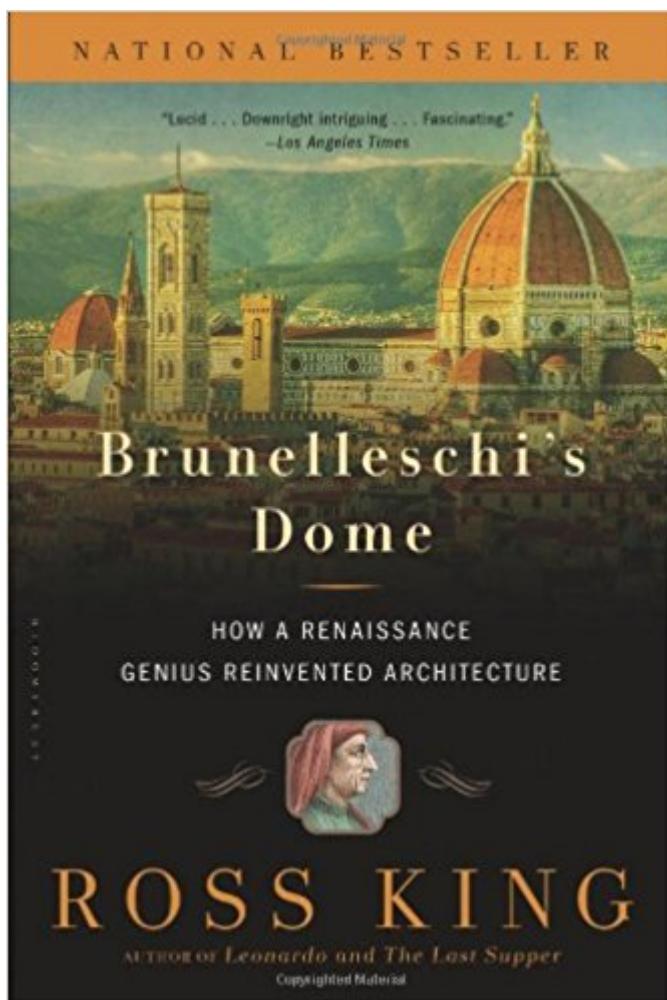


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# Brunelleschi's Dome: How A Renaissance Genius Reinvented Architecture



## Synopsis

On August 19, 1418, a competition concerning Florence's magnificent new cathedral, Santa Maria del Fiore--already under construction for more than a century--was announced: "Whoever desires to make any model or design for the vaulting of the main Dome....shall do so before the end of the month of September." The proposed dome was regarded far and wide as all but impossible to build: not only would it be enormous, but its original and sacrosanct design shunned the flying buttresses that supported cathedrals all over Europe. The dome would literally need to be erected over thin air. Of the many plans submitted, one stood out--a daring and unorthodox solution to vaulting what is still the largest dome (143 feet in diameter) in the world. It was offered not by a master mason or carpenter, but by a goldsmith and clockmaker named Filippo Brunelleschi, then forty-one, who would dedicate the next twenty-eight years to solving the puzzles of the dome's construction. In the process, he did nothing less than reinvent the field of architecture. Brunelleschi's Dome is the story of how a Renaissance genius bent men, materials, and the very forces of nature to build an architectural wonder we continue to marvel at today. Denounced at first as a madman, Brunelleschi was celebrated at the end as a genius. He engineered the perfect placement of brick and stone, built ingenious hoists and cranes (among some of the most renowned machines of the Renaissance) to carry an estimated 70 million pounds hundreds of feet into the air, and designed the workers' platforms and routines so carefully that only one man died during the decades of construction--all the while defying those who said the dome would surely collapse and his own personal obstacles that at times threatened to overwhelm him. This drama was played out amid plagues, wars, political feuds, and the intellectual ferment of Renaissance Florence--events Ross King weaves into the story to great effect, from Brunelleschi's bitter, ongoing rivalry with the sculptor Lorenzo Ghiberti to the near capture of Florence by the Duke of Milan. King also offers a wealth of fascinating detail that opens windows onto fifteenth-century life: the celebrated traditions of the brickmaker's art, the daily routine of the artisans laboring hundreds of feet above the ground as the dome grew ever higher, the problems of transportation, the power of the guilds. Even today, in an age of soaring skyscrapers, the cathedral dome of Santa Maria del Fiore retains a rare power to astonish. Ross King brings its creation to life in a fifteenth-century chronicle with twenty-first-century resonance.

