John Horton Conway, a 'Magical Genius' in Math, Dies at 82

John Horton Conway in his office at Princeton University in 1993. He "was a magical mathematician," a colleague said.

Adapted from an Obituary in the New York Times By Siobhan Roberts

John Horton Conway, the English-born Princeton mathematician whose body of work ranged from the rigorously highbrow to the frivolously fun, earning him prizes and a reputation as a creative, iconoclastic and even magical genius, died on Saturday in New Brunswick, N.J. He was 82. His wife, Diana Conway, said his death, at a nursing home, was caused by Covid-19.

Dr. Conway's boundless curiosity produced profound contributions to number theory, game theory, coding theory, group theory, knot theory, topology, probability theory, algebra, and more.

His friend Martin Gardner called the Game of Life Dr. Conway's "most famous brainchild." He reckoned that at the game's peak of popularity — with users programming it at home and at work — one quarter of the world's computers were playing it.

Dr. Conway was proudest of his discovery of surreal numbers. He always hoped that surreal numbers might find practical applications, perhaps in helping to tell us more about the universe

John Horton Conway was born on Dec. 26, 1937, in Liverpool, England. His father, an autodidact, had left school at age 14 and, with his photographic memory, made a living playing cards. Dr. Conway's mother, a great reader, especially of Dickens, had worked from age 11. Family lore has it that she boasted about finding her son at age of 4 reciting the powers of two.

At 18, in 1956, John left home for the University of Cambridge, where he earned his Ph.D. His adviser, Harold Davenport, a number theorist, once said that when he would give Dr. Conway a problem to solve, "he would return with a very good solution to another problem."

As a student, Dr. Conway cultivated his acknowledged lifelong preference for being lazy, playing games and doing no work. He could be easily distracted by what he called "nerdish delights." He built a water-powered computer, which he called Winnie (Water Initiated Nonchalantly Numerical Integrating Engine). He could recite pi to over 1000 places from memory, regale anyone willing to listen on the science of rainbows or on his Doomsday rule for calculating the day of the week for any given date.

Hired at Cambridge as an assistant lecturer, Dr. Conway gained a reputation for his high jinks. Lecturing on symmetry and the Platonic solids, he might bring in a turnip as a prop, carving it one slice at a time into, say, an icosahedron, with its 20 triangular faces, eating the scraps as he went.

Dr Conway then moved to Princeton University in America, where, with his mischievous and seductive aura, he drew news media attention. Asked by a reporter about his life of the mind, he replied: "What happens most of the time is nothing. You just can't have ideas often." He also offered extracurricular content, like a campus tour titled "How to Stare at a Brick Wall."

Math, Dr. Conway believed, should be fun. "He often thought that the math we were teaching was too serious," said Mira Bernstein, "And he didn't mean that we should be teaching them silly math — to him, fun was deep. But he wanted to make sure that the playfulness was always, always there."

Siobhan Roberts is the author of "Genius at Play: The Curious Mind of John Horton Conway" (2015).