

Press Release

Research reveals genius of Wren's 'trial-and-error' approach to the dome of St Paul's

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Sir Christopher Wren wrestled with the design of the famous St Paul's dome even as it was being built, remodelling its profile countless times.

A two-year project led by the [Cathedral's Collections Department](#) and in association with [London Metropolitan Archives](#), gives new insights into Wren's working practices at St Paul's. Architectural historian Dr Gordon Higgott has written an [online catalogue](#) of the Cathedral's 226 drawings from Wren's office which shows how he continually revised his designs during construction.

- **The dome design was radically modified even as it was being built – something unconscionable in contemporary architectural practice.** He sloped the inner wall of the drum at the base of the dome just before work began above the crossing arches in 1696 and revised the upper part of the dome in 1702, by introducing a concealed brick cone to support a much larger stone lantern. Then he used stone and wooden models to revise the lantern when work was about to start in 1707.
- **Wren improvised by testing out parts of the design, including the dome, with small and full-sized models in timber, plaster and stone.**
- **Wren designed the Cathedral in stages between 1675 and 1710.** He relied on a contractual system that allowed him to leave detailed design-work until construction was about start in any given area. The most significant change was in 1685–87, when he added a two-storey western body behind the portico and raised full-height exterior 'screen walls' above the aisles.
- **The modus operandi of the Wren office has been revealed.** Wren himself was unrivalled in his time as an architectural draughtsman, but fewer than 20 of the drawings in the St Paul's Collection are entirely in his hand. Instead Wren guided his assistants in pencil and encouraged talent in the drawing office by allowing older, more experienced masons and draughtsmen to teach the new recruits.
- **The architect Nicholas Hawksmoor drew more of the surviving designs than anyone else.** We can now date changes to the design from the hands of draughtsmen, like Hawksmoor, who joined the office as an apprentice in about 1685. Another valued assistant was the French engraver, Simon Gribelin, who started at the same time and was highly skilled in line and wash drawings.

Dr Gordon Higgott said: "Wren had an extraordinary ability to express three-dimensional forms on paper purely through the use of line. His complete grasp of complex architectural relationships, and his natural talent for delegating design-work to assistants, enabled him to remodel the dome in a series of trial-and-error studies between 1685 and 1708."

Oliver Caroe, the Cathedral's current Surveyor to the Fabric (the title held by Wren himself) added: "Taken at face value, Sir Christopher Wren took risks which would be unconscionable in

architectural practice today. What Dr Higgott has demonstrated is that Wren was not only an exceptional master of the science and craft of architectural design, he also commanded almost complete control of the entire construction process. Thus the risks he encountered - and originated - were well matched by his extraordinary talents.”

St Paul’s is the only great cathedral of the early modern era to have been designed and completed by a single architect. It is also an exceptionally well-documented historic building. All the building accounts, contracts, and records of the Rebuilding Commission survive, along with about 290 original design drawings. It used to be thought that Wren designed the whole building up to the colonnade of the dome in 1675 and only made changes to the outer dome, lantern and western towers after about 1700. However, research on Wren’s office over the past decade has identified the hands of most of the draughtsmen working at St Paul’s and helped establish dates, or date-ranges, for almost every drawing.

Catherine Angerson, the Cathedral’s former Archivist, who project-managed the research, said: “It has been great to work with Dr Higgott and London Metropolitan Archives to make these amazing drawings available to the public online. They are the Cathedral Archive’s most important and requested architectural drawings and they should be used by scholars, students and anyone interested in how St Paul’s was designed and built.”

The research and catalogue have been made possible by generous sponsorship from the [Paul Mellon Centre for Studies in British Art](#), the [Friends of St Paul's Cathedral](#), the [Pilgrim Trust](#), the [Delmas Foundation](#), the [Headley Trust](#), the [Marc Fitch Fund](#) and the D’Oyly Carte Charitable Trust.

The Wren Office Drawings will be officially launched at a lecture by Dr Gordon Higgott at St Paul’s on Tuesday 5 March.

Explore the research at www.stpauls.co.uk/wren-office-drawings
Explore the full St Paul’s collections at www.stpauls.co.uk/the-collections
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