## Book Information

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## Customer Reviews

Filippo Brunelleschi's design for the dome of the cathedral of Santa Maria del Fiore in Florence remains one of the most towering achievements of Renaissance architecture. Completed in 1436, the dome remains a remarkable feat of design and engineering. Its span of more than 140 feet exceeds St Paul's in London and St Peter's in Rome, and even outdoes the Capitol in Washington, D.C., making it the largest dome ever constructed using bricks and mortar. The story of its creation and its brilliant but "hot-tempered" creator is told in Ross King's delightful Brunelleschi's Dome. Both dome and architect offer King plenty of rich material. The story of the dome goes back to 1296, when work began on the cathedral, but it was only in 1420, when Brunelleschi won a competition over his bitter rival Lorenzo Ghiberti to design the daunting cupola, that work began in earnest. King weaves an engrossing tale from the political intrigue, personal jealousies, dramatic setbacks, and sheer inventive brilliance that led to the paranoid Filippo, "who was so proud of his inventions and so fearful of plagiarism," finally seeing his dome completed only months before his death. King argues that it was Brunelleschi's improvised brilliance in solving the problem of suspending the enormous cupola in bricks and mortar (painstakingly detailed with precise illustrations) that led him to "succeed in performing an engineering feat whose structural daring was without parallel." He tells a compelling, informed story, ranging from discussions of the construction of the bricks, mortar, and marble that made up the dome, to its subsequent use as a scientific instrument by the Florentine astronomer Paolo Toscanelli. --Jerry Brotton, .co.uk --This text refers to an out of print or unavailable edition of this title.

Walker was the hardcover publisher of Dava Sobel's sleeper smash, *Longitude*, and Mark Kurlansky's steady-seller *Cod: A Biography of the Fish that Changed the World*. This brief,

secondary source-based account is clearly aimed at the same lay science-cum-adventure readership. British novelist King (previously unpublished in the U.S.) compiles an elementary introduction to the story of how and why Renaissance Italian architect Filippo Brunelleschi (1377-1446) designed and oversaw the construction of the enormous dome of Florence's Santa Maria del Fiore cathedral. Designing its curves so that they needed no supporting framework during construction: a major Renaissance architectural innovation. Illustrated with 26 b&w period prints, the book contains 19 chapters, some very brief. Although the result is fast moving and accessible, King overdoes the simplicity to the point that the book appears unwittingly as if it was intended for young adults. (Donatello, Leonardo and Michelangelo, for example, "took a dim view of marriage and women.") This book feels miles away from its actual characters, lacking the kind of dramatic flourish that would bring it fully to life. Despite direct quotes from letters and period accounts, the "would have," "may have" and "must have" sentences pile up. Still, the focus on the dome, its attendant social and architectural problems, and the solutions improvised by Brunelleschi provide enough inherent tension to carry readers along. (Oct. 23) Copyright 2000 Reed Business Information, Inc.

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This is my second book by this author, and I was very happy to read the book. Having been fortunate to have visited Florence twice and having been to admire the incredible dome, this book was a terrific explanation of this Medieval wonder. King brings together the time and place of Florence in the Middle Ages. The feel of the times, and wonder of new developments we might see as pedestrian are brought to some semblance of life. The book isn't long at under 200 pages, but the ability to make the reader understand how this dome was conceived and built is terrific. I understood the architectural aspects, the structural engineering aspects and what this meant to Europe once it was completed. Worth reading and I look forward to reading King's other books.

See the review entitled "Brisk Narrative, Busted Contract" for clearer elucidation of my gripe with this book. If you are looking for the "story" of how the dome was built, and how Brunelleschi navigated the politics of Florence to get it done -- 5 stars. If you are trying to understand the architectural/structural brilliance of the dome -- you are better off reading the wikipedia article [http://en.wikipedia.org/wiki/Florence\\_Cathedral#Dome](http://en.wikipedia.org/wiki/Florence_Cathedral#Dome). The figures in the book are inadequate to provide understanding. Annotated pictures would have been worth tens of pages of descriptions. I was disappointed.

