Benoit Mandelbrot Biography

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Biography

One of the youngest fields of mathematics-- fractals--deals with geometric shapes that are self-similar, that is, that have a similar appearance at any level of magnification. The early development of fractal mathematics owes much to the work of Benoit Mandelbrot. Mandelbrot was born in Warsaw, Poland, on November 20, 1924. He received his engineering degree from the École Polytechnique in Paris, France, in 1947, his master's degree from the California Institute of Technology in 1948, and his Ph.D. in mathematics from the University of Paris in 1952. After working at Philips Electronics in Paris from 1950 to 1953, Mandelbrot held a number of academic positions, including posts at the Institute for Advanced Study in Princeton, New Jersey (1953-1954); the Institute Henri Poincaré in Paris (1954-1955); the University of Geneva (1955-1957); and the Lille University and École Polytechnique in Paris (1957-1958). In 1958, Mandelbrot accepted a position with the IBM Research Center, where he also served as director of research from 1972 to 1976. In 1987, he was appointed Abraham Robinson Professor of Mathematics and Science at Yale University. Mandelbrot officially retired from IBM in 1993, but continues to work at Yale as the Sterling Professor of Mathematical Sciences and at IBM's Watson Research Center as a fellow emeritus. He received the prestigious Wolf Prize for Physics in 1993.

Mandelbrot's early work on fractals was based on conversations with geologists, meteorologists, cartographers, hydrologists, and scientists from other fields. He became aware of the occurrence of fractal-type phenomena in a great variety of fields and sought to develop mathematical techniques for dealing with such phenomena. In 1975, he produced one of the classic works on fractals, *Les Objets fractals*, in which he coined the term "fractals," from the Latin words meaning "fragmented" and "to break." One part of the book illustrates many of the fractal-type phenomena that can be found in the natural world. The second part is a historical account of the development of fractal mathematics. Here, Mandelbrot explains how fractal mathematics represents a dramatic break with classic, Euclidean-based mathematics and provides methods for dealing with structures that mathematicians had traditionally regarded as "pathological" and "a gallery of monsters."