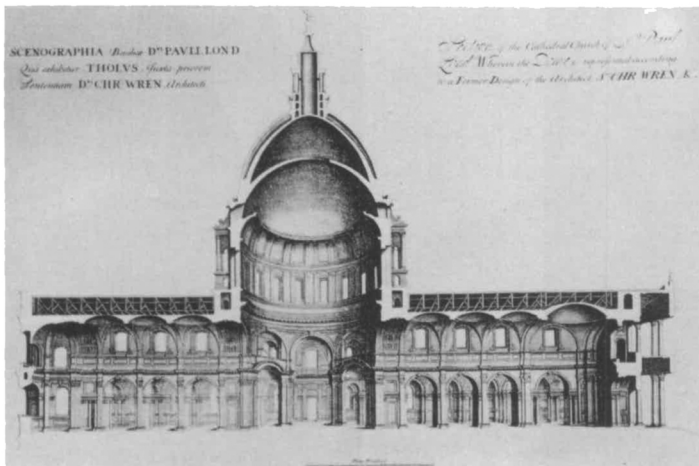
c



d



d



e

Fig. 1a-e. Engravings from Wren's drawings for St Paul's: a. West elevation. b. Plan. c. North elevation. d. West and east fronts. e. East-west section, final state

Autographo Architecti', shows 'tempietto' west towers and Wren's last approved design for the dome and towers before the one finally executed.³⁷ In April 1703 Sir Christopher Wren was reimbursed for the engraving of four further plates: 'Ground Plot, North-prospect, East & West-prospects (on the same Plate)', and 'A Large Section in Perspective from East to West'.³⁸ These have reasonably been taken to correspond to a plan at floor level with half-plans superimposed at crypt and peristyle levels ([B], Fig. 1b), a north elevation showing the same dome ([C], Fig. 1c), elevations of the east and west fronts without the dome ([D.i and D.ii], Fig. 1d), and an east-west section ([E], Fig. 1e).³⁹ [B] and [C] are titled in Latin in the same large cursive script as Gribelin's west elevation [A], with the words 'Ex Autographo Architecti', and they seem therefore to form a sub-set with it.

The accounts make it clear that these engravings were authorized and paid for by the building Commission rather than a private undertaking by the architect. Moreover the payment to Wren for plates between the two payments to Gribelin implies that all were conceived together and dates their cutting to 1702–03; although precise details are lacking, some of them at least were printed and published in these and the two following years, sums being expended on paper, printing, and framing.⁴⁰

The two parts of [D] seem, with [E], to form a second sub-set: all three images are titled in Latin and English, and two are identified as 'former' designs, the west elevation in respect of the towers and the section in respect of the dome. In fact the east elevation is also an early version, showing a segmental pediment crowning the east end instead of the crested parapet executed.

Such details mean that only [A], [B], and [C] were still — if only just — current in 1702–03, and could be printed and issued as such. But it is indeed extremely probable, as Summerson acutely observed,⁴¹ that [D] and [E], already out of date, were not printed or even lettered until the 1720s, as part of a different programme, of retrospect rather than advertisement.⁴² Wren's son had begun to collect biographical material before 1720 (the first draft of *Parentalia* is dated 1719) and from 1723, the year of his father's death, he was commissioning plates for a large album, which for some reason he abandoned after three or four years.⁴³ Ultimately, in 1749 and after the younger Wren's death, a somewhat heterogeneous set of fifteen plates was published by Harding, Browne and Bathoe, as *Synopsis Aedificiorum Publicorum Dni Christophori Wren*. Besides prints of various other buildings cut by Hulsbergh and dated 1723–26, they include four of the 1673–74 Great Model for St Paul's (one dated 1726), Hulsbergh's 1726 plan of St Paul's as built, copied recognizably from [B], and impressions of [D], as two sheets, and of [E]. All are titled in Latin and English and, although [D] and [E] (nos 12, 13, and 10 in the series) lack the framing cartouches of the other prints, their typography is very similar. Elevations of the completed St Paul's are conspicuously absent.

The early history of the plates [A]–[E] is also complicated by the changes made, in the north elevation [C], to the plate itself. As issued 'Ex Autographo Architecti' it was in the second of two known states. The first state survives in a proof copy which came from Sir Christopher's own collection (Fig. 5), and still hangs in the south triforium with some other framed prints that were not deposited at Guildhall with the drawings.⁴⁴ It clearly belongs to the same phase as [D], [E], and the All Souls drawing

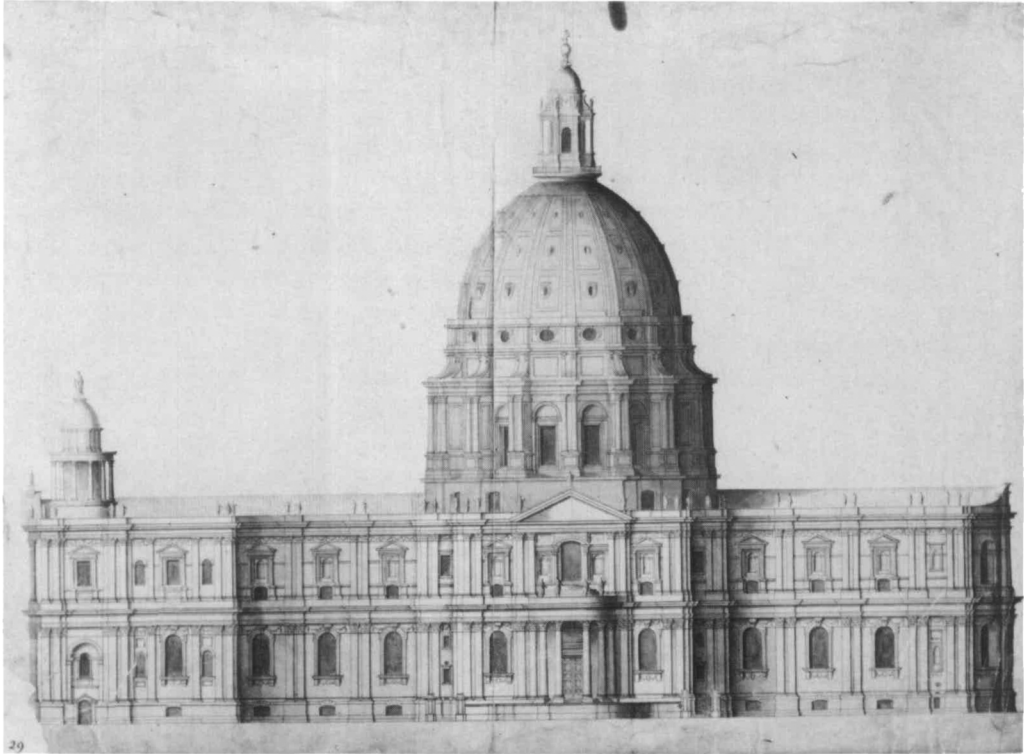


Fig. 2. Wren. South elevation drawing for St Paul's (*All Souls II.29*)



Fig. 3. Jean Marot. Engraved elevation of the Invalides (*detail*)

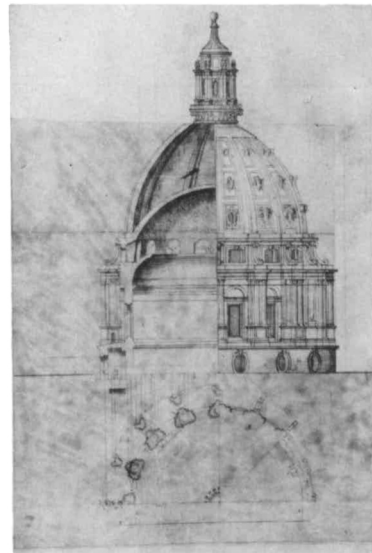


Fig. 4. Edward Woodroffe. Dome study for St Paul's (*Guildhall, cat. 95*)

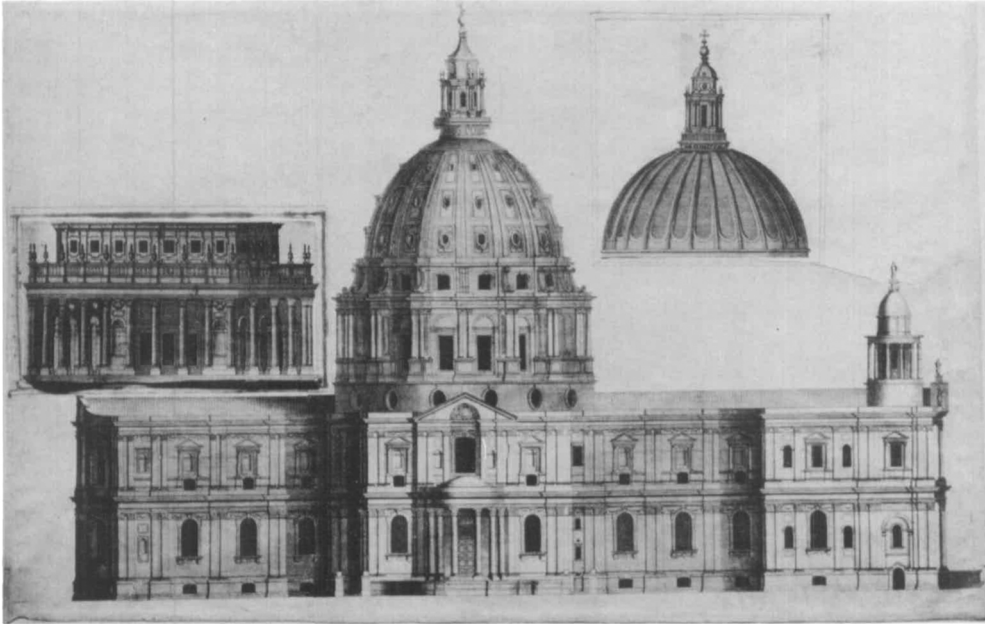


Fig. 5. *St Paul's. North elevation, proof engraving (SP105)*

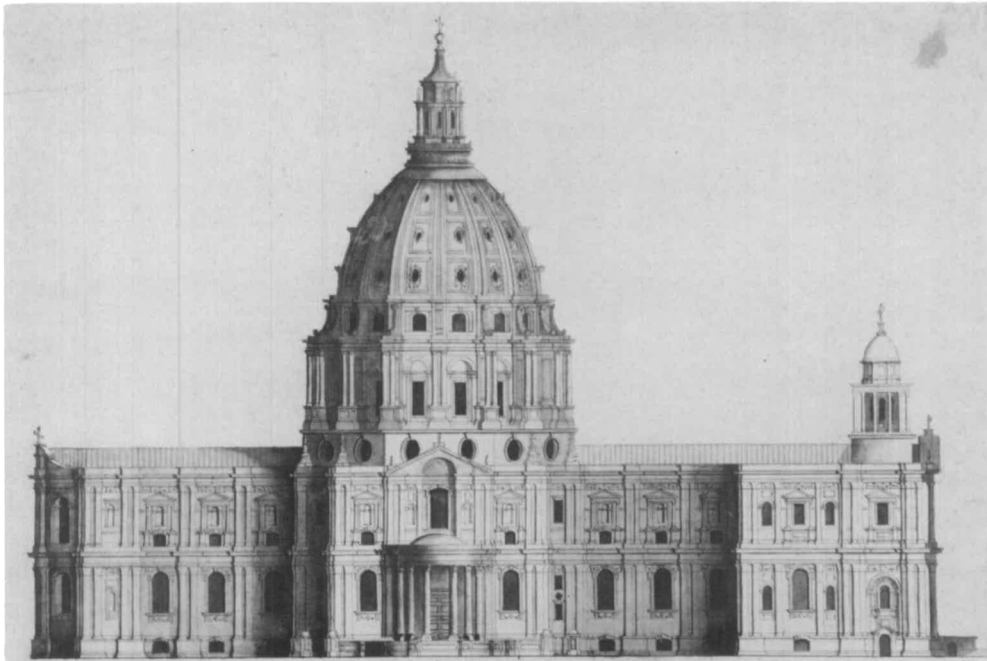


Fig. 6. *St Paul's. Anonymous north elevation (Whitworth Art Gallery)*

(Figs 1d, e, 2) with which it shares the form of the west towers, the segmental pediment over the east end of the choir, and the whole of the dome.

