IMAGINING OTHER WORLDS

Explorations in Astronomy and Culture

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Sir Christopher Wren: Architect-Astronomer

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Abstract: Sir Christopher Wren is better known in many circles as an architect rather than an astronomer, having designed St Paul's Cathedral and another fifty-one churches in London following the Great Fire of London in 1666. However, from the time of his appointment as Gresham Professor of Astronomy in 1657 at the age of 25, his proficiency in science and astronomy was evident. This paper will aim to bridge the gap between these two major aspects of Wren's career by focussing on the astronomical elements that he transferred over to his later architectural career, looking in particular at the astronomical symbolism and significance of St Paul's Cathedral and other selected Wren buildings in London.

A contemporary, Robert Hooke, wrote of Sir Christopher Wren that '*Since the time of Archimedes there scarce ever met in one man in so great perfection such a mechanical hand and so philosophical mind*'.[1] As a visionary – yet with a practical bent for physics and engineering – Wren is best known perhaps as the architect of St Paul's Cathedral in the City of London (Fig. 21.1). But during his long life (1632–1723) he was also responsible for a very large number of other architectural designs, as well as for having a notable career as Professor of Astronomy, firstly at Gresham College London (1657–60), and subsequently as Savilian Chair of Astronomy at Oxford. As well as being such a renowned architect, Wren should be remembered as a leading scientist of his age, and instrumental in the founding of the Royal Society and Royal Observatory.

In fact, had Wren died young, as it were, instead of reaching the age of ninety, he would doubtless have been remembered as a great astronomer, geometer and mathematician, regardless of his architectural work. A great deal has been written about Wren as an architect but clearly he would need to have known a great deal about mathematics to enable his great edifices, such as St Paul's, to stand. This paper aims to bring these two aspects together and, in the light of the theme of the INSAP conferences, to consider how his earlier scientific career informed his later astronomical work and whether 'astronomical phenomena' inspired some of his greatest architectural works, such as St Paul's Cathedral, The Monument, the Royal Observatory and other of his City churches.

Wren's prowess as astronomer was first recognised in his appointment as Gresham Professor of Astronomy (the oldest Chair of astronomy in Europe), so the

[1] Robert Hooke, *Micrographia* (London, 1665).

Figure 21.1. Johan Clostermans, *Sir Christopher Wren*, ca. 1690. Photo: Wikimedia Commons.

context of Gresham College is highly significant. Space does not allow extensive discussion of the significance and importance of Gresham College in London since the sixteenth century, but Wren's involvement with the College as the hub of intellectual development in London at the time clearly had a profound effect in the early stages of his career.[2]

Wren's background and early life are also significant for an understanding of these dual aspects of his career. His father was Rector at East Knoyle in Wiltshire until he became Dean at Windsor, where the young Christopher would have been immersed in contemporary theology and the workings of the liturgy, as well as befriending members of the Royal family, namely King Charles I and his young sons (subsequently to become Charles II and James II). Whilst still at school, the young Wren

[2] The first Professor of Astronomy in England was appointed at Gresham College in 1596, predating the Chairs in astronomy at Oxford and Cambridge by more than twenty years. An unbroken line of Gresham Professors of Astronomy has continued to the present day and the collective contribution of Gresham Professors to the study of astronomy is immense. Briefly, Sir Thomas Gresham (1519–79) was a financier, merchant and philanthropist who served as Royal Agent for Henry VIII, Edward VI, Mary and Elizabeth I in Antwerp, Flanders, and Spain. Trading and negotiating loans, he saved the monarchy from bankruptcy, formulated 'Gresham's Law', acquired vast estates in London and Norfolk and built (and owned) the 'Royal' Exchange, forerunner of the modern Stock Exchange. Sir Thomas's son died in 1564, so he left his vast fortune in Trust to found a College with Professors in Divinity, Astronomy, Musick, Geometry, Law, Physick and Rhetorick. The College has continued to provide free public lectures to the public for over four hundred years, presenting and recording lectures in a wide range of subjects, and making them available worldwide via the internet (www.gresham.ac.uk).

