

King of Infinite Space: Donald Coxeter, the Man Who Saved Geometry

By Siobhan Roberts



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The word "geometry" brings to mind an array of mathematical images: circles, triangles, the Pythagorean Theorem. Yet geometry is so much more than shapes and numbers; indeed, it governs much of our lives?from architecture and microchips to car design, animated movies, the molecules of food, even our own body chemistry. And as Siobhan Roberts elegantly conveys in The King of Infinite Space, there can be no better guide to the majesty of geometry than Donald Coxeter, perhaps the greatest geometer of the twentieth century.

Many of the greatest names in intellectual history? Pythagoras, Plato, Archimedes, Euclid? were geometers, and their creativity and achievements illuminate those of Coxeter, revealing geometry to be a living, ever-evolving endeavor, an intellectual adventure that has always been a building block of civilization. Coxeter's special contributions?his famed Coxeter groups and Coxeter diagrams?have been called by other mathematicians "tools as essential as numbers themselves," but his greatest achievement was to almost singlehandedly preserve the tradition of classical geometry when it was under attack in a mathematical era that valued all things austere and rational.

Coxeter also inspired many outside the field of mathematics. Artist M. C. Escher credited Coxeter with triggering his legendary Circle Limit patterns, while futurist/inventor Buckminster Fuller acknowledged that his famed geodesic dome owed much to Coxeter's vision. The King of Infinite Space is an elegant portal into the fascinating, arcane world of geometry.

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King of Infinite Space: Donald Coxeter, the Man Who Saved Geometry By Siobhan Roberts Bibliography

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Editorial Review

From Publishers Weekly

During the latter half of the 20th century, geometry largely fell out of favor within the mathematical community. As Canadian journalist Roberts so well describes in her first book, Donald Coxeter (1907–2003), a University of Toronto mathematician, almost singlehandedly preserved and advanced the discipline through hard work and acute insights. His impact has been felt in a wide variety of fields and acknowledged by the likes of Buckminster Fuller and M.C. Escher. Coxeter also helped transform mathematics education to bring geometry back into the mainstream. This change is critical because, as Roberts explains, a robust understanding of geometry is essential for progress in disciplines from crystallography to cosmology, and from video graphics to immunology. Given Coxeter's long life and career, his biography, in large part, tells the story of mathematics in the 20th century as well as a human portrait of a man who—despite his royal title—was a "humble, hands-on geometer." Roberts, who won a National Magazine Award for a *Toronto Life* profile of Coxeter, puts most of the technical material in appendixes, so the text is readily accessible to a general audience. 70 b&w photos and diagrams. (*Sept.*)
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From **Booklist**

The mathematics of shape and space, geometry was not professionally hip during the career of H. S. M. Coxeter (1907-2003). As Roberts elaborates in this warm but not uncritical portrait, the visual and intuitive aspects of geometry did not attract a field headed in more abstract directions. By the 1950s, a group of French mathematicians mounted the barricades against geometry under the slogan "Death to triangles!" Coxeter took notice but no heed of the radicals, content with his fertile imagination that yielded new geometrical papers up to his nineties. Though keeping geometry vibrant was not Coxeter's intent, it was the effect as, over time, his discoveries came to be useful to architect Buckminster Fuller, string theorists, and *Godel, Escher, Bach* (1979) author Douglas Hofstadter, who contributes a preface. Roberts accessibly explains the cruxes of Coxeter's discoveries and his place in mathematics history, while her narrative of Coxeter's personal life depicts an aloof but amiable character a bit deficient in the parenting department. With Coxeter appraised by peers as a modern Euclid, Roberts' biography bears inclusion in the popular mathematics collection. *Gilbert Taylor*

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Review

"A lively view of the history of mathematics...weaving the story of Donald Coxeter, a broad-minded genius." -- Freeman Dyson

"A marvelous book...I found it impossible to stop reading." -- Martin Gardner

"An elegant biography of an elegant man." -- John Horton Conway

Users Review

From reader reviews:

Donald Davisson:

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