The most significant variance is in the lower drum at roof level, which is pierced by sixteen large oval windows — about 10 ft high — but these can be identified elsewhere. A drawing in the St Paul's-Guildhall collection (Fig. 4) shows half the section, elevation, and plan of the same design, and makes it clear that these windows could have lit nothing but a circular corridor in the thickness of the drum. It would have consisted of sixteen arc-shaped rooms separated by thick radial walls under the piers around the upper drum, and linked by small arches in those walls.⁴⁵ The further significance of this drawing, scarcely less than that of the All Souls elevation, will be shown later (Section 4), but for the moment it will suffice to say that it confirms and amplifies the exterior details of the proof engraving. These curious rooms have no obvious purpose other than to lessen the weight of masonry between drum and main arches, and the size and ornateness of the windows would seem therefore to have more to do with appearance than with function. They appear to derive from the through windows of the Penultimate and of a dome project developed from it.⁴⁶ Wren was evidently in two minds about the windows, for while they are absent from both the All Souls drawing and the engraved section [E] they appear in the fragment of another south elevation discovered by John Redmill,⁴⁷ whose upper order with Composite instead of Corinthian capitals and a bracketed frieze, is closer to the built elevation. The proof plate, on the other hand, shows the earlier Corinthian upper order, and at the same time the later treatment of the transept end with a carved lunette in the tympanum.

Whether the original drawing by Wren, used by the engraver and now lost, had the same discrepancies is not immediately obvious, but evidence that it did is provided by what seems to be an early or contemporary drawing which is certainly closely related (Fig. 6).⁴⁸ Since it is in the same sense as the engraving, i.e. a north elevation, and shaded in the same direction, it is tempting to suppose that it was copied from the same or another similar print. Wren consistently drew south elevations from his 1666 pre-Fire design onwards, and the authorized prints are reversed — from the north.⁴⁹ On the other hand this drawing, although an accomplished piece of work, is consistently and almost painstakingly inaccurate in several respects. The absence of detail in capitals and friezes is not unusual, but the windows and the aedicules in the screen walls are over-scale and too big for their surroundings. The whole elevation including the dome is too high in proportion to its width by four or five per cent, which gives the dome a profile resembling Florence more than Rome.⁵⁰ The draughtsman has also misunderstood the shading, giving the impression of an octagonal dome of sixteen bays in pairs, and confirming this impression by vertical breaks in the lower drum. The cross on the lantern is also foreshortened in the same direction as in the print.

The drawing is to a smaller scale than the print, about 30 ft to 1 inch horizontally whereas the print, like the All Souls drawing, is about 20 ft to 1 inch. The St Paul's drawings are to all sorts of odd and arbitrary scales, in accordance with seventeenth-century practice as described by Sir Roger Pratt: essentially the scale was determined by the size of the paper and the size of the building; a formula was used to divide the available width of the paper by the number of feet in the width of the building, and the

scale foot was derived from a diagonal rule.⁵¹ The Whitworth drawing is therefore not based on a tracing, either way round, but must have been set out dimensionally or proportionally from its source.⁵²

However, one detail is reversed between the print and the drawing: the series of objects around the attic of the lantern, which resemble schematic penguins but can be identified, by comparison with the more elaborate detailing of the All Souls drawing, as flaming urns with the fire blowing to one side.⁵³ The paper has a common fleur-de-lys watermark, and the drawing is endorsed in pencil, 'St Paul's as Intended to be Built'; such endorsements often record an original title lost when the drawing was trimmed by a tidy-minded dealer or collector.

This drawing leaves unanswered questions; nevertheless it is possible to suppose that it was made in the hope of profit rather than for the fun of it, and the motive may thus have been piracy, either connected with William Emmett or independently. What is clear, however, is that a decision was taken, either before or after the appearance of Emmett's prints, to bring the official plate up to date with the 'last approved' dome design [C] (Fig. 1c).⁵⁴

This paper is not the occasion for a thorough review of the early prints of St Paul's, but the history and status of a second plate need to be clarified. Summerson's discussion of SP105 mentioned, but did not illustrate, SP106, which also hangs in the triforium, and shows the dome and west towers as completed in 1710 (Fig. 7).⁵⁵ This is not a proof before letters as at first appears, but a closely and roughly trimmed impression of *The North Prospect of the Cathedral of St. Paul* 'sold by Thomas Bowles in St Paul's Church Yard': the scale has been pasted vertically on the right, and traces of the original title and imprint can be seen along the present bottom edge. Other impressions, notably in the Guildhall and the Crace Collection at the British Museum, make it possible to relate the plate to the preceding one, with which it corresponds accurately in proportions although the scale is different enough to rule out its being a copy by any kind of direct transfer. Nevertheless, allowing for the substitution of the dome and towers as built, the images are closely related. Even the disposition of shadows is the same, although more sharply defined and with different use of hatching. Bowles's print also shows accurately the radial arches inside the peristyle, which some printmakers from Emmett onwards misunderstood or omitted. Bowles's engraver may therefore have used an original drawing from Wren's office, such as a revised version of the All Souls south elevation.

The Crace Collection has a variant with a blank sky and the additional legend 'H Hulsbergh Fecit'. This seems to be the only mention of Hulsbergh, and it may be that the plate was intended to be part of the *Synopsis*.⁵⁶ This impression also shows accurately the podium and four gate-pier urns proper to the south transept rather than the north; they were then taken out and replaced by a flight of steps of breakneck steepness, as in SP106. A sky and clouds were also added.⁵⁷ The clearest traces of the erased podium and piers I have found is in a copy in the Guildhall, maybe because it is a late impression whose publisher has been changed to Carrington Bowles, nephew of John and perhaps son of Thomas.⁵⁸

What of course distinguishes the St Paul's copy is the loose addition of the 1675 dome (as we shall assume it to be) taken from another impression of SP105 and too large since

the latter plate is to a slightly smaller scale. Since both prints were part of the Wren family collection, listed in the Wren Society's Vols II and III (and again in Vol. XX) it is possible that the architect's son intended one or other as the basis of a comparative plate to illustrate the history of the design.⁵⁹

4 EDWARD WOODROFFE

As has been seen, in the early 1950s most students believed that building had begun according to the Warrant Design, that the momentous changes of the western chapels, the semicircular transept porticoes, the screen walls, and all that they entailed, had been made some years later. Summerson's dating of the All Souls drawing to 1675 was thus revolutionary; unfortunately his own handling of the matter did little to support his case, for he not only never published his original reasons but also forgot them. Forty years on, tracing the course of events has itself become a historical exercise, but with memory, old notes, and diary entries it is still feasible.

In 1951 Summerson had catalogued the architectural drawings in the Marquess of Bute's collection for sale at Sotheby's (23 May 1951), including 32 drawings connected with St Paul's, 59 for the Wren City churches, and other important drawings of the Wren-Vanbrugh-Hawksmoor school. It was apparently this commission, together with the completion of *Wren and Architecture in Britain* (both published in 1953), that led him to review Wren's drawings in general. In February 1952 he published a paper on some of the drawings for churches.⁶⁰ On 30 May he delivered a 'Discourse' on Wren's drawings to the Royal Institution, to which I was given a ticket by Margaret Whinney. As far as I remember, Dr Whinney was not present, being (or certainly about to be) in hospital for some days; it was presumably in part to give her an account of the evening that I visited her there about ten days later. It was a black-tie affair, at 9 p. m., and not at all propitious for the taking of notes; the best record I can find of what now concerns us is a footnote, written in 1956–57, in my *Hawksmoor*. Referring to the All Souls elevation, I wrote, 'I am unable to agree that this drawing is by the same hand as a group of drawings (e.g. *Wren Soc.* I Pl. XVII) which Summerson convincingly attributed to Woodroffe ... at the Royal Institution'.⁶¹ The example given is the elevation of the Greek Cross design of 1672, preceding the Great Model,⁶² and the group must have included an early proposal for the tower of St Mary-le-Bow, in the same vigorous, rather coarse pen style, with considerable use of precise ruled pen hatching instead of wash shading.⁶³ Until now (1993) Woodroffe's role in Wren's office in the early 1670s was something I believed I 'had always known', but clearly in 1952 none of us had known it. Woodroffe as a draughtsman does not feature in his entry in the original (1954) edition of Colvin's Dictionary. Copious lecture notes of the time do not even mention the Greek Cross; in those days, when one could walk through the Great Model for sixpence, the Greek Cross hardly merited a footnote. In 1952 I had recently started to identify and catalogue the drawings of Hawksmoor, and Wren featured in the resulting monograph only as Hawksmoor's teacher.