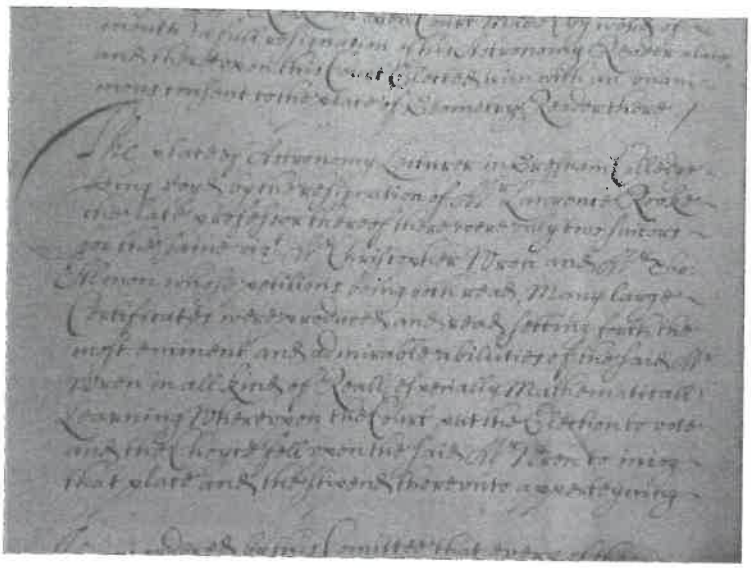

Figure 21.2. The Joint Grand Gresham Committee, appointment of Mr Christopher Wren. Photo: Valerie Shrimplin.

made models of the moon and solar system. He then studied at Oxford, becoming a Fellow of All Souls and, at this time, pursuing some early observational work and theories of terrestrial magnetism, as well as searching for a method to calculate longitude. He also carried out medical experiments on blood circulation and transfusion. He was familiar with the classics, especially Vitruvius, who significantly specified in his *Ten Books on Architecture* that it is essential for all architects to 'be acquainted with astronomy and the theory of the heavens.'[3]

Wren was appointed Gresham Professor of Astronomy in 1657, yet Sir Thomas Gresham had endowed the Professorship of Astronomy much earlier, in 1575, at a time when the subject was not taught in any school or university in England, when its rudiments were almost unknown and when many of the leading figures of the age believed in astrology. As well as his personal interest in astronomy (reflected in his coats of arms), Gresham's idea seems to have been based on his aim to ensure a practical approach to academic study, emphasising the functional rather than theoretical use of subjects like astronomy, used so much in navigation at the time. The minute books of the Joint Grand Gresham Committee have survived since the sixteenth century and record the appointment of 'Mr' Christopher Wren (Fig. 21.2).

[3] Vitruvius, *The Ten Books on Architecture*, trans. M. H. Morgan (New York: Dover, 1960), p. 6. Knowledge of astronomy is particularly significant architecturally in the history of the construction, development and symbolism of the dome.

Duties were specified: '... to read the principles of the sphere and the theories of the planets... to explain the use of common instruments for the capacity of mariners... to use by reading the area of navigation'.

Considerable detail is known about Wren's time at Gresham College. From 1657–1660 he lectured (on Wednesdays) on telescopes, the Moon, Saturn and the Satellites of Jupiter. He was interested in the prediction of solar eclipses and also worked on astronomy as an aid to navigation, including the search for a means of calculating longitude. Optics, meteorology and mechanics were of interest at this time as he worked with other notables at the College including Robert Boyle and Robert Hooke. Wren was said to have influenced Newton's *Mathematica Principia* by disputing Hooke's explanation of motion round the sun; the transcript of Wren's inaugural Gresham lecture, 1657 ('*Oratio inauguralis, habita Londini in collegio Greshamensi per Christophorum Wren, astronomiae professorem electum, ann. 1657, aetatis suae 25*') survives. The lecture contains extensive classical references and an emphasis is laid (as Gresham would have wished) on astronomy for practical purposes such as navigation ('*Astronomia navigantium tutelam puma suscepit*'), with references to Christopher Columbus and circumnavigation, as well as Copernicus, Galileo and Kepler's elliptical orbits.