It was some contest. And some prize. The contest had come down to this: who among the architects could stand an egg on its end. The prize was designing what would become the signature architectural landmark of Florence, Italy--the octagonal Dome of Santa Maria del Fiore. The year was 1418. Such an undertaking would require more than mere artistic vision. It would require engineering techniques yet to be developed and something more: unshakeable optimism, for nothing like it had ever been done before. Indeed, few believed it could be done. The dome would have to begin at a height of 177 feet above the ground, span an opening of 138 feet, and rise to a height of 375 feet. To put it into perspective, the dome would rise from an opening 18 stories above the street, and top out at the equivalent of a 38-story building. Just getting building materials up to a height of an 18-story building to begin to begin the job would be a formidable undertaking in itself. How the dome was built is the subject of "Brunelleschi's Dome" by Ross King. It's a fascinating story, and well told. Below are a few of the details. Filippo Brunelleschi won the contest by challenging the other competing architects to make an egg stand on its end. After they all failed, he succeeded by pressing the blunt end down upon the table. When they answered that they could have done the same thing, he answered that they would make similar claims AFTER he had built his dome atop the cathedral. It was easy--when you knew how, and Brunelleschi knew how. Brunelleschi's plan called for two domes--one within the other. The inner dome was built first and like the frame of an automobile contained a series of horizontal and vertical supports that held everything together. The horizontal supports consisted of a series of sandstone and wood beams and iron chains that circled the dome like the hoops of a barrel, to keep the structure from spreading outward. Being an octagon, there were vertical supports at each of the eight corners, curving inward toward the center, with two additional vertical supports between each corner support, for a total of 24 vertical supports. Couple with the circular horizontal supports, the entire structure was a lattice work of cross members embedded within the brick-and-mortar walls. Center scaffolding is crucial in building arches and domes. Once center scaffolding is in place, rows of bricks are run up to the top of the scaffolding, and a keystone locks everything into place. Once the mortar sets, the scaffolding is taken down. Brunelleschi did not have this luxury, as there were not enough trees in all of Tuscany to build the necessary scaffolding to reach the heights that were presented. To get around it, he had the bricks laid in a herring-bone pattern that redirected the weight of the bricks against the vertical supports, instead of downward toward the ground. Once a row of bricks was locked into place and the cement had set, work proceeded on the next row, and continued like this, row upon row, upward and inward, the circle ever closing with each new row. There were a multitude of other problems to be overcome. For one, workman became increasingly fearful as the dome rose ever

higher and ever inward. With no visible means of support (and not understanding the law of compression), they believed the entire structure would collapse from its own weight and they would fall to their death. So they went on strike. When they finally returned (for less pay), a plague struck the city and work halted yet again. In all, it would take 16 years to build the dome. Yet another problem was getting bricks and large stones up 18 stories to the base of the dome. To lift 37,000 metric tons of material, including over four million bricks, Brunelleschi invented hoisting machines that were widely copied by others including Leonardo de Vinci. The hoist not only raised material, it had a swinging arm for moving material laterally. The most revolutionary aspect was a reversible gear. The reversible gear allowed loads to ascend and descend without the need of turning around the oxen team each time the direction was changed. Once the inner dome was completed, work proceeded on the outer dome. The outer dome carried the roof. Brunelleschi created a unique external covering system that consisted of tiles designed specially for easy assembly and maintenance. The vertical ribs seen at each of the dome's eight corners are not load-bearing and are more for aesthetics--to please the eye. Between the inner and outer domes is a cavity for stairs leading up to an observation platform at the summit of the dome. There are 463 steps that feel like 1000 when you reach the top. Making the climb and taking in the view is a must-do for visitors. Brunelleschi designed the cupola at the top of dome, but did not live to see its completion. He did live to see the dome itself completed, one of the greatest achievements of Renaissance architecture. The dome has survived hurricane winds, and several earthquakes. In a city brimming with breathtaking art and architecture, the Dome of Florence is the city's most prized possession, and proof that one man with vision can do whatever he sets his mind on doing. However arresting to behold, the Dome of Florence is nothing less than a monument to optimism. My one criticism of the book is with the illustrations. They are not well drawn, and in some cases not clear, such as the brick herringbone pattern used to build the dome: the illustration is small and difficult to figure out. I could figure it, without the illustration. Others may have trouble. For a book this well-researched and this well-written, this is inexcusable.

I had the opportunity to attend a talk by Mr. Ross a couple weeks ago and it was so interesting that I purchased this book a couple days later. I just finished it and it was excellent, though now I wish I would have known of it sooner so that I could have read it before my many trips to Florence. I was, of course, impressed with the beauty of the cathedral. But now, having learned more of its miraculous history and ingenious construction, I didn't appreciate it nearly enough. Anyone with even a hint of interest in architecture really should read this before a trip to Florence; it makes the

history come alive.

This book was Amazing, especially for Engineers! Not to say that you have to be an engineer to appreciate it, I am and did. I've always shied away from Historical fact books (usually I think they're dry and boring), though I do enjoy Historical fiction. This however did an absolutely amazing job of telling the historical events leading up to and during the building of the dome like a story. But then with the pictures and the descriptions I was really able to better appreciate the architectural and engineering genius that Brunelleschi was! I am preparing for a trip to Florence and wanted to read up a bit on what things I would be seeing. I HIGHLY recommend this book to anyone visiting Florence or Italy as it will help you appreciate the start of the Renaissance and how truly amazing these artists were!

The most important question, what was Brunelleschi's secret process, is left secret. Wonderfully written, full of fascinating little stories. The problem of building the dome is well explained but there are only tidbits of how it was done. For instance, How did they get 100s offset of the segments into place several stories above ground? I picked this up to see how it was built. I didn't find out.

I loved this book. Perhaps because I love Florence, have stood spellbound looking up at the dome of the church of Santa Maria del Fiore or perhaps because the story of how a man's dream of building a dome without buttresses or wooden centering (wooden support posts) actually came to pass. Whatever the reason, I found the book both beautiful and fascinating.

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