Because it is something else I 'had always known' I am sure that in Summerson's Discourse the Woodroffe group also included the composite plan/elevation/section already mentioned (Fig. 4, note 45), but this drawing was soon forgotten. On the other

hand, those most deeply involved in the field accepted and remembered the brilliant identification of Woodroffe's hand in the Greek Cross drawings. It must be remembered that very few historians had looked at the St Paul's drawings in the original, and nobody was particularly interested in studies for the dome, whose design 'passed through a number of phases and was probably not finally settled till the Commission gave the word for it to proceed in 1697'.⁶⁴ Making better sense of those studies was something for a rainy day; we were far more concerned with what we saw as the quite distinct problem of the screen walls. There is some slight excuse for this distinction in the material itself, for in very few drawings for the final building does Wren seem to think above and below the roof-line on the same sheet of paper. The same is true of the early editions of Summerson's *Architecture in Britain*, where the body of the church and the dome are discussed separately; moreover, although the crucial drawings (Figs 2, 4 here) are both reproduced, the book is so laid out that they cannot be viewed together.⁶⁵ Presumably the connoisseurship of architectural drawings was considered too specialized for either the Pelican History of Art or the Collins 'Brief Lives' series, and in neither book is there a word about Woodroffe's place at St Paul's.⁶⁶

On 24 March 1954 Summerson gave a version of his Discourse to students at the Courtauld Institute. As the engagement had slipped his memory and he arrived breathless, it was not his best performance, and perhaps because he did not have the right slide to hand he described the Woodroffe dome study while showing the All Souls elevation. In other words, he said that the latter was by Woodroffe, who died in October 1675, thus dating the drawing. To Dr Whinney and myself in the audience, this was untenable since the All Souls drawing, elegantly shaded in wash, was quite unlike the Greek Cross drawings. We said so afterwards; Summerson claimed, rightly if unhelpfully, that he must have had *some* good reason for his conclusion, even if it had escaped his memory. We on the other hand saw no reason to retrieve the All Souls drawing from the 1680s. The breakdown is reflected in my note already quoted,⁶⁷ and in a rather puzzled footnote in Whinney and Millar's *English Art 1615–1714* of 1957.⁶⁸ But Summerson's confidence had been dented, and he sought alternative evidence. When he published the Penultimate design in 1961 he believed he had found it. Of the All Souls elevation he then wrote:

Everything below dome level is as executed, with one important exception — there is no rustication. Considering that all sculpture is minutely shown the omission of rustication must surely mean that it was not intended when the drawing was made. Now the contracts with Marshall and Strong for the lower part of the choir, dated 17th August 1675, refer to 'Six Courses of Plinth & Rustick Ashler'; the decision to rusticate had been taken ... It seems, therefore, almost certain that the drawing A.S.II.29 was made before August 1675.⁶⁹

It is now known, of course, that many detail drawings showing rustication precede this elevation,⁷⁰ but Whinney was quick to point out that 'people didn't *always* draw in rustication, for in some of the late Webb/Whitehall drawings the Banqueting House is not rusticated, though it was there before their eyes'.⁷¹ Moreover, of all the authorized engravings and the drawings related to them only the east elevation [D.i] shows any rustication — and that only of the basement — whereas Emmett's prints are rusticated, in agreement with the building; the omission seems thus to relate to graphic economy rather than surface intentions.

In practice the grounds for dating the *design* of the two-storey screen-wall elevation may be separated from those for dating the *drawing*. It can be argued from a close analysis of the design that the coupled pilasters, the two-storey elevation, and the effective reduction of the nave from five bays to three, all form part of a consistent elevation. Moreover the foundation for the extra weight of the screen walls, and therefore the rest of the elevation, must have been decided upon before any footings were laid.⁷² Whinney later conceded in discussion that Hooke's Diary showed him collecting prints of St Peter's in 1677, offering circumstantial evidence for bringing the Michelangesque dome of the All Souls drawing back to that year, although there was 'no means of dating the drawing precisely'.⁷³

Thus the difference of opinion was down to two years when, in 1978, suggestions were made for a Wren exhibition in 1982 and a new monograph, there being none in print. Whether in connection with either of these, or in preparation for a Wren seminar, I found myself browsing in an old departmental copy of *Architecture in Britain*, in that receptive right-hemisphere state which was the basis of Warburg's library system.⁷⁴ There, illustrated, were Woodroffe's dome study, datable 1675 because he died then, and Wren's complete elevation, showing virtually the same design. That was the evidence — and it was enough!⁷⁵ The transfer of the St Paul's collection to the Guildhall in 1980, and the invitation to make a new handlist, opened up the drawings to study, and the Whitechapel exhibition two years later allowed a public statement that Summerson had been right thirty years earlier.

5 OTHER EVIDENCE FOR DATING THE 'DEFINITIVE' DESIGN

Summerson's recantation in 1990, in favour of a date of 1683, raised the question whether the date he had so consistently defended could be supported by independent evidence. Since the All Souls drawing is homogeneous, it must have been drawn all at one date, and thus, if it can be shown that other datable drawings precede it, we have a terminus for the complete design it shows.

The most striking differences (apart from the dome) between drawing and building are in the upper storey, which was not begun in the period under contention and therefore cannot be used in this argument. However, there is a second record of the complete design up to the roof-line in abbreviated form, leaving out repetitive elements in nave and choir. This is the series of drawings uniquely to a scale of 10 ft to 1 inch, which describe analytically in three dimensions the east and west ends and the crossing and transepts (Fig. 8).⁷⁶ These differ in some significant respects from the All Souls elevation, the engravings [D] and [E] and the drawings for [D]. One consistent difference is that whereas the latter group still shows a Corinthian upper order on the outside and a Corinthian small order inside, the set of 10 ft scale drawings all show the Composite adopted, after some hesitation, in both locations in the building. The latest possible date for the change in the internal order would be the summer of 1680, for payments were made for carving the 'lesser' capitals in January 1681.⁷⁷ It would indeed be reasonable to assume that the internal order had been finally settled by 5 September 1678 when the masons' contract mentioned leaving busks for the carving of these

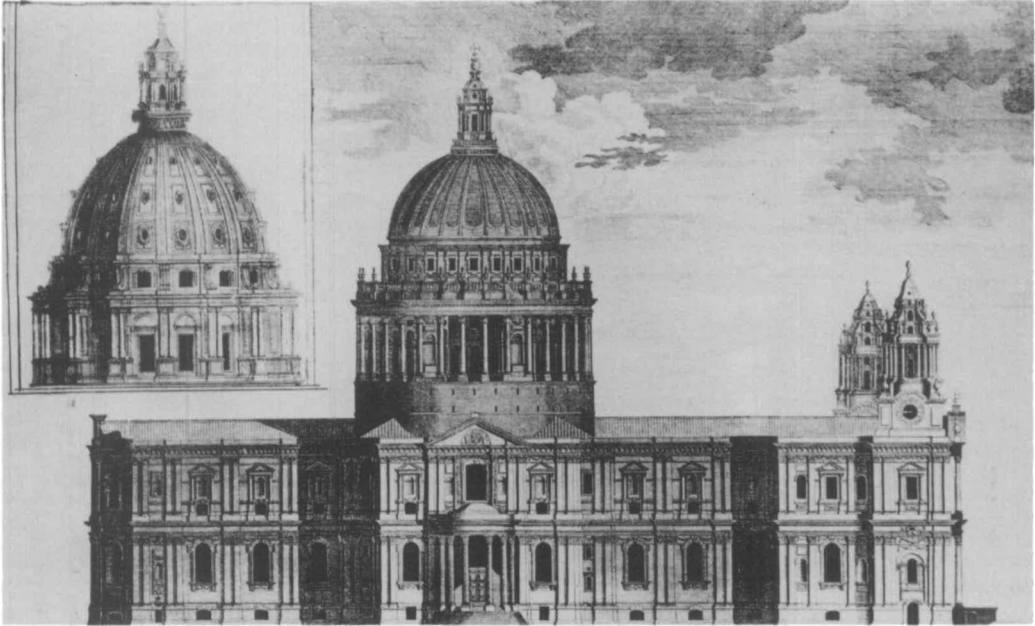


Fig. 7. *St Paul's. Engraved north elevation with addition (SP106)*

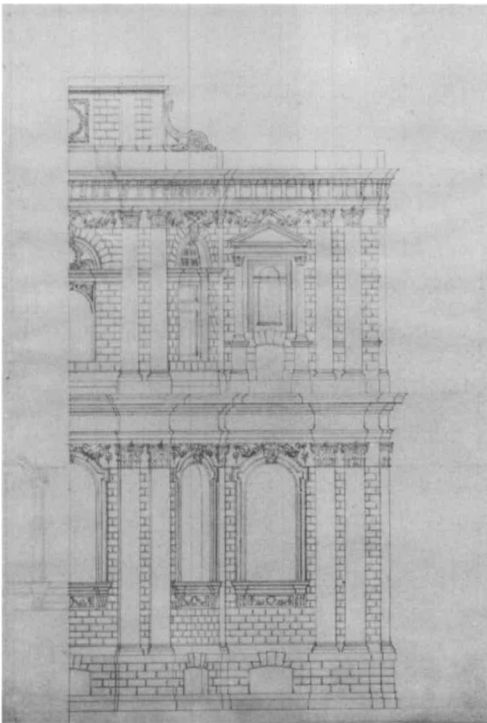


Fig. 8. *Wren. Half elevation of east end of St Paul's (Guildhall, cat. 64)*

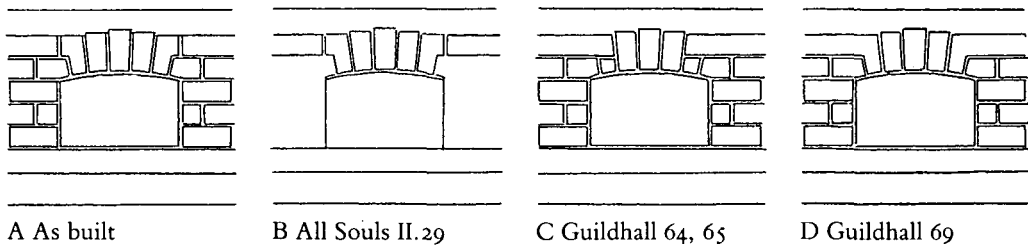


Fig. 9. *St Paul's. Schemes of basement window voussoirs*

capitals *in situ*.⁷⁸ This is a good deal earlier than 1683, but other features of the 10 ft set show that it was drawn — and the order therefore changed — rather earlier.

Up to and including the Warrant design we have little in the way of preparatory drawings, and the dome is only presented to us as an integral part of each design. This is also true of the fragmentary Penultimate, in which Wren seems to have worked outwards as if from the centre of the crossing at floor level. But thereafter, as has already been noted, the majority of the drawings for the building itself are concerned *either* with the church up to the roof-line *or* with the dome above it. The logic of Wren's design is such that it is possible conceptually — and would be so physically in a model — to lift the whole dome off after slicing horizontally through the structure above the eight cardinal and diagonal arches, eight piers, and four corner bastions on which it rests. There are practical advantages in such a concept, which allowed Wren to keep certain options open, visually and structurally, until the late 1690s. Could he in fact have thought much earlier of the building as two separate designs?⁷⁹

It is clear that, up to the Penultimate stage, he did nothing of the sort. But thereafter we have a far greater number, and greater diversity, of drawings, and an analogy may be useful with the use of drawings by painters in the sixteenth-century Tuscan-Roman tradition in preparation for large-scale paintings. First the composition would be worked out, from sketches, to a *modello*, showing every figure in its determined position, attitude, action, and setting. Then detailed studies would be made for individual figures and parts such as heads and hands. Methodical painters, and those who ran large studios, would then proceed to a full-size cartoon from which assistants could execute the final painting in a process almost as delegative as that of architecture.

There is some degree of similarity between the compositional sketches and the Penultimate drawings, but we have no record, equivalent to a finished *modello*, of Wren's overall conception of the building at this stage. We next find a number of careful detail studies, for individual bays, windows, piers, arches, portions such as the west end, and the transept fronts, which must in Wren's mind have related to a total concept. Whether this was in his head or committed to paper, it must have included the structure of the dome because the supports for it were an integral part of the whole. There is in fact a series of dome studies which relate to a supporting structure, several of them interrelated, just as a painter might make several careful studies for the principal figure or group in his picture.

At the next stage the analogy should not be pressed too far, simply because builders do not work from full-size drawings. But the Definitive set — of which the All Souls

elevation is the best surviving piece — corresponds to the painter's drawing squared up for transfer to manageable pieces of full-size cartoon, and the analytical 10 ft set amounts, in fact, to a set of visual instructions for building the cathedral just as cartoons are instructions for painting the picture.

