

Geometry as Libera(l)ting Art in Wren's St. Paul's Cathedral

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Following plague, fire and civil war, the building of the new St. Paul's Cathedral was intended to signal a restored/redeemed heart of the city, nation and world. To this monumental task, Christopher Wren brought his many talents and characteristics. Among these were his status as: 1) staunch royalist, 2) devout Christian, 3) scientist, 4) architect and 5) synthesist (*a la* Newton, Boyle and Kepler). Perhaps most important for this study, Wren brought his abilities as a geometer/mason to the job of designing this important edifice.

It is in the symbolic use of geometry as consistent with Wren's status as geometer/mason that this study will primarily look.

Wren inherited the use of *ad quadratum* (root 2 symmetries) and *ad triangulum* (root 3 symmetries) from the medieval master masons (who designed the original St. Paul's as well as scores of other buildings with which Wren would have been familiar). Of course, Renaissance treatise writers from the continent (Serlio, Cesariano, Alberti, Palladio, DiGiorgio, *et al.*) and his immediate predecessor in English architecture, Inigo Jones, also make note of these proportioning devices in the design of good buildings. It would seem consistent with both contemporary practice and precedent, that Wren would have made significant use of such ordering devices.

Except for a brave but flawed attempt by the historian Sekler to analyze the plan based on 'Serlio's Door Diagram,' there is no published geometric analysis of St. Paul's. In addition, there are no surviving drawings by Wren and his contemporaries which overtly display the 'mother' geometry for the cathedral. While inconvenient for the contemporary investigator, this circumstance is not surprising. As a mason, Wren would have been disposed to a certain amount of secrecy when it came to geometry. As a 17th century member of the English intelligentsia, an interest in the mystical dimension of the world would also have come naturally. Included in this intellectual community/context was the desire by many scientists and artists to rectify the differences between the traditional, symbolic ways of knowing and the new knowledge produced by the emerging scientific method. Kepler's harmony of the spheres, Newton and Boyle's intense interest in alchemy and various referencing to Hebraic, Pythagorean and Hermetic mysticism abound in Elizabethan (and following) literature, theatre and urban ritual. This general cultural milieu, Wren's own talents/interests, and the general desire for the design to satisfy a strong symbolic agenda, constitute conditions which would lead Wren to use such geometrical schemes in his design.

This author has studied Wren's original drawings and executed geometrical analyses of the definitive measured drawings (by Poley) of the building as well as earlier, unbuilt versions of the design.

Wren used a geometric scheme in the plan which produces both root 2 and root 3 symmetries. It is in the vertical dimension, however, that a more specific scheme seems to be at work. After many hours in the attempt to analyze the section and principal (west) elevation, this author could not find a consistent/comprehensive set of root 2, root 3, root 5 or phi symmetries. It was then that the attempt was made to overlay the 'sephirotic tree' of the Hebraic cabala which was known to Wren and his contemporaries (esp. some of those in the Royal Society) by way of the work of the Florentine platonist Ficino and various scholars/teachers from the continent. The cabala was especially attractive as a method by which a 'truer' more 'pure' form of Christianity might be formed. Since its roots were in Jewish lore, it was believed to provide a more direct access to a 'true' understanding of pre-papal Judeo-Christian religion.

The new temple (St. Paul's) was to act as the symbolic heart of a rebuilt London. In turn, London was to serve as the capital of a reformed (and more pure) Christian England with its recently restored monarch (head of church and state). Its role was nothing short of a rebuilding of the Temple of Solomon toward London becoming the New Jerusalem. The use of the cabalistic tree in the design seems consistent with these conditions and desires.

The analysis to be demonstrated will include the graphic evidence of the use of the 'tree' in the design of the section and elevation. While this application might, or might not, eventually prove true, the current study at least provokes the question of Wren's specific intentions.

It is this author's belief that Wren, like Kepler before him, was attempting the marriage of the symbolic with the empirical and the esoteric with the exoteric. The stone of the cathedral is its visible medium of expression. The geometry is its invisible meaning. As one of the seven 'liberal' arts, geometry is intended to provide (through the practice of the discipline) a 'liberation' and transcendence toward a heavenly (cosmic) order. This platonic belief was well known to Wren. It is contended here that he made good use of this principle. The evidence is embedded in the design of his cathedral and is accessible to us through a study of its geometric relationships.