Perhaps even more important than his work as Professor of Astronomy was Wren's role in the foundation of a 'College for the Promoting of Physico-Mathematical Experimental Learning', which took place following one of Wren's own lectures at Gresham College on a damp November evening in 1660 when Wren, Hooke, Boyle and others set up a society, later named as the Royal Society by decree of Charles II in 1662. Wren undoubtedly played a major role in the early life of the Royal Society since his wide expertise in so many different subject areas helped the exchange of ideas between colleagues. The Royal Society is the oldest scientific academy in continuous existence, and has led to some of the most fundamental and significant discoveries in the history of science. As a fellowship of the world's most eminent scientists in all areas of science, engineering and medicine, it continues 'to recognise, promote, and support excellence in science and encourage the development and use of science for the benefit of humanity' and has led to whole new branches of science, with profound theories on atoms, evolution, gravity and motion. The importance of its foundation at Gresham College, 'the focus of scientific life in the capital', should not be underestimated and until very late in his life Wren acknowledged and supported the College.[4]

[4] Michael Hoskin, *Cambridge Concise History of Astronomy* (Cambridge: University of Cambridge Press, 1999), p. 132.

In 1661 Wren was appointed Savilian Professor and moved to Oxford, where he was largely based until 1668, although he did make frequent trips to London to attend the Royal Society (then lodged in a corner of Gresham College). Wren's scientific achievements are recorded in some detail at the Royal Society, his work ranging from astronomy, optics, the problem of finding longitude at sea, cosmology, mechanics, microscopy, surveying, medicine and meteorology.[5] Wren continued his work with the Royal Society during this period, but it was around this time that he began to turn his attention to architecture. His scientific interests seem to have gradually waned as his architectural and official duties absorbed more time. A turning point seems to have come in 1665 when Wren's interest in architecture increased dramatically as a result of a visit to Paris where he met Bernini (architect and sculptor famous for his contribution to St Peter's in Rome) and saw his designs, as well as the architectural projects and rebuilding promoted by the 'Sun King', Louis XIV. Strongly influenced by the French and Italian baroque styles, Pevsner often quipped that this resulted in the beginning of an English 'Wrenaissance'.

Wren's first major architectural design was a chapel at Pembroke College, Cambridge, commissioned in 1665 by his uncle, the Bishop of Ely. Around the same time he worked on a design for the Sheldonian Theatre, Oxford, completed in 1668 and demonstrating real mathematical research. This was Wren's first attempt to design a dome, for which he had studied drawings of Michelangelo's great dome at St Peter's in Rome and also developed his study of engineering. At a time when architecture was considered to be a part-time interest for wealthy and educated gentlemen, Wren was one of the few architects to have a sound knowledge of the structure of buildings. Architecture, with its technical challenges and delivery of both functional and imposing spaces, enabled Wren to show off his architectural talent, and the Restoration of the monarchy in 1660 brought increased opportunities to those who, as mentioned above, had previously known and been loyal to Charles I and his family. The family's Royalist sympathies had caused difficulties under the primacy of Oliver Cromwell but caused Wren to experience special favour when the Civil War and Commonwealth came to an end with the Restoration of Charles II in 1660.

Apart from St Paul's Cathedral, Sir Christopher Wren was responsible for a wide range of architectural projects (many by Royal patronage), including fifty-one other 'Wren' churches in London replacing those destroyed by the Great Fire of London 1666: The Sheldonian, 1668; The Monument, 1671–76; the Royal Observatory

[5] Wren presented a coded manuscript outlining possible longitude methods to the Royal Society in November 1714 – the year the first Longitude Act offered a £20,000 reward for a solution. See Lisa Jardine, *On a Grander Scale* (London: HarperCollins, 2002), p. 460.

Greenwich, 1675–76; the Library at Trinity College Cambridge, 1676–84; Chelsea Hospital, 1682–92; Kensington Palace, 1689–96; South front of Hampton Court Palace, 1689–1700; and the Winchester Palace designs, modelled on Versailles. However, it was really St Paul's (built 1675–1711) that dominated his architectural work.