This is of course an idealized account of events, based on certain assumptions about the nature, purpose, and sequence of the surviving drawings, and the fact that the drawings can be fitted into such an account does not establish an equation of identity between the ideal and the real. Nevertheless the range of surviving dome studies favours it. Most of them⁸⁰ fall into a set drawn, as is the All Souls south elevation, to a scale of 20 ft to 1 inch. Drawings are perishable, and some folders survive while others do not; nevertheless there are no other studies that can be accepted as later than the Penultimate but before the Definitive, and none that can be placed between the mid 1680s and the working out *c.* 1697–1704 of the final design. This does suggest that all these dome studies are close in date to the All Souls elevation, the prototypes for engravings [D] and [E] and the other studies for them.

The 10 ft analytical set is homogeneous, although as some of those drawings, while finished, are only in faint graphite, and none bear inscriptions, we ought to suppose that Wren made or ordered another set of fair copies for official use. They do not show the dome, surely, because its design was settled for the foreseeable future, even if twenty-five years was a longer future than Wren had expected for construction up to parapet level. And — which is of critical importance — the 10 ft drawings are certainly later than the Definitive drawings and incorporate revisions to them, which all tend towards the executed building, and include complete rustication of the exterior, the replacement of the east-end segmental pediment by the crested parapet, and the re-design of the upper transept window and pediment (also seen in the proof SP105, Fig. 5).

This leaves the question whether the 10 ft set can be shown to precede the start of construction. A consistent feature of the set is the provision of two stepped courses of masonry plinth around the ground base-line, as in the executed building. This is also the case in the All Souls elevation, but some of the design studies and the Redmill fragment show only one. This distinction was crucial by the time the masonry contracts were signed, but as the Redmill drawing shows nothing higher than the drum with oval windows the 10 ft set cannot be dated by this means.

Two other features are more helpful. The first is the way in which the voussoirs over the crypt windows are drawn. In the building every window has five voussoirs: the keystone and two wedges flanked by outer stones of a more complex shape, which turns at the top into a short horizontal portion of the plinth that runs beneath the pilaster bases. The total span of the five voussoirs is equal to the width of the window (Fig. 9a). In the All Souls elevation the voussoirs are the same, but no other rustication is shown (Fig. 9b). In the 10 ft drawings two other patterns of rustication are shown. In the drawings for the east end the outer voussoirs are much smaller, only coming up to the bottom edge of the plinth, so that the window reads as if it had only three voussoirs interrupting an otherwise continuous plinth (Fig. 9c). The drawings of the transept and west end read differently again, the outer stones continuing sideways much further before reaching a vertical break with the rest of the plinth (Fig. 9d).

In drawings prepared with such care these differences are surely not accidental, but represent different ways of seeing a detail not yet firmly fixed; similar indecision has been noted in the number of base plinth courses and the choice between Corinthian and Composite. There are other differences of detail between the 10 ft set and the building, but this one is critical because the crypt outer walls were contracted for, including 'the Coines and Windows & Rustic Arches expressed in the Designe', on 17 August 1675, and completed including the plinth under the pilasters during the 1676 building season.⁸¹ Thus even if — as is conceivable — the precise detail expressed in the design was modified after the contract, that can have been done no later than the spring of 1676.

The other feature is that none of the sections in the set gives any indication of the interior of the crypt; the building is still represented (though the basement windows show it was not conceived) as if it had a solid floor raised above ground level by unspecified means. The crypt must have been designed before the start even of rubble work. It is thus reasonable to conclude both that the Definitive drawings (including the dome) precede the 10 ft set and that the latter also pre-date the start of construction. Whether they do so by a matter of days or of months is a question which depends on what may be supposed about official practice and procedure of the time, but in either case the All Souls elevation, dome and all, must precede the start of masonry in the summer of 1675.

6 THE ROTATED DOME

If Le Jeune de Boullencourt's *Déscription générale de l'Hôtel Royal des Invalides* has been 'consistently overlooked' by Wren scholars, as Summerson claimed,⁸² it can only be because they have not thought it relevant enough to find and consult; on the other hand some of the prints, by Jean Marot and others, have been reproduced, especially in French publications, and the book is fully described in Mauban's catalogue of Marot's work.⁸³

The Invalides church was not begun until 1677, two years after St Paul's and eleven after Wren's return from Paris, and it would theoretically be possible to suppose that some English agent had communicated a premature hint of the French project to Charles II's court architect — similar things happen in the automobile industry today, but there the financial stakes are rather larger. We might of course seek other ways of reconciling the dates, for there was certainly English interest in the Invalides. Drawings were requested in 1677 — of the hospital rather than the church — and sent over through diplomatic channels the following year.⁸⁴ As this is two years too late, it is desirable to enquire whether the design it represents really needs to depend on that of Hardouin-Mansart. When A and B produce similar effects, possible explanations include pure accident or chance, knowledge of A's production by B, and a common source for both. It is worth looking again at the third of these.⁸⁵

Hardouin-Mansart's and Wren's designs have certain features in common with domes such as Michelangelo's St Peter's; these include a multiple shell, external ribs, and pier buttresses edged with columns around the drum below the cupola. The most obvious specific and unusual feature common to the two is the rotation of the drum by

- A Bourbon Chapel 1663/5 F. Mansart
 B Invalides 1677/79 J. H. Mansart
 C St Paul's 1675
 D Invalides as built 1689/91
 E Versailles project 1683

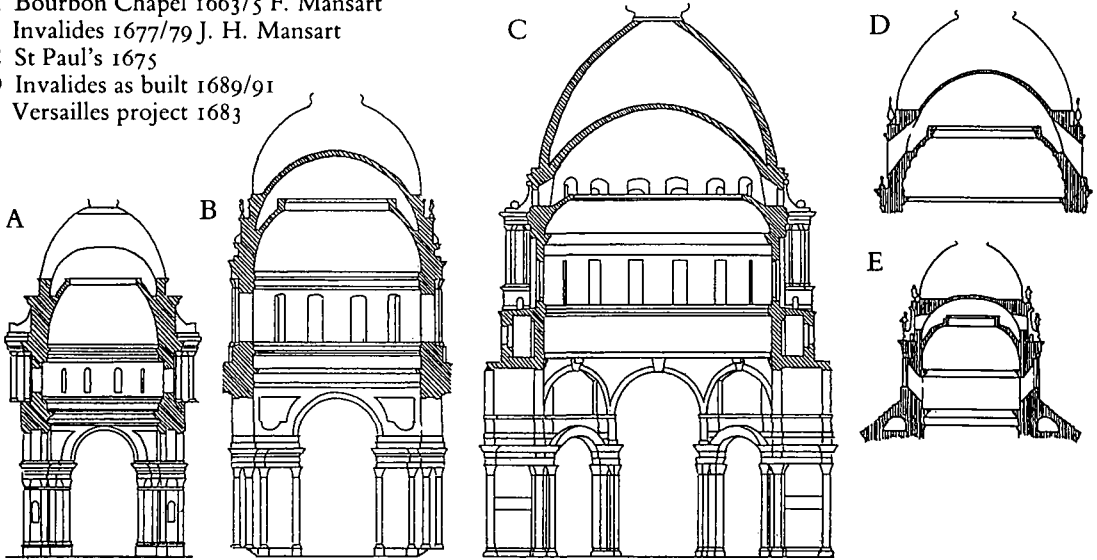


Fig. 10. Cross sections of domed structures, to approximately same scale. In A, B, C and D the section of the drum walls is represented in a vertical plane as if through the windows, i.e. offset from a cardinal axis. Only in E are there actually windows on the cardinal axes.

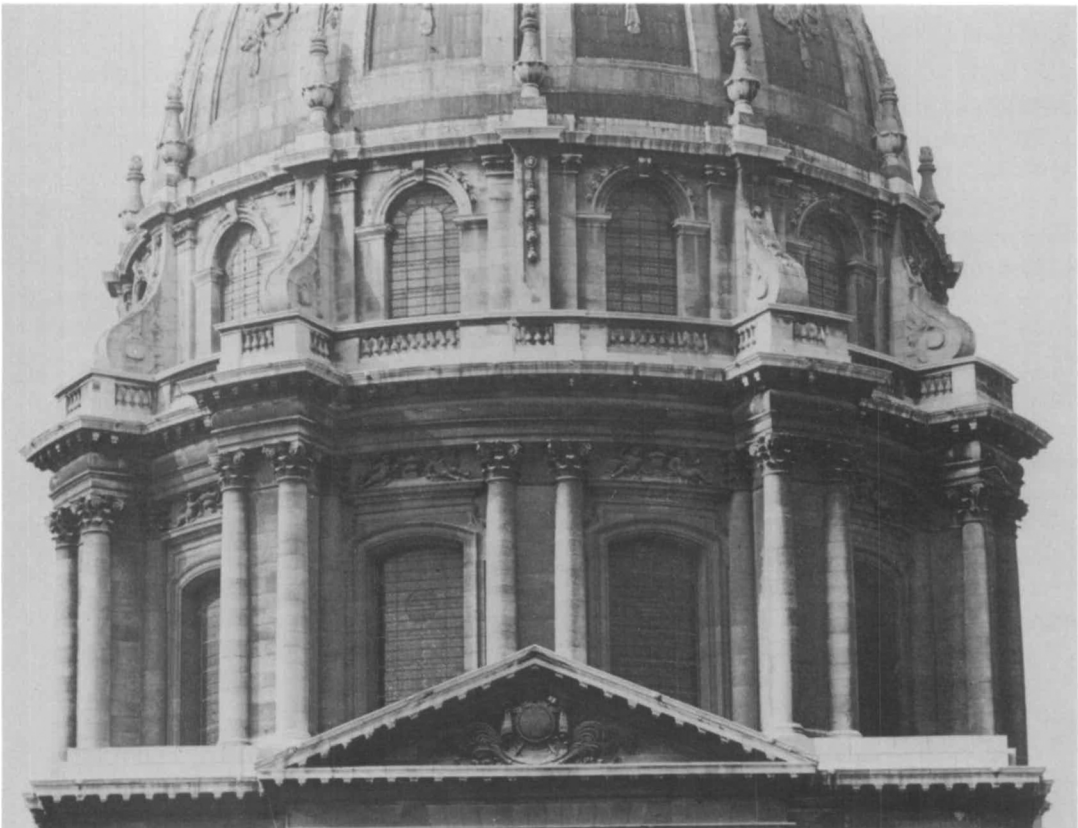


Fig. 11. J. H. Mansart. *Dôme of the Invalides* (detail)

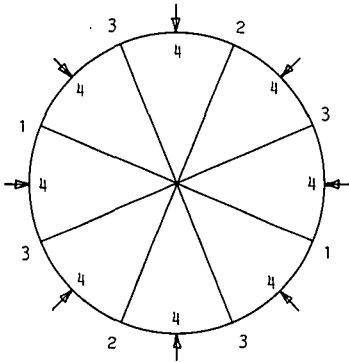
half a bay, so that a pier occurs on each of the cardinal axes (Fig. 10b,c), instead of a window which is otherwise the almost invariable practice; the conjunction in our two examples of the 'solecism' (Summerson's word) of placing a solid over a void seems too rare to be accidental; nevertheless there is more than one way of looking at this arrangement and of arriving at it.

