ARCHITECTURE- WHO IS YOUR FAVOURITE ARCHITECT?

BRUNELLESCHI

By Edoardo Leone Giuliani de Santis IVB

The most amazing part of the mind of a genius is the mystery behind the thought it brings. The cupola of Santa Maria del Fiore, Florence was built by a man that understood this concept and assured that nobody in the future will be able to fully understand how it was built. In 1418, the plan of the dome that was to finally complete the building, was presented by Filippo Brunelleschi, (Fig.1) a Florentine goldsmith by using an egg to explain his design – a mysterious solution. He found a way to create the biggest dome in the Renaissance world, facing the problem of the impossibility of using wooden centering as the structure would collapse on itself due to the massive weight.

The objective of the majesty of the dome was to show the power of Florence over the other city states that composed the political scenery of the Italian peninsula, but also, as part of the story of humanity, to glorify Christianity, exactly as Romans did to show the power of their gods through their magnificent temples: a most famous example the Pantheon, with a monumental hemispherical dome that inspired Brunelleschi's Duomo design. The perfect circle could not be used for the Florentine dome as he had to build from the already completed octagonal drum. He had to use a pointed arch construction, perfect to lay on the irregular octagonal base and with a slender shape towards the sky to make it appear even higher. To get closer to the Pantheon shape the Byzantine onion domes of San Marco were rejected and Brunelleschi used the geometry of the *quinto acuto*, (Fig.2) which meant the cupola was almost hemispherical – as great as the ancients. Perhaps from studying the Pantheon's compression rings (Fig.3) Brunelleschi's dome was supported by nine sandstone rings that assured that the weight of the material would stop an outward thrust of the structure and collapse. (Fig.4) The rings perhaps even had a theological symbolism, representing the nine circles of Dante's heaven that composed the path to holiness. In this way Christianity was merged with architectural symbolism.

The last of Brunelleschi's brilliant engineering ideas to solve the problem of centering was to place the bricks in such way that they supported each other, using a Herringbone pattern. To assure the system worked all the bricks had to be placed with total precision and it is still unsure what method he used, but hypothetically he used cords to measure the distance from the center. Finally, to move the heavy materials so high Brunelleschi invented cranes and pulley systems that had never been seen before. (Fig.5)

Brunelleschi was one of the greatest architects in history, creating something considered unbuildable, he solved problems bringing together his genius mind, the knowledge of past architects, theology and literature and his ability to dream the "impossible". From 1436 the skyline of Florence has been immediately recognisable through the unique shape of Brunelleschi's dome, (Fig.6) which is, as Alberti wrote, "vast enough to cover the entire Tuscan population with its shadow".

APPENDIX IMAGES



Fig.1 Filippo Brunelleschi 1377 – 1446



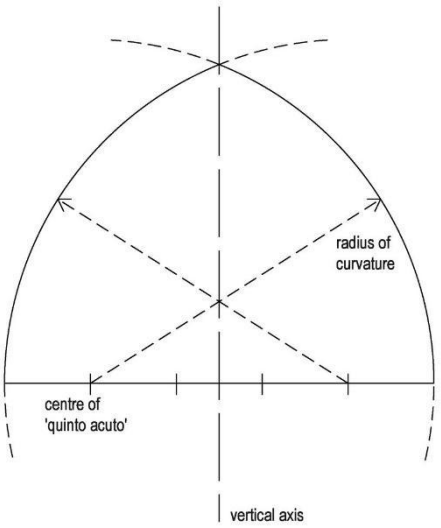


Fig.2 Cupola, Duomo, Florence 1418 – 1436 & Quinto Acuto



Fig.3 Pantheon Dome. Exterior, Compression Rings, 125 AD

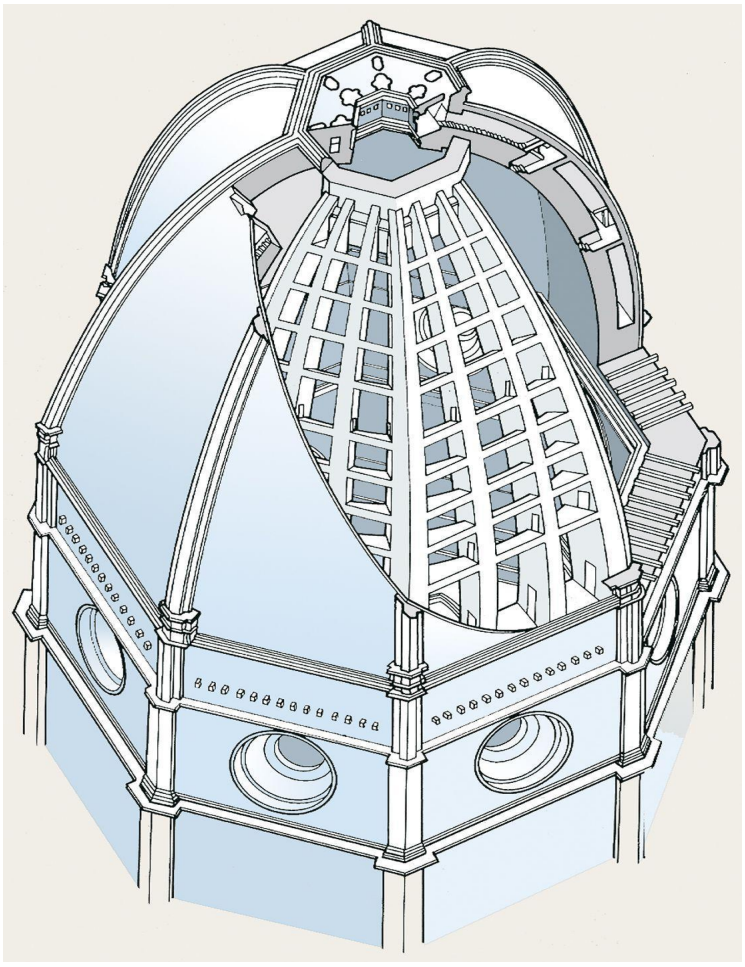


Fig.4 Dome Construction Double-Shell & Rings



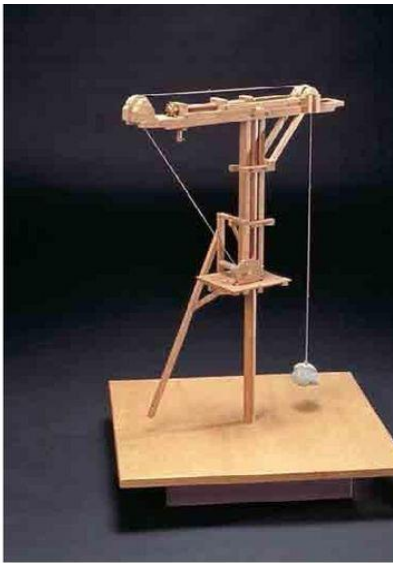


Fig.5 Cranes

Fig.6 View of Florence



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