At the same time as Bernini and Borromini were changing the face of Rome, the rebuilding of London was also taking place, since the redesign of St Paul's Cathedral had already been underway before the Great Fire of London in 1666 made total rebuilding necessary. Sir Christopher Wren had already been consulted about St Paul's, which was in danger of collapsing, and proposed replacing the tower by a dome according to his designs of 27 August 1666. By chance, the Great Fire of London was to start just a few days later on 2 September 1666, resulting in the vast majority of the buildings of the City of London being burned to the ground during the four days that the fire raged until 5 September (Wren was in Oxford at the time...). While it had first been decided to improve the medieval cathedral with a tower and spire, Wren now opted for a domed structure. This may well have been influenced by Wren's knowledge of the late sixteenth-century architecture of Palladio (such as the Villa Rotunda) or by his contact with Bernini in Paris in 1665–66 (suggesting an emulation of St Peter's). But it could also be the result of his astronomical knowledge relating to the celestial and cosmic implications of large, especially domed, structures. Although the concept of the flat earth covered by the dome of heaven had been superseded and no educated person (let alone a professor of astronomy) seriously believed the earth to be flat, the idea of the earth covered by the dome of heaven still persisted in theological thinking and was reflected in architecture. The celestial implications appear to have acted as an inspiration for the final design of the dome of St Paul's (1675), which can hardly be doubted by anyone able to visit the Cathedral and experience its 'cosmic' proportions. The later nineteenth-century mosaic decoration of the creation cycle demonstrates how securely this cosmic aspect was felt by succeeding generations. Bearing in mind that Wren was first a mathematician and astronomer and afterwards an architect, and that he was also the architect for the Greenwich Observatory, lying on the prime meridian, the astronomical implications seem clear. Domed architecture continued to be reserved for schemes of special significance.

The first plans, 27 August 1666 (pre-dating the Great Fire) made provision for the correction of the dangerous bulging of the walls and the addition of a dome. But after the Fire (2–5 September 1666) Wren was given a rare chance to redesign a major Church and the capital city that surrounded it. Invited then to dismantle and rebuild, rather than to restore the great Church under the 1667 Rebuilding Act, Wren's initial design, called the 'First Model' (winter 1669–70), was not approved by

Figure 21.3. Christopher Wren, *The Great Model.* Photo: Wikimedia Commons.

the City Council. They thought it was insufficiently grand, so his Greek Cross design then followed (1671–72), eventually known as the 'Great Model' (1674) since a large model of his design was made in wood, six metres long (Fig. 21.3). This was also rejected, this time by the clergy who did not like its Greek-influenced plan. Wren was at first upset and then angry. His third design, called the 'Warrant Design', was for a Latin Cross plan with a relatively small dome surmounted by a spire, and this design was approved by Royal Warrant in 1675 (Fig. 21.4). However, Wren was determined to arrange things as he wished as building progressed, and it was significantly written in to the agreement that Wren was allowed 'to make variations... as from Time to Time he should see proper.' The finished work (Figs. 21.6 and 21.7) was a far cry from the approved 'Warrant' design as a result. The Foundation stone was laid on 21 June 1675, the cathedral opened and the first service held in 1697, with the dome completed in 1711 thirty-five years after the laying of the Foundation stone.

Domed architecture is traditionally linked with astronomy and cosmology, being imitative of natural eye observation of the earth covered by the dome of heaven, according to scriptural references. So there are various indications that, in addition to this basic concept, Sir Christopher Wren used his astronomical training and career to lay a basis for, and influence, his later architectural career, and his building of St Paul's exemplified this in several ways. Domed architecture was unknown in

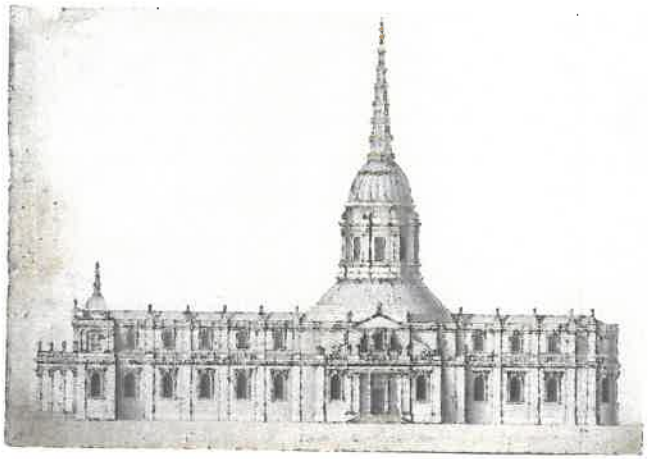

FIGURE 21.4. Christopher Wren, *The Warrant Design*. Photo: Wikimedia Commons.