There are in fact significant differences between the two designs. The drum of the Invalides has the unusual number of 12 bays. Wren's is (like St Peter's) of 16 identical bays with identical pier buttresses; in other studies he experimented with 32 (the final number) and 24, which involves multiples of three and is twice the 12 of the Invalides. This difference is the more important because the Invalides has another peculiarity: instead of 12 uniform pier buttresses, Mansart designed projecting pairs at the corners and nothing more than applied half-columns on the cardinal axes, making in effect four large cardinal relative voids between four large diagonal solids (Fig. 11). This is of course a textbook example of Baroque composition in which the units read by the eye are larger and fewer than those of which the whole is ultimately composed; moreover, as Wren would immediately have recognized from a plan, it corresponds closely to Mansart's supporting structure of four cardinal arches and four composite corner piers.

Wren on the other hand was not yet thinking so much in terms of few large units, but proceeded from 4 axes to 8 piers to 16 bays (and in the final design to 32 in groups of 4); but we could also say that he thought of his drum as a single unit attached or detached at its base, a ring of identical sections. How therefore he arrived at the half-bay rotation is impossible to say, but working by division it would have been a logical consequence. This can be checked very simply by folding a circle of paper into two, four and eight segments, and imagining that the folds represent piers and the segments represent windows. Then one more fold will put a pier in the middle of each void (Fig. 12).

We cannot of course say that this is how Wren proceeded, but speculation is perhaps unnecessary. At the time of his visit to Paris the two architects he expected to meet were Bernini and the elder Mansart, François. Both were engaged in projects for the Bourbon mausoleum at St Denis, conceived in 1663, under active consideration in the summer of 1665, soon thereafter abandoned by Louis XIV and later replaced as a concept by the younger Mansart's Dôme of the Invalides. Since Wren claimed on his return from France to have paid particular attention to domes and to have consulted daily with the best authorities,⁸⁶ he is sure to have taken any chance he could get to discuss the Bourbon project with François Mansart. Its design is known to us only from a few free-hand sketches; however, the larger drawings that must already have been made would have been on Mansart's desk that summer, and the character of the project is such as to suggest a common source for both the domes designed in the 1670s. In one of Mansart's sketches the dome is clearly of sixteen identical bays between pier buttresses; in another,⁸⁷ there are twelve bays with piers disposed as in the Invalides. Here the same kind of compound dome is used as in both the later — and perhaps dependent — designs, and the drum is rotated half a bay in the same way as Wren's (Fig. 10a).

A further common feature between the Invalides, the Woodroffe drawing, and the proof print SP105 (but not the All Souls drawing) is the ring of bracket scrolls between the top of the cupola and the base of the lantern.⁸⁸ This too can be explained by

Fig. 12. *Sequence of folds in a disc of paper*

reference to François Mansart's studio. It does not appear as such in the Bourbon sketches, though it is implied in one,⁸⁹ but it is to be found elsewhere among pre-1665 designs from Mansart's studio, in projects for the church of the Minimes and the Val-de-Grâce, both recorded in drawings by other hands.⁹⁰

7 THE ILLUMINATED DOME

The engraved section, the Woodroffe drawing, and a few others⁹¹ share one other feature with the *Dôme of the Invalides*, not as it was designed in 1676 and published in 1683, but as it was completed in 1689–91: the device by which a ring of windows lights the cupola but is concealed from the viewer on the church floor.⁹² This is the most important change between Hardouin-Mansart's first and final designs for the *Invalides* (Fig. 10b, d), and while on the outside the attic windows add considerably to the effect of the whole, Hardouin had his work cut out to make them useful inside. In fact the window embrasures are so steeply canted upwards, in reverse to the fall of daylight, that the lip of the inner dome is actually higher than the tops of the outer window frames.

It is tempting to suppose that in this instance Wren's design influenced Hardouin's; it would nevertheless be imprudent to do so, even if Wren's intentions had received public exposure in the 1680s. Moreover, Hardouin had considered the idea as early as 1683 in a project for a domed chapel at Versailles (Fig. 10e).⁹³ In the end Wren abandoned this feature, or at least restricted it to the small area at the top of the cone under the lantern, visible through the eye of the inner dome (Fig. 13). Thus the effect is usually discussed in respect either of Wren's drawings or of Hardouin's building. Only when we put the two together do we find the feature otherwise so uncommon that it is necessary to ask how Wren arrived at it.

'Our artist', wrote Wren to Bishop Ward of Salisbury in 1668, 'knew better that nothing could adde beauty to light.'⁹⁴ Better, because in Wren's opinion light was more beautiful than complicated window tracery. The positive role of light in architecture is not easily illustrated, not only because even the most advanced lenses and film emulsions fall far short of the human eye in reacting and adapting to the operation of daylight in interiors, but also because daylight itself — and English daylight more than most — varies so much with the weather. In any actual building subjective impressions

are more useful than readings on a light meter, and light is certainly one of the star performers in the Sheldonian Theatre, opened the year after Wren's Salisbury report. In the 1670s the performance would be refined, for example in the great clerestory of Trinity College Library, Cambridge, and in the lunettes and ovals (some recently unblocked and restored) of St Stephen, Walbrook.

Wren's observation was made early in his architectural career, when his experiences in France were still fresh in his mind. We should remind ourselves what sort of animal the architects and scientists of Paris encountered during his visit, for he was no ordinary sightseer. As a person of eminence — indeed of brilliance — in several disciplines, his fact-finding mission 'to pry into Trades and Arts' would have been purposeful, practical, and successful, although he seems never to have completed his written *Observations* on the subject.⁹⁵ His education certainly included Latin, still a language of scholars, and presumably French. If Italian failed him he would not have been the first or the last to adapt his Latin with the help of gesture and a pencil, and he would have made it his business to understand and be understood. And we have his own word for it that he had been in 'daily conference' with 'the best Artists French and Italian' in charge of dome-building in Paris.⁹⁶

The blind cupola of the Val-de-Grâce was then being painted by Pierre Mignard, and the vague pen marks in the Woodroffe drawing suggest that such decoration was at least briefly considered for St Paul's. Padre Guarini, supervising the never-finished Parisian church of his order, St Anne-la-Royale, surely offered the germ of that extraordinary dome project for St Paul's that rests on eight concave hemicycles,⁹⁷ and Guarini knew more than anyone what could be done with light in domes. If there was too little to be seen of this in Paris Wren could, after all, read a drawing. The other expert on lighting was again François Mansart, who had used concealed windows in the attic of the main stair at Blois (Fig. 14).⁹⁸ Moreover, within the capital he had earlier built the church of the Visitation. There, as in Lemerancier's Sorbonne church, the dome opens into a lantern whose windows can be seen from below; more significantly Mansart used the device, known also to Bernini, of a concealed lantern to shed a spotlight in the principal chapel (Fig. 15). And that is the nearest we can find to the floating upper dome of the Invalides and Wren's 1675 project — with one exception. Mansart's sheet of sketches for the Bourbon Chapel offers in cross section two alternative designs. The one with the dome rotated to have piers on the axes has already been discussed; in the other, as an afterthought, windows are drawn through the thickness of the cupola to the zone that is hidden from viewers inside by the lip of the lower dome. This is certainly a precedent for Hardouin's ultimate solution, though not for his earlier one. What is certain is that Wren was familiar with the idea by 1672, and sufficiently taken with it to use it in both the Greek Cross (1672) and the Great Model (1673) designs, in the form of a ring of 32 circular windows set high up on the exterior near the lantern, invisible from the church floor, and lighting up the upper shell visible through the eye of the lower.⁹⁹

It took Wren six years to absorb what he had seen in Paris sufficiently to produce the Greek Cross design so carefully drawn out by Woodroffe. It took him far longer — until the ill-starred 1698 designs for rebuilding Whitehall — fully to absorb the message of Bernini's Louvre designs, which on a few minutes' inspection he 'would have given

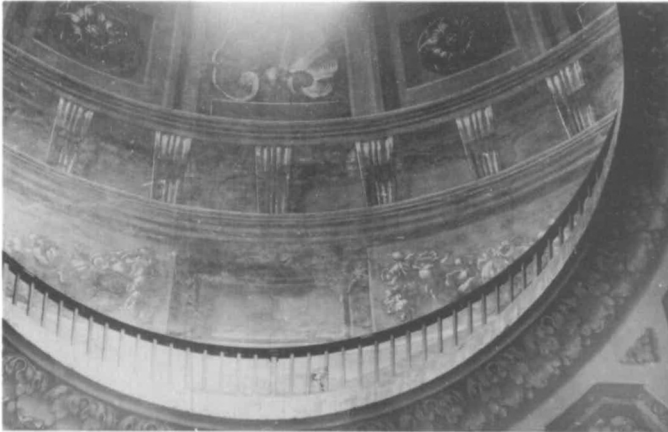


Fig. 13. *St Paul's. Base of lantern seen from floor level*



Fig. 14. *François Mansart. Blois, Orléans wing. Staircase roof*



Fig. 15. *François Mansart. Paris, S. Marie de la Visitation. Dome of altar chapel*

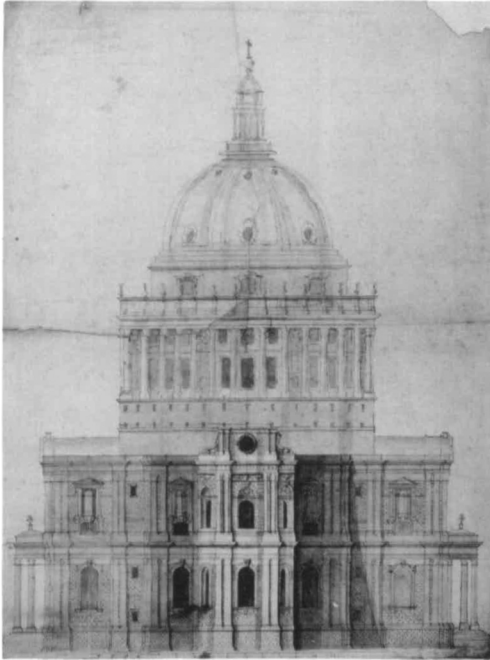


Fig. 16. *St Paul's. Anonymous east elevation, c. 1702*

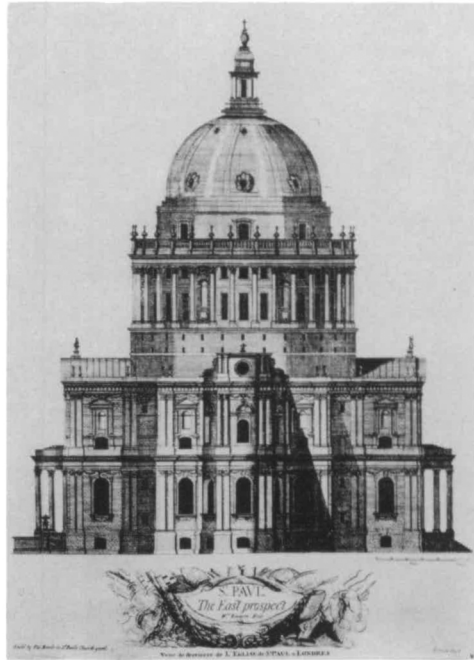


Fig. 17. *William Emmett and J. Simon. Pirated east elevation of St Paul's c. 1702*

my skin for'. Wren was an inventor, more than a borrower, of detail: the external aisle windows and the aedicule-niches above them at St Paul's make this abundantly clear. Whether, as is not inconceivable, he arrived at the idea of concealed illumination quite independently, psychologically it is likely that the distinctive features of the Definitive design were to a similar extent the products, not of copying, but of reflection and digestion.

