

## OBITUARY

# Martin Gardner (1914–2010)

'Mathemagician' who popularized maths and debunked pseudoscience.

From the mid-1950s to the early 1980s, perhaps the most well-known section of *Scientific American* was the 'Mathematical games' column of Martin Gardner. In recognition of its success, three eminent mathematicians dedicated their 1982 book *Winning Ways for Your Mathematical Plays* to Gardner, who, they wrote, "brought more mathematics to more millions than anyone else". Yet Gardner was not a mathematician. His only degree was in philosophy.

Gardner, who died on 22 May, aged 95, was born in Tulsa, Oklahoma, to a devout Methodist mother and an oil-geologist father. He was drawn to mathematics, science, magic and writing at a very young age, and published a 'New color divination' in a magic journal at just 16. He wanted to go to the California Institute of Technology in Pasadena, but in the 1930s entry to Caltech required the completion of two years at a liberal-arts college first. Instead, Gardner went to the University of Chicago in Illinois and studied philosophy, graduating in 1936.

After various jobs, including assistant oil editor for *The Tulsa Tribune*, and four years in the navy, Gardner returned to Chicago and began writing short stories for *Esquire*, spending much of his spare time inventing, demonstrating and selling magic tricks. In 1947, he took a post in New York as editor of *Humpty Dumpty*, a children's magazine, and in the same year wrote an article on logic machines for *Scientific American*.

In the early 1940s, four graduate students of Princeton University, including Richard Feynman, had found a way of folding a paper strip into a hexagon that could then be manipulated to show different hexagonal faces. Gardner heard about these 'flexagons' and drove to Princeton to talk to the two students still there. His article about flexagons was accepted by *Scientific American* for the December 1956 edition, and, as a result, in the following issue Gardner began his 'Mathematical games' column with an article on magic squares. His lack of formal mathematics training turned out to be his forte — working slowly and carefully through the ideas helped him to explain them.

Gardner's column, which ran for 311 issues over 25 years and was collected into 15 books, soon became the main outlet for new and offbeat mathematical ideas.



Enthusiastic readers sent letters pointing out corrections, new results and suggestions for further columns. Gardner replied to most of them himself, luring many young people into mathematical careers.

His expositions turned numerous games and objects into fixtures of Western culture: the board game Hex; the Soma-cube puzzle; the 'polyomino' shape commonly used in puzzles; the computer game *Life*; even Roger Penrose's non-periodic tilings of the plane, which in turn have led to 'quasicrystals' and even to non-periodic pattern designs on toilet paper! Gardner also popularized Penrose's 'impossible staircase' and 'impossible triangle', or tribar — an apparently solid object made of three straight square beams that meet at right angles at the vertices of the triangle.

Gardner's greatest scoop occurred when the cryptographer Ronald Rivest told him of his work on trapdoor ciphers — ways of encoding and decoding information that provide the secure encryption and public-key cryptography now used to hide information in almost every form of electronic communication. From 1977 until 1994, the CIA attempted to suppress the export of such encryption methods. But Gardner's article, published in August 1977, had already provided a detailed description of the techniques.

In 1952, Gardner published *In the Name of Science* (later renamed *Fads and Fallacies in the Name of Science*). In this seminal book on debunking pseudoscience, he exposed many fallacies, including theories that the Earth is flat or hollow, and various pseudoscientific speculations regarding pyramids, phrenology, UFOs and creationism. He was a founder of the Committee for the Scientific Investigation of Claims of the Paranormal — now the Committee for Skeptical Inquiry. Later, he

was a regular contributor to the committee's journal, the *Skeptical Inquirer*, producing the monthly column 'Notes of a fringe watcher' from 1983 to 2002.

Gardner's playfulness was irrepressible. In April 1975, he devoted his *Scientific American* column to "recent but little known" results: Fermat's last theorem and the 'four-colour problem' (in which only four colours are needed to colour the shapes on a map so that no adjacent regions are the same colour) had been disproved; a lost drawing of Leonardo da Vinci

revealed that Leonardo had invented the flush toilet; and the mystery of how to win at chess had been resolved. An amazing number of readers were taken in. He also compiled two booklets of 'obscene magic tricks' — not easy to obtain.

Gardner's extensive writing, even his pranks, endeared him to his followers. Tom Rodgers, a puzzle collector and philanthropist, organized an exhibition of puzzles for the opening in 1993 of what is now the Museum of Design Atlanta in Georgia, with an accompanying conference to honour Gardner. This was so popular that 'Gatherings for Gardner' have occurred in Atlanta every two years since. Several hundred mathematicians, magicians and sceptics show up, and many more have to be turned away for lack of space.

Martin's writings on mathematics were just one strand in a remarkably prolific literary career. Among other things, he was an expert on Lewis Carroll — his *Annotated Alice*, the definitive guide to *Alice in Wonderland*, sold more than a million copies. In fact, the extent of Gardner's writing will probably not be known for several years: a current bibliography covers 350 pages, and various lists suggest that he wrote either 73 or 124 books. At the first Gardner gathering, computer scientist Don Knuth explained how Martin managed to write so much: "He didn't have a computer."

Martin is one of the few people who has earned the phrase 'We shall not see his like again'. Certainly, with or without a computer, few people have bridged the 'two cultures' so successfully.

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