Brunelleschi and the Dome of the Florentine Cathedral

The influence of the revival of antiquity during the Renaissance is perhaps most visible in the architecture of the period. Inspired by the classical ruins architects saw around them and a renewed interest in theory, architects incorporated classical features into existing buildings and constructed new structures wholly in the classical style with rounded arches, columns, and harmonious geometrical proportions. These features included rounded arches; columns with capitals of the classical orders of Ionic, Doric, and Corinthian; airy colonnades and arcades; and roundels. These features were all in perfect proportion to one another. In addition to studying ruins, in 1416 architects rediscovered the principles of classical architecture and design through Vitruvius’s *De Architectura*, written around 27 C. E. In 1480, the humanist, painter, and architect Leon Battista Alberti (1404-1472) composed a treatise based on Vitruvius’s *De Architectura*. The treatise was printed in Latin in 1486 and was quickly translated into several vernacular languages.

The Florentine Filippo Brunelleschi (1377-1446) pioneered the new, revived style in architecture. After losing the first competition to design the Baptistery doors of the cathedral in Florence in 1401-1402, Brunelleschi travelled to Rome with his friend Donatello. While there, Brunelleschi studied the ruins. In his attempt to reproduce on paper precisely what he saw, Brunelleschi discovered linear perspective. Brunelleschi believed that each part of a structure had to be mathematically proportional to all other parts of the structure, which was rendered in ratios of whole numbers. Symmetry and harmony—the hallmarks of classical architecture and the Renaissance’s revival of it—was created by geometrical proportion. Brunelleschi’s Ospedale degli Innocenti, a foundling hospital, was the first secular building in the Renaissance to be based exclusively on classical principles and design. Started in 1419 and finished in 1451 after Brunelleschi’s death, the façade of the hospital contains an arcade enclosed by rounded arches. Roundels with relief sculptures dotted the spaces between columns. The same roundels appear in Brunelleschi’s design for the Pazzi Chapel at the church of S. Croce in Florence, constructed in 1430. The chapel features a colonnade and airy porch approaching the entrance with the dome rising behind. Inside, Brunelleschi reproduced the arches of the colonnade and the Corinthian capitals of the columns with roundels adorning the spaces between capitals. Brunelleschi’s other designs included the sacristy for the church of S. Lorenzo in Florence, the entire church of S. Lorenzo, and the churches of Sto. Spirito and Sta. Maria degli Angeli. Brunelleschi’s most impressive feat was constructing the dome of Florence’s cathedral.

Built in 1296, the cathedral in Florence is Gothic in style. However, its dome is classical in style. In 1420, Brunelleschi won a competition to construct a cover for the massive structure. The task was a difficult one as Brunelleschi’s winning design proposed to enclose a space with a dome on a scale that had not been done since antiquity. Furthermore, he proposed to build a dome without the use of exterior scaffolding, a cost-cutting measure that appealed to the citizens who financed the project. Instead,
Brunelleschi’s plan consisted of assembling rings of bricks that would then be hoisted up to their appropriate height. Brunelleschi also designed the machine that executed construction of the dome. Brunelleschi placed the bricks in a herringbone pattern. The horizontal rings of bricks that were hoisted up were interspersed with rows of vertical bricks and with the vertical rows interlacing one another. As the dome grew taller, it reinforced itself. Moreover, the buttressing of the dome was invisible. Brunelleschi accomplished this by constructing two domes: one for the interior and one for the exterior. The two were connected by vertical arching ribs. Circular windows, proportional to the rectangles in which they were placed, lined the base of the dome to let in light. Mostly completed by 1436, the dome of the cathedral remains one of the most prominent features of the Florentine skyline. The dome represents the central place of geometrical harmony and the revival of ancient models in Renaissance architecture.