APPENDIX

Among a miscellany of prints and drawings transferred from St Paul's to the Guildhall is a large east elevation with the 'last approved' dome (Fig. 16); it is on the same scale as Emmett's print of c. 1702 (Fig. 17) and may have been connected with its preparation.¹⁰⁰ It was never part of the collection acquired by Robert Mylne; a pencil note at the top left reads: 'St Paul's Cathedral / an early study for the / exterior — Sir C Wren archt'. This is probably in the hand of C. R. Cockerell, for an addition reads 'Presented to F C P by Mr Cockerell 1852'; in that year F. C. Penrose succeeded Cockerell as Surveyor to the Fabric. The sheet has been cropped at the sides and bottom and laid down on a card mount. No watermark is visible but it is certainly a drawing of around 1700.

It is not a very good drawing, and the best part of the impression it makes of liveliness is due to the highlighting of the apse in relation to the wash shading of most of the rest. It is not by Emmett, for it is not in the same hand — or of anything like the quality — as his signed elevation, on several sheets, of a design for a colossal palace at Whitehall.¹⁰¹ It has an echo of the brilliant use

of wash and free-hand detailing to be found in Hawksmoor's studies for the west towers,¹⁰² but it is only an echo.

Other features in common with Emmett's prints are the omission of the radial arches inside the peristyle and the drawing in of all the rustication, which was done on none of Wren's complete elevations whether drawn or printed, but appears in all Emmett's prints. Here, however, initial mediocrity descends to slovenliness, for while in the upper storey the horizontals are mostly ruled, lower down they are drawn freehand, and become progressively more irregular towards the plinth and basement. Whoever drew this part of the image was neither prepared for the tedium of measured drawing nor familiar with the professional's methods of executing or suggesting this kind of repetitive detailing.

The rustication and the wash shading are probably by the same hand as the drawing of the dome, one particularity of which shows that it was not copied from the print but set out (albeit crudely) from a plan. This is a semicircle in pencil centred in the base line of the peristyle, underlying the elevation of the peristyle and attic. In the left half of the drawing a series of small ink crosses at the level of the column bases corresponds to other crosses lying on this semicircle;¹⁰³ thus a plan of some sort was used to set out points required for projecting the details of the drum in true elevation.

Whether or not the lower half of the drawing (excepting the rustication) is by the same hand, it was produced in a different way. For the most part it is a competent ruled elevation, such as any draughtsman could have copied from an original in Wren's office. However, the astragal at the base of the capitals is ruled continuously across the whole elevation, cutting through the hoods of the windows in the lower storey and the pediments of the aedicules in the upper. As faint pencil guidelines this would be acceptable and not unusual, but in pen and ink it is an elementary error. Moreover there are two serious mistakes, one of omission and the other of misunderstanding. The omission is the crypt windows, which as we have seen were the first detailing to be constructed and appear in the early drawings. The other mistake is in the caps of the transept porticoes, which are shown as full, instead of half, saucer domes. Both these mistakes were easily correctible by reference to the fabric well before 1700.

Like Emmett's prints, this drawing reflects the desire to show both what was built as it was built, rustication and all, and what was projected as far as it could be ascertained. It was already evident that Emmett must have had a spy or a mole in the office, and we are still no wiser as to who that was. However, the sketchy, impromptu, inaccurate, and unprofessional character of the drawing is in accordance with the notion that it was produced in circumstances of haste and stealth.

*** Prolegomena. I** This paper is dedicated to the memory of Sir John Summerson and Margaret Whinney, who not only taught me so much but also played each a vital part in the story it unfolds. It owes its origin directly to, and its title is adapted from, Summerson's review, 'J. H. Mansart, Sir Christopher Wren and the Dome of St Paul's', *Burlington Magazine*, 132 (1990), 32–36 — hereafter cited as Summerson (1990) — of K. Downes, *Sir Christopher Wren, the Design of St Paul's* (London, 1988) — hereafter cited as Downes (1988). An early draft, written with his encouragement and in direct response to the ideas put forward in the review, was seen by him early in 1991, and some of its content appears in individual entries of the exhibition catalogue, *Sir Christopher Wren and the Making of St Paul's* (London, Royal Academy, 1991). Since then the discovery of two drawings, an interval of time, and the Hon. Editor's helpful comments, have led to a complete recasting of the material.

II My heartfelt thanks are also due to Ralph Hyde, Jeremy Smith, John Fisher and other staff at the Guildhall Library Print Room, and to the late Frank Atkinson and to his successor as Cathedral Librarian, Joe Wisdom.

Grateful acknowledgement is made for permission to reproduce the following: the Warden and Fellows of All Souls College, Oxford, Fig. 2; Whitworth Art Gallery, Manchester, Fig. 6; the Dean and Chapter of St Paul's, Figs 5, 7; the Dean and Chapter of St Paul's and Guildhall Library, London, Figs 4, 8, 16.

III The principal images of St Paul's discussed in this paper are:

Six authorized engravings on five plates, here referred to as [A]–[E] (Figs 1a–e).

An early complete south elevation in Wren's hand (All Souls, Oxford, II.29) (Fig. 2).

An early study for the dome attributed to Edward Woodroffe, in the St Paul's collection in the Guildhall (Downes 1988, cat. 95) (Fig. 4).

Two engraved north elevations at St Paul's (SP105 and 106 in the Wren Society's list) (Figs 5, 7).

A drawn north elevation in the Whitworth Art Gallery (Fig. 6).

An analytical set of drawings of parts of the cathedral (Fig. 8).

A drawn east elevation in the Guildhall, and William Emmett's engraving to which it is related (Figs 16, 17).

Jean Marot's engraving, published in 1683, of the Dôme of the Invalides (Fig. 3).

Besides those rare or unique prints whose location is specified, impressions of most of the prints discussed are to be found in the Guildhall Print Room (460 PAU(2)).

IV Other works cited below in short form are:

K. Downes, *Hawksmoor* (London, 1959).

K. Downes, *The Architecture of Wren* (London, 1982).

R. Hooke, *Diary*, ed. H. W. Robinson and W. Adams (London, 1935).

J. Summerson, 'The Penultimate Design for St Paul's', *Burlington Magazine*, 103 (1961), 83–89; reprinted in *idem*, *The Unromantic Castle and other Essays* (London, 1990), pp. 69–78.

J. Summerson, *Wren* (London, 1953).

G. Vertue, *Notebooks*, Vols 1, 3, in *Walpole Society*, 18 (1930), 22 (1934).

C. Wren, *Parentalia* (London, 1750); facsimile reprint Farnborough, 1965.

Wren Society, Vols 1–20 (Oxford, 1924–43).

NOTES

1 *Parentalia*, p. 283. For the effective secrecy surrounding the design see below, section 3. Wren could have claimed, if challenged, that every essential feature of the Warrant design was incorporated in the Definitive, and that the differences were additions and improvements.

2 Summerson, 'Penultimate'. Many of the extant drawings relate to the assembly of the Definitive design, first so named by Downes (1982), p. 78.

3 Summerson (1953), pp. 108–09. *Parentalia*, p. 286, says that Wren 'began to lay the Foundations from the West-end, and . . . proceeded successfully through the Dome to the east-end'. This is one of several examples of the younger Wren's naivety in logistical matters. Wren followed tradition in building from east to west, and for some time after 1675 large parts of the site were covered with ruins and rubble, and much of the old west end was still standing with the whole of the portico. The process described therefore cannot have been more than one of setting out the plan on site, or even on paper.

4 *Wren Soc.* 16, pp. 7–10, 200–13; 13, pp. 70–77.

5 In *Wren Soc.* 13, pp. 69–202. M. Whinney, *St Paul's Cathedral* (London, 1947), p. 9, suggested that the screen walls were conceived 'perhaps as early as 1681', apparently misreading *ibid.*, pp. 152–54.

6 Comparable in style and quality to the signed pre-Fire designs for a new crossing in the old cathedral, All Souls II.4–8 (*Wren Soc.* 1, pls v–viii).

7 E.g. G. F. Webb, *Wren* (London, 1937), p. 104; E. F. Sekler, *Wren and his Place in European Architecture* (London, 1956) — but probably written before Summerson's book appeared — pp. 126, 128: 'as late as 1687'. V. Fuerst, *The Architecture of Sir Christopher Wren* (London, 1956), p. 110 and n.493, specifically rejected Summerson's dating as incompatible with 'our interpretation of the evolution of St Paul's', and placed both this and the related drawing (Fig. 4 here) c.1697.

8 Summerson (1953), p. 104 and pl. 6.

9 Believing the date of 1683 to be a new discovery, Summerson (1990) overplayed its significance. A connection between Hardouin-Mansart's and Wren's designs was sought a century ago by W. J. Loftie, *Inigo Jones and Wren*

(London, 1893), p. 157. On the other hand Sekler (*Wren*, p. 129) points out that the engraved design is less like Wren's than the executed one, forcing a comparison between the arched windows in the attic of the drum (Fig. 11) and the segmental-headed ones in the corresponding position in Woodroffe's drawing (Fig. 4).

10 Downes (1988), p. 35 n.8.

11 In correspondence with the writer, Paul Jeffery has identified an irreducible nucleus of factual information in the eighteenth- and nineteenth-century literature.

12 T. Clutterbuck, *History and Antiquities of the County of Hertfordshire* (London, 1815), II, 168. The MS now in Soane's Museum was not part of Soane's own collection. The first mention in print of the date of 21 June 1675 appears to be in E. Hatton, *A New View of London* (London, 1708), ii, 456, according to which the second stone was laid by 'Mr Longland' (John Longland, master carpenter). The account given in Jane Lang, *Rebuilding St Paul's* (Oxford, 1956), p. 79, is, like many passages in that book, an attempt to flesh out the known facts with reasonable assumptions. Since her use of printed sources was so thorough, it is perhaps neither unjust nor indiscreet at this distance in time to record a circumstance never widely known: for physical reasons Miss Lang's research was confined to the resources of the Bodleian Library, and MS sources elsewhere were not accessible to her.

13 A century earlier John Thorpe laid the first stone of Kirby Hall, Northants, in 1570 at the age of seven: J. Summerson, 'John Thorpe and the Thorpes of Kingscliffe', *Architectural Review*, 106 (1949), 291–300 (reprinted in *Unromantic Castle*, pp. 17–40). Ritual is part of human life, and every trade has its share. A Yorkshire village builder told me recently, 'No, we don't do anything special when we start, but usually when we put the roof on a house we put a flag up, and we're supposed to be given a drink — we don't always get it'.