England until this time and the continental influences on Wren can be traced, apart from his visit to Paris, to prints and drawings of other examples from Rome to Constantinople. St Paul's significantly measures 365 feet high to the top of the cross, and the South West Tower was known to operate as a scientific instrument for telescopic observations and for pendulum experiments. More significant, perhaps, is the question of the orientation of the new Cathedral, which was changed from the medieval building. Orientated to the East, as is normal in Christian places of worship, the medieval Cathedral lay on a true east-west axis. Wren's Cathedral was however rotated to lie circa 6 degrees north of due east (FIG. 21.5).

Various reasons have been put forward to explain why Wren should have made this change. All Wren's expertise as a mathematician had to be put to use as he had to devise immensely strong foundations on London's soft clay soil, based on the use of complex catenary arches, but this does not explain the change in orientation. It could, it has been argued, have simply been to fit the awkward shape of the site which was unsuitable for Wren's original grandiose scheme. Or perhaps Wren still had hopes of implementing his design for an entire new City for which a change in orientation of the Cathedral might be needed? Although the Warrant design was only finally approved on 19 May 1675 and the Foundation Stone laid on 21 June 1675, there is some evidence from the building accounts (April–September 1673) that scaffolding for a domed design was already being set up in 1673, and also that in May-September 1674 there was some evidence of staking out of the building. The Greek Cross design, known as the Great Model design, would have been the chosen option at that time, although later abandoned for the Warrant design. So the argument that

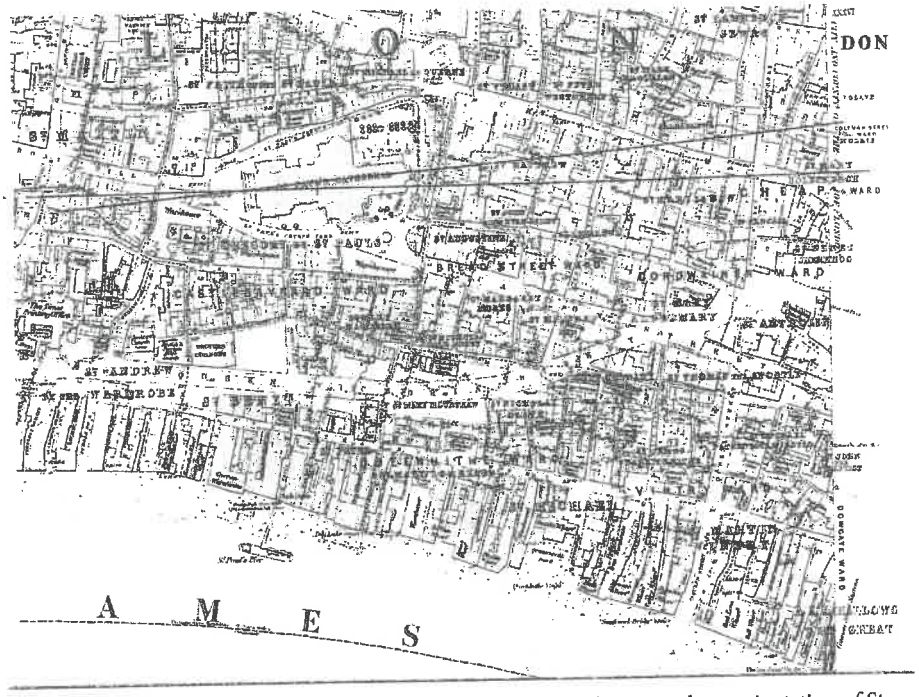

Figure 21.5. Ordnance Survey Map of London, 1890, overdrawn to show orientation of St Paul's Cathedral. Photo: Valerie Shrimplin.