14 p. 292. That stone is commemorated, but not preserved, in the tympanum of the south transept end. For the record, the date 21 June is nowhere given in *Parentalia*; however, it is to be found in a quite extraneous insert after p. 334 in the RIBA Heirloom copy (and the Gregg facsimile reprint): the thirty pages forming Book I of *English Architecture, or the Public Buildings of London and Westminster*, which was a supplement added by the publisher Osborne to his second edition of W. Maitland, *History of London in 1758* (E. Harris, *British Architectural Books and Writers* (Cambridge, 1990), pp. 188–90).

15 *Wren Soc.* 16, p. 201. For the site relation between the Great Model and the final building see Downes (1982), text fig. 11. The question of Wren and freemasonry would not be worth raising if it were not for the 'historic Wren maul'. In October–November 1932 a loan exhibition was held in the Trophy room at St Paul's to mark Wren's tercentenary. The Lodge of Antiquity lent a 'Maul. Used by Sir Christopher Wren when laying the Foundation Stone of the Cathedral' (cat. 65). A silver plate was affixed to it in 1827 by the Duke of Sussex, Grand Master and younger brother of George IV, with the inscription 'A.L. 5831–A.D. 1827. To commemorate that this being the same mallet with which His Majesty King Charles II levelled the foundation stone of St Paul's Cathedral, A.L. 5677–A.D. 1673. Was presented to the Old Lodge of St Paul's, now the Lodge of Antiquity, acting by Immemorial Constitution, by Brother Sir Christopher Wren, R.W.D.G.M., Worshipful Master of this Lodge and Architect of that Edifice'. The maul was mentioned, with other souvenirs, by John Timbs, *Curiosities of London* (London, 1885), p. 359, giving the accepted date of 21 June 1675.

The only serious question is whether the Duke of Sussex's date of 1673 referred correctly to the setting out of the dome in that year. The introduction of Charles II to the story makes this less, rather than more, probable, and the supposition that there was a Masonic and therefore hidden ceremony is self-cancelling, since modern historians of Freemasonry have found no trace even of a tradition to this effect until some years after Wren's death. Indeed they have expressed grave doubts about the extent of 'speculative' Masonry before the establishment of the Grand Lodge in 1717, and have traced most of what is supposed of Wren's involvement 'without foundation' to the second (1738) edition of James Anderson's *Book of Constitutions* and William Preston's *Illustrations of Masonry* (1772). Although as early as 1620 non-tradesmen (Nicholas Stone being one) were 'accepted' into the Masons' Company of London, acceptance was distinct from the Freedom of the Company. Knoop and Jones conclude that Wren 'probably joined the Fraternity in 1691' but 'took little or no active part in Freemasonry after his acceptance' (D. Knoop and G. P. Jones, *The Genesis of Freemasonry* (Manchester, 1948), pp. 131–32, 146–47, 168–70; F. L. Pick, G. N. Knight and F. Smyth, *The Pocket History of Freemasonry*, 8th ed. (London, 1991), pp. 50–51, 70).

16 K. Downes, *Sir John Vanbrugh, a Biography* (London, 1987), pp. 293–94, where the word 'foot' was omitted by a printing error. A stone of 8ft square is impractical. More recent practices are different: foundation stones with commemorative inscriptions are placed well above ground level, or alternatively the opening of a completed building is marked by the unveiling of a plaque.

17 L. Whistler, *The Imagination of Vanbrugh* (London, 1954), pp. 229–30.

18 Guildhall Library MS 25622/1. This contemporary second copy of the Commission's minutes was brought to my notice by Paul Jeffery. It largely duplicates the original book (Guildhall MS 11770) but records uniquely most of the meetings of 1674–76, which are missing from the latter volume. Neither MS was found by the Wren Society editors, although MS 25622/1 must have been in St Paul's Library. MS 11770 came on to the market in 1965 (Ben Weinreb, London, Catalogue 10, no. 11) and was acquired for the Corporation of London.

19 W. Dugdale, *History of St Paul's*, 2nd edn (London, 1716), p. 169. Dugdale completed the revision of his text to include the new cathedral before his death in 1685.

- 20 Guildhall MS 25622/1.
- 21 Guildhall MS 11770.
- 22 *Wren Soc.* 16, pp. 206–08.
- 23 *ibid.* 16, pp. 209–12; 13, pp. 73–77. A drug is a low carriage for heavy loads.
- 24 *ibid.* 16, pp. 208–09.
- 25 Tillison's Acquittance Book, which records payments made rather than debts incurred, shows this and, a week earlier, £15 for wheelbarrows (*ibid.* 13, p. 64).
- 26 M. Whinney, *Wren* (London, 1971), p. 102.
- 27 *Parentalia*, p. 282.
- 28 *ibid.*, p. 283.
- 29 Guildhall MS 11770.
- 30 Both reproduced by V. Fuerst, op. cit. (in n. 7), figs 112, 114. Fuerst was unwilling to accept their irrelevance to Wren's thinking. It is the effectiveness of the information black-out, as much as the close agreement between the accounts of 1702–03 and the earliest authorized prints, that rules out Summerson's suggestion (1990, pp. 34–36) that Wren commissioned the plates 'soon after 1683 . . . to crystallize a new (and hopefully final) situation in the cathedral's development'. Such a conjecture, derived entirely from the desire to involve the Invalides in the argument, supposes 'several [other] sets of plates, engraved around 1700–03' of which we have absolutely no trace; Summerson's rhetorical question about Wren's motivation will, it is hoped, be adequately answered below.
- 31 *Wren Soc.* 6, pp. 39, 41; Downes (1959), pp. 85–87. It is doubtful whether Gribelin's 'Large view' of Greenwich was ever issued; the proof before all letters at All Souls (V. 33) was for long considered unique. Another impression was offered for sale by Paul Breman, London (Catalogue Jan. 1990, no. 58) with the unlikely inference from *Wren Soc.* 8, p. 22 that unlettered prints were sent to subscribers.
- 32 *Wren Soc.* 15, pp. 70, 71. In the present paper the term 'engraving' is used of copper plates without distinction between cutting with a graver and etching with acid. According to Vertue (I, 106), who was in the profession, Kip 'was not over curious [careful] in his manner but expeditious . . . all his work were done with Aqua Fortis'.
- 33 *Wren Soc.* 16, pp. 97, 98.
- 34 This will be seen to mark a change from the design shown in engraving [E] and the All Souls drawing (Figs 1c, 2). Ned Ward's highly satirical account (*The London Spy* (1700), p. 106) of a site visit in 1699 likens the Whispering Gallery to the 'Embroider'd Hole in the middle of the Top' of a goose-pie, and reports the intention of 'a Spire to be Erected three Hundred Foot in height'. This suggests a source in the Warrant design rather than even Morgan's 1682 map.
- 35 *Wren Soc.* 14, pls xiii, xiv, vii, xv, xxxvii, and xvi. Pl. xxxvi shows the section re-issued with the west tower as built.
- 36 *ibid.* 15, pp. 84, 96.
- 37 *ibid.* 14, pl. xii. The term 'last approved' rather than 'penultimate' is used here in order to avoid confusion with the Penultimate design of 1674–75.
- 38 *ibid.* 15, p. 94. The fact that [D] and [E] as well as the first state of [C] (below, n. 44) were out of date suggests that Wren offered the engravers drawings that were to hand. The source of [D] is All Souls II. 36 and 37. Neither of the known west elevations All Souls II. 39 or Guildhall (Downes (1988), cat. 205) exactly corresponds to Gribelin's plate [A]; the All Souls drawing is heavily reworked with scissors and paste, the Guildhall one is endorsed in French and was very probably used by Gribelin. Comparable economy with the truth bedevilled the plan of Castle Howard in Campbell's *Vitruvius Britannicus*; see K. Downes, *Sir John Vanbrugh* (as in n. 16), p. 531.
- 39 *Wren Soc.* 14, pls 6, 10, 11 upper and lower, 9. A proof before all letters of the section [E] is in the Guildhall St Paul's collection (Downes (1988), cat. 94); some at least of the notes on it are in a hand consistent with that of Hawksmoor in the early 1700s.
- 40 Summarized in *Wren Soc.* 14, p. xi, with some red herrings. The 'framing' of numbers of prints on several occasions does not imply wooden, let alone glazed constructions, and perhaps no more than card mounts or even ruled borders: see OED, s.v. 'frame'. In December 1702 Colonel Ayres received £4.6s. for 'Writing & Engraving 3 Plates of St Paul's' (*Wren Society* 15, p. 89). It can safely be said that these belonged to a genre of plates which contained words, not images: John Ayres, an officer in one of the City bands, was a noted penman, writing-master and copper-plate writer, and lived in St Paul's Churchyard (DNB; Vertue, I, 140). Early in 1736 (19 January) Hawksmoor asked the Dean of Westminster 'to advance about 25£; that I may print in Copper, the West End of the Abby, to give to the Members of parlm: I am sure it wou'd do us no harm, but the contrary. Sr: Chr. Wren did it, St Paul's, to an Expence of 300£' (Downes (1959), p. 260).
- 41 Summerson (1990), p. 36. The section [E] was evidently unknown to Emmett (n. 35 above) whose imaginary version of 1703 (*Wren Soc.* 14, pl. xxxvii) incorporates the tapering inside drum but represents a structure in which diameters both inside and outside are consistently over-size.
- 42 The section is known in three states. (1) the proof before all letters (n. 39 above) with notes requesting additional hatching and amendments to several of the moulding profiles and other details. (2) an intermediate state in the Guildhall, titled and incorporating the hatching and a few other amendments, but with the hemispherical

inner dome unbroken (cf. Fig. 4) and with the cross section of the drum left blank (Downes (1982), pl. 59). (3) the final state (e.g. SP119) at the Guildhall, in which there are no further detail amendments but two major new changes have been made. The cross section shows the windows, piers and other details of the drum, and the inner dome is broken by a large eye opening into the outer one (Fig. 1e). This opening goes back to an early design (Downes (1988), cat. 88) but it is difficult to see any warrant for re-introducing it in the engraving. These changes were perhaps made in the 1720s at the instigation of Hawksmoor, whose contributions to the *Synopsis* (see below) included drawings specially made for the prints of St Mary-le-Bow and the Monument.

43 Vertue (III, 136) says that 'some disgust happend'; Samuel Johnson's second meaning is 'ill-humour, malevolence, offence conceived'. Hulsbergh died in May 1729 after an illness of two years or more (Vertue III, 38). The 15 plates are listed and described in *Wren Soc.* 14, pp. xii–xiv; those not reproduced in that volume appear in vol. 18, pls xvi–xxi; Hulsbergh's title plate with a pyramidal catalogue of Wren's works is pl. xix. The antiquary Richard Gough described the set as 'already become extremely scarce' (*British Topography*, 1 (London, 1780), 611). Several sets are known (E. Harris, op. cit. (n.14), pp. 503, 508).

44 SP105 in the old numbering (*Wren Soc.* 20); first published by Summerson (1990), Fig. 30. An old repair is pasted vertically through the westernmost choir bay, and a pilaster to the right of the transept window is damaged and laid down. The attached 'as built' fragments of the dome and peristyle, which Summerson calls 'a late state (c. 1710) of Kip's engraving of 1702–03' (whatever that might mean) are to a larger scale and from a later print not so far identified. Good impressions of the authorized plate [C] confirm that it began life as SP105. Besides the identity of so many details, there are still traces of the podium and gate-piers, and of the wider profile of the earlier peristyle.