Figure 21.6 & Figure 21.7. Christopher Wren, St Paul's Cathedral: West façade (left) and Dome (right). Photos: Valerie Shrimplin.

the change in orientation was simply to fit the site, is based on the idea, as Schofield proposes (following Crayford), that it was the large symmetrical design that needed to be accommodated. However, given the authority accorded to Wren as early as 1667 by the Re-building Act, and the fact of the destruction of surrounding areas, it is here argued that this simple explanation seems unlikely. More importantly, with a tradition of orienting Christian Church buildings to the east, and with Wren's well known prowess as an astronomer, it is argued that the reason for the change had an astronomical basis. Whilst recent work has shown that the notion of the orientation of Christian buildings to the direction of sunrise on the Saint's Day of the dedication of the church is less likely than previously thought, the idea was supported in the late seventeenth century. Hence, the orientation of a major building such as St Paul's by the Astronomer-Architect Wren, must surely have had significance.[6]

The answer seems to lie in looking at when sunrise was 6 degrees north of due east in the years 1673–75, assuming an unobscured horizon – which would be reasonable given that most of the City had burned down. It clearly was not the precise orientation on the Saint's Day of the church, since the saint's day for St Paul falls on 25 January when sunrise would be south of east for the latitude of London. Nor would it likely have been related to the day chosen for the laying of the Foundation Day (21 June 1675) because at the time of the summer solstice sunrise would, at the latitude of London, be around 50 degrees (and as mentioned, some laying out had already started in 1673).

The current Table of the Declination of the Sun Mean Value for the Four Years of a Leap-Year Cycle, giving a positive sign (+) where the sun lies north of the Celestial Equator, and a negative sign (-) where the sun lies south of Celestial Equator should be considered at this point.[7] An orientation of circa 6 degrees north of east yields a declination of ca. 3.5, that is, for 31 March. This would have been eleven days earlier in 1673 (since the Julian, not the Gregorian, Calendar was used in England until

[6] For new work on the orientation of Christian churches see Peter G. Hoare, 'Orientation of English Medieval Parish Churches', in *The Handbook of Archaeoastronomy and Ethnoastronomy*, ed. Clive L. N. Ruggles (New York: Springer, 2015) , pp. 1711–18; and Stephen C. McCluskey, 'Orientation of Christian Churches', in Ruggles, ed., *The Handbook of Archaeoastronomy and Ethnoastronomy*, pp. 1703–10. However, McCluskey does point out (p. 1708) that the notion was popular and widely believed in the late seventeenth century, as cited by Wren's contemporaries and fellow members of the Royal Society, John Aubrey ('Customs and Manners of the English', 1678), Silas Taylor and Robert Plot. I am grateful to the anonymous referee for drawing the volume to my attention.

[7] https://www.starpath.com/blog_files/Table%20of%20the%20Declination%20of%20the%20Sun.pdf [accessed 26 September 2016].

Figure 21.8. Christopher Wren, St Paul's, West Tower. Photo: Valerie Shrimplin.

1752).[8] This indicates a likely actual date of 21 March, which indicates the Vernal Equinox, also a likely symbol of rebirth appropriate to the building (by a trained astronomer) of the most important ecclesiastical edifice in the country – which furthermore was quite literally rising from the ashes. The idea of the orientation being changed to fit with the vernal (spring) equinox also seems even more appropriate when it is considered that Easter sunrise occurred on 2 April in 1673. It also fits in with the idea of choosing the summer solstice for the laying of the Foundation Stone. These seem to be far more plausible reasons for the change in orientation than simply a way of fitting a building onto an awkward site. Wren appears to have chosen the calendrical dates over the empirical observable dates for the vernal equinox and summer solstice. Because of the shift in the Julian calendar by 1673 (as mentioned), the calendar was off by eleven days which means that the calendar marked 21 March (the Spring equinox) eleven days after the empirical observable equinox. The orientation to the calendrical date instead of the empirical one was certainly a careful and

[8] Assistance from Dr Fabio Silva, UCL Archaeology and UWTSD, for advice on, access to and use of declination tables is gratefully acknowledged (personal communications October 2014 and June 2015).

considerate choice by Wren, implying perhaps an opposition to the new calendar.