45 Downes (1988), cat. 95. The All Souls drawing shows eight segmental-headed windows, in pairs, on the diagonals.

46 Summerson (1961), fig. A; Downes (1988), cats 87–88.

47 Downes (1988), fig. xix. When this is compared directly with the All Souls drawing it is difficult to say either that they are by the same hand or that one of them is not in Wren's hand.

48 Whitworth Art Gallery, University of Manchester, inv. D1926.363. Pen and brown ink and grey wash, 33.4 x 47.8 cm. I am grateful to Charles Nugent of the Whitworth for bringing to my attention this drawing, an exception in a large group of non-architectural drawings. It cannot be shown to have come from the Gardner Collection of London topography, which was broken up and sold piecemeal at Sotheby's in 1924.

49 The details of plinths and steps to the transept porticoes, which differ north and south because of ground levels, were not handled consistently in the reversal process. A south elevation follows naturally on the drawing board from a plan with north at the top of the paper. Printmakers were, of course, able if required to produce a reverse image that would print in the same sense as the original. Hawksmoor's perspective of St Mary-le-Bow (above, n. 42) is in the same sense as the print; that of the Monument is in reverse except for the bas-relief at the base of the column.

50 The discrepancy is too large to be the result of dimensional movement in the paper support.

51 For diagonal scales, which used to be found on the backs of better quality school rulers, see M. Hambly, *Drawing Instruments 1580–1980* (London 1988), pp. 115–16. This is what Pratt means by 'the divisions made upon the brass rule of 200 parts to one inch'. He mentions (referring to Scamozzi) the use of ready-made paper scales, but his own method of making a scale is as follows: 'Take an exact measure of the whole length of the paper between those two perpendiculars which are at the ends of it, and having found out the number of inches in it etc. set them in figures and multiply them by 200 according to the divisions made upon the brass rule of 200 parts to one inch, then divide that whole number so multiplied by the number of feet etc. intended by you, and the quotient will give you most exactly that part which is so to divide the whole length aforesaid, which part being afterwards most diligently taken off by a compass from the rule and reiteratedly set upon a line for that purpose till the whole be divided by it, the work is done.' (R. T. Gunther, *The Architecture of Sir Roger Pratt* (Oxford, 1928), p. 21).

52 It is impossible to see how this was done; only a few significant points were marked with a stylus. Variable proportional compasses were available; for one in a set of instruments made for Roger North about 1680 see Hambly, *Drawing Instruments*, pl. 150.

53 In the print and the Whitworth drawing these are tall ovals, in the All Souls drawing they are conical.

54 The shading in Emmett's pirated south elevation is reversed from that in the authorized north elevation.

55 Summerson (1990), p. 34 n. 4; *Wren Soc.* 14, pl. xxxii.

56 BM Crace xix. 161 (*Wren Soc.* 14, pl. xxxix, mislocated in caption). The deficiency of the *Synopsis*, as already mentioned, in respect of elevations of St Paul's as completed, together with the fact that Hulsbergh engraved a new plan, suggests that the original plates [A]–[C] were either lost or unsuitable for alteration. The authorized plates were kept with great care in the early years; green baize bags were made for them in Sept. 1703 (*Wren Soc.* 15, p. 98). Lot 44 of the Wren sale on 5 April 1749, 'Fourteen Copper Plates of Antiquity, Architecture etc.' was bought, according to one marked copy, by Stuck or Stack for £2.3s. and at this price may well have been actual plates. Dr William Stack FRS was also the buyer of the drawings now at All Souls, but no conclusions can be drawn. For the sale catalogues see *Wren Soc.* 20, pp. 78–80 and D. Watkin, *Sale Catalogues of Libraries of Eminent Persons. 4, Architects* (London, 1972), pp. 41–43.

57 BM Crace xix.162 is a good impression. The Guildhall also has both this and the skylless state signed by Hulsbergh.

58 Harris, op. cit. (n. 14), p. 227, cat. 310.

59 Some of the prints at St Paul's, if ever part of this collection, had become detached from it before the Wren Society catalogue was made in 1924–25. SP105 and 106 had been framed by 1950 when they formed part of an exhibition in the Trophy Room (cat. nos. 57 and 114, both as 'Engravings of dome studies. North elevation').

The provenance of the St Paul's drawings is now complete. Downes (1988), p. 11 traces them as far back as John Grover; as noted by P. Jeffery, *Architectural History*, 35 (1992), p. 133 n. 3, Grover was undoubtedly a buyer at the Wren sale in 1749, although details of buyers in the Bodleian and Soane Museum copies of the catalogue (above, n. 55) are at variance. It is not known when the drawings were arbitrarily mounted in two volumes (now dismantled) but it was in bound form that Somers Clarke (Consultant to the Fabric 1897–1906) found them in the Dean's Vestry and had them transferred to the Library (*Wren Soc.* 3, p. 3).

60 *RIBA Journal*, ser. 3, 59 (1952), 126–29.

61 Downes (1959), p. 24 n. 31; the revised note in the 2nd (1979) edition gives an accurate summary of the true case.

62 All Souls II.22.

63 All Souls II.47; *Wren Soc.* 9, pl. 23.

64 Summerson, *Architecture in Britain 1530–1830* (London, 1953), p. 141.

65 *ibid.*, pls 81A, 84A; pp. 139–40, 141. In the latest edition (New Haven and London, 1993), p. 213, the date 1683 is firmly stated and the matter of proof prints is further confused.

66 See Downes (1988), pp. 30–33.

67 note 61 above.

68 M. Whinney and O. Millar, *English art 1625–1714* (Oxford, 1957), p. 211 n. 1.

69 Summerson (1961), p. 88 n. 17.

70 Downes (1988), cat. 11–46 *passim*.

71 Letter to the present writer, paraphrasing one to Summerson, 8 March 1961. For Webb's representation of the Banqueting House see *Walpole Soc.* 31 (1946), pls XVIII(b), XXI, XXII. Wren did the same in his 1698 Whitehall drawings (*Wren Soc.* 5, pl. v).

72 K. Downes, *English Baroque Architecture* (London 1966), pp. 28–30.

73 K. Downes, *Christopher Wren* (London, 1971), p. 167. In fact, Hooke was also considering St Peter's in 1675 (*Diary*, 1 July 1675, 10 June 1677).

74 Fritz Saxl, 'The History of Warburg's Library', in E. H. Gombrich, *Aby Warburg, an Intellectual Biography* (London, 1970), p. 327.

75 The shock of this revelation led me to imagine in retrospect that in the first and second editions there had been a footnote to this effect, but that was not so.

76 Downes (1988), cats 63–72.

77 *Wren Soc.* 13, pp. 137–46.

78 *ibid.* 16, p. 15. In all the engravings discussed the upper order is shown as Corinthian, which implies descent from drawings made before the start of building.

79 Lest this should appear to impose a modern spatial conception on a seventeenth-century architect, there is the example of Leonardo da Vinci's bird's-eye view of a centralized church in which he draws a transparent plane between the first and second storeys and notes that 'this edifice would also do well if executed from the line a b c d upwards [questo edificio anchora starebbe bene affarlo dalla linja a. b. c. d. insù]' (A. E. Popham, *The Drawings of Leonardo da Vinci* (London, 1946), pl. 312).

80 Downes (1988), cats 86–91, 93, 95–100.

81 The same contract quoted by Summerson (above, n. 69); *Wren Soc.* 16, p. 9. The completed work of Marshall and Strong was measured and accounted in the works book for March 1676/7, and no masonry would have been set over the preceding winter months (*Wren Soc.* 13, pp. 86–89).

82 Summerson (1990), p. 36.

83 Jean Marot's engraved elevation of the Invalides was published in Lejeune de Boullencourt (Boullencourt, Boullancourt), *Description générale de l'Hôtel Royal des Invalides*, Paris, 1683; the plate was engraved before Marot's death on 15 December 1679 (R. W. Berger, 'Wren and the Invalides' (letter), *Burlington Magazine*, 132 (1990), 573). The identification and date appear in A. Mauban, *Jean Marot, architecte et graveur parisien* (Paris, 1944), pp. 116–19, 225–26; P. du Colombier, *Saint-Louis-des-Invalides* (Paris, 1946), and thereafter in F. Saxl and R. Wittkower, *British Art and the Mediterranean* (London, 1948), §46 and P. Reuterswärd, *The Two Churches of the Hôtel des Invalides* (Stockholm, 1965), p. 71.

84 Whinney and Millar, op. cit. (in n. 68), p. 217 n. 1.

85 Another possibility in theory is a resemblance that is no more than generic. There are only so many ways in which, for example, the Madonna can hold up the Christ Child.

86 See below, Section 7 and notes 95–96.

- 87 Best reproduced in A. Braham and P. Smith, *François Mansart* (London, 1973), esp. pl. 457. The rhythm of two deep and one shallow piers occurs in one half of the plan on that sheet. The Bourbon Chapel is not mentioned by Summerson (1990), even in order to reject it, though the case is stated clearly in Downes (1988), p. 116.
- 88 Not mentioned by Summerson (1990) although it would have supported his case.
- 89 Braham and Smith, *Mansart*, pl. 454.
- 90 *ibid.*, pls 285 (pointed out by Reuterswärd, *op. cit.* (n. 83), pp. 72–73), 446.
- 91 Downes (1988), cat. 88, 98.
- 92 How this works is shown in P. Bourget and G. Cattai, *Jules Hardouin Mansart* (Paris, 1960), pls XXXIII and CXLVI, and B. Jestaz, *L'Hôtel et l'église des Invalides* (Paris, 1990), Fig. 62.
- 93 Bourget and Cattai, pl. CXXXV; A. Laprade, *François d'Orbay* (Paris, 1960), pl. IX.8D.
- 94 Report on Salisbury Cathedral (*Wren Soc.* 11, p. 21).
- 95 Wren's letter from Paris (*Parentalia*, p. 262).
- 96 Report to the Commission, May 1666 (*Wren Soc.* 13, p. 17).
- 97 Downes (1988), cat. 90.
- 98 Braham and Smith, *Mansart*, pls 175, 180, 182.
- 99 Greek Cross, All Souls II.23 (Downes (1988), fig. vi). Hulsbergh's engraved section of the Great Model (*Wren Soc.* 14, pl. ii) shows a similar arrangement; in the model itself the eye is now covered by a wooden disc which is of some age. William L. MacDonal earlier came to the conclusion that the elder Mansart was the source (*Macmillan Encyclopedia of Architects* (New York, 1982), II, 311 s.v. 'Hardouin Mansart').
- 100 Brown ink and grey wash, 570 x 437 mm. Scale 16 ft 8 ins to 1 inch.
- 101 BM 1848-8-5-1/4; *Catalogue of British Drawings*, 1 (1960), pl. 119.
- 102 Downes (1988), cat. 140, 148.
- 103 At least they did before an old tear and repair misaligned parts of the drawing. The semicircle is too faint to reproduce.