As mentioned, the South West Tower of St Paul's was also used for scientific and astronomical work (Fig. 21.8), demonstrating again how Wren's astronomical career influenced and went over into his later architectural one. The South West Tower was very different, standing out as having a suite of separate rooms, together with an aperture, probably used for observational experiments, since it was known that the building would take many years and problems like stellar parallax could be investigated with such a great height involved. Pendulum experiments were also said to have been carried out and Ward (in his *Lives of the Gresham Professors*, written soon after in 1740) also speaks of a planned telescope on the south side between the nave and transept. The minutes of the Royal Society, February 1704, record that 'Sir Christopher Wren proposed that the Telescope given by Mr Huygens to the Society should be set up in [St] Paul's and astronomical observations made' – providing substantial evidence of the interaction between Wren's astronomical and architectural careers.

The Great Fire devastated the City of London with the loss of eighty-six parish churches, as well as St Paul's. The replacement churches by Sir Christopher Wren similarly, but perhaps to a lesser extent than St Paul's, also reflect his earlier interests in astronomy in their overall designs, for which Wren was responsible, rather than in close supervision and detail – Wren was clearly above such niceties as details of stars on finials and so on. Twenty-three of the original fifty-one other Wren Churches in the city of London survive and are in use, the other 28 having been destroyed (many of them during the bombings of the Second World War) or having been very much rebuilt. In comparison with St Paul's, the other fifty-one parish churches for which Wren was appointed to oversee the construction have been somewhat overlooked. This resulted in a unique set of contemporary churches, even though some have not survived. Working with Robert Hooke (also a Gresham Professor) and Nicholas Hawksmoor, Wren also made use of the famous wood carver, Grinling Gibbons. Not all are masterpieces, like St Stephen Walbrook or St Brides, but they all have merit and several show astronomical features. For example, St Michael Cornhill has a vaulted ceiling with star features in the glass roundels in the south aisle. The ceiling is now painted blue which no doubt reflects the contemporary idea, alluded to above, of the vault as a symbol or reflection of the heavens. St Mary at Hill features a dome with an aperture to let in the sunlight, whilst a star is featured in the roundel situated above the altar. St Mary Abchurch unusually consists of a 40-foot dome supported only by brick walls with the heavens (painted by Thornhill in 1708) significantly depicted on the dome. Wren had more control and input into St Stephen Walbrook (Fig. 21.9), since it was his own parish Church, nearby where he lived

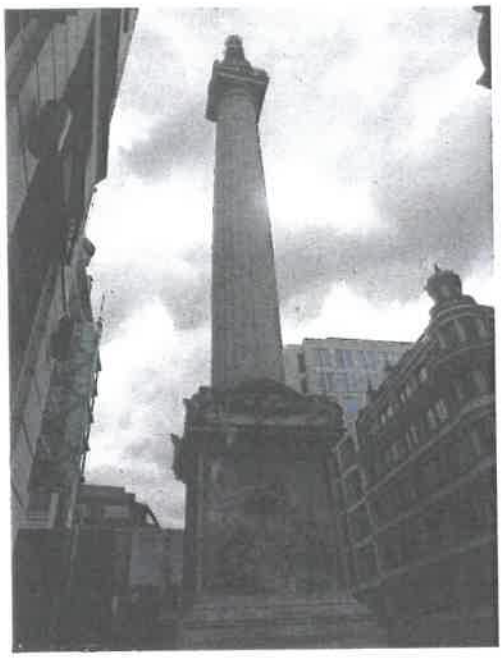

Figure 21.9. Christopher Wren, St Stephen Walbrook. Photo: Valerie Shrimplin.

at 15 Walbrook. The dome again reflects the heavens in a demonstration of light, weightlessness and illumination – achieved by the creation of the dome by the use of lath and plaster over a wooden frame, rather than stone.

Amongst the other surviving Wren churches, further examples, such as St Edmund King and Martyr, St Margaret Pattens, St Michael Paternoster, St Magnus the Martyr, St Mary le Bow and St Lawrence Jewry are built in the same tradition of airy, light weightlessness, with many having domes or vaulted ceilings. Even the flat ceiling of St Michael Paternoster continues to be painted blue.[9] Although rarely containing direct astronomical allusions, there is an overall feeling that Wren's scientific background was indeed carried over to his architectural work, other than in the purely practical aspects of the mathematics needed for the completion of such enterprises. On entering St Paul's Cathedral itself, it is clear that it is nothing if not cosmic – in scale, proportion and feeling.

[9] The other surviving churches are St Andrew by the Wardrobe, St Andrew's Holborn, St Anne and St Agnes, St Benet's Paul's Wharf, St Brides Fleet St, St Clement Eastcheap, St James Garlickhythe, St Martin within Ludgate, St Margaret Lothbury, St Mary Aldermary, St Nicholas Cole Abbey, St Peter upon Cornhill and St Vedast Foster Lane.

Turning to some of Wren's other works, The Monument, 1673–79 (Fig. 21.10) shows clear astronomical features. Built as a memorial to the Great Fire with the assistance of Robert Hooke, it was actually conceived as a telescope, with the idea of replacing the symbolic urn of ashes at the top with a lens made by Constantine Huygens. Over 200 feet (62 m) high, it was known to have been used for astronomical experiments, such as the attempt at detection of Stellar Parallax (for proof of the earth's orbit) and also gravity and pendulum experiments, with an underground laboratory beneath. Like St Paul's, it was both a national Monument and an over-sized scientific instrument.[10]

Other significantly astronomical works by Wren included the Royal Observatory (1675–76) where John Flamsteed, the first Astronomer Royal, lived until his death in 1719. Wren was amongst those who advised Charles II that an observatory was needed in order to undertake observational work and mapping of the sky. It seems to have been his suggestion to construct the observatory at Greenwich where there had been an important Royal palace and with good river transport and communication. Much may have been left to his Royal Society Colleague Robert Hooke and the builders themselves, but Wren was clearly a great influence and driving force. The project was supported by Charles II, with the idea that a detailed study of the moon and stars would assist with navigation at sea – a concept still very much in line with Sir Thomas Gresham's ideas about using astronomy for practical purposes. The use of telescopes and other scientific instruments would enable the recording of the moon's position relative to specific stars which would, in turn, enable navigators to set their positions and routes more accurately so as to avoid loss of life and trade. Wren was behind and supportive of this approach, demonstrating that he never forgot about astronomy in his later career, even when he later became immersed in other major Royal projects such as the Royal Hospital for soldiers at Chelsea, Christ Church Oxford, Kensington Palace, Hampton Court, and as Surveyor General for Repairs to Westminster Abbey.

In his later career, Wren was elected as Member of Parliament for Old Windsor, near where he had lived and grown up, in 1680, 1689 and 1690, but he did not take up his seat. He was President of the Royal Society (1681–83) and continued always to be active in scientific circles, serving on a range of committees and commissions relating to scientific, astronomical and even medical interests. He referred to astronomy as 'The trade I was once well acquainted with', acknowledging perhaps that his main interests had moved on, although he never dismissed it completely. He also never forgot Gresham College, as reflected in his continued links with Robert Hooke

[10] Jardine, *On a Grander Scale*, p. 318.

Figure 21.10. Sir Christopher Wren and Robert Hooke, The Monument, 1673-79. Photo: Valerie Shrimplin.

and his involvement in 1702 in plans to expand the Royal Society at Gresham College (still based, until 1768, in Gresham's mansion in Bishopsgate). A crater on Mercury, 'Wren', was named after him in honour of his astronomical work, but finally his greatest achievement can perhaps be considered as St Paul's Cathedral – of truly cosmic proportions. His memorial (and tomb) beneath the dome, record '*Lector, si monumentum requires, circumspice*' (Reader, if you seek his monument, look around you). St Paul's Cathedral has become a lasting national icon, its importance summed up by Sir Winston Churchill when it became threatened during that second period of great fire in London, the Blitz of 1940. Rather than seeing a further opportunity to rebuild, Churchill simply insisted, 'St Paul's must be saved at all costs'.