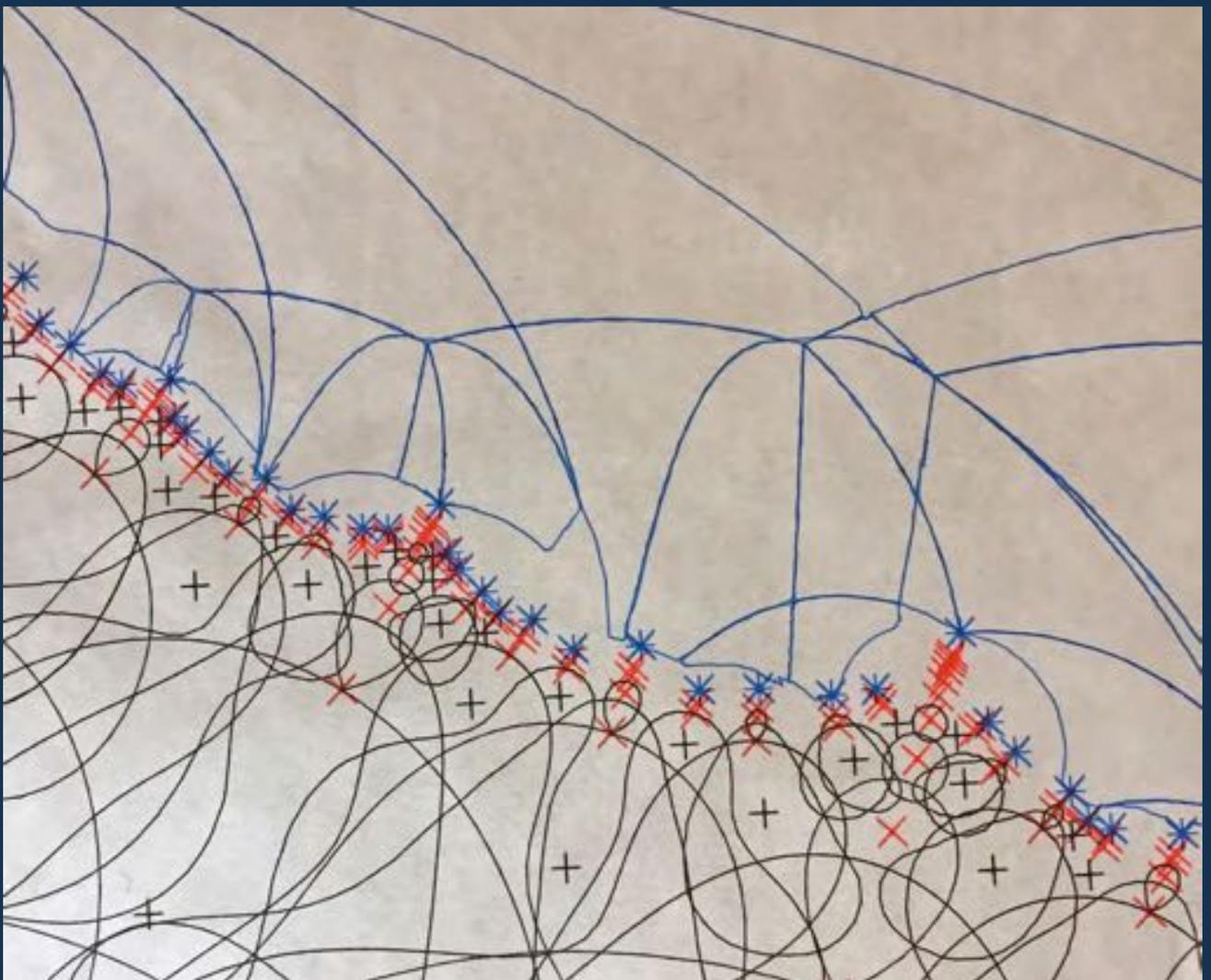




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## NEWSLETTER

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INTERVIEW  
WITH THE  
PRESIDENT

COMPLEX  
ECOLOGICAL  
META-NETWORKS

BOB RILEY  
AND HIS  
MATHEMATICS

is indeed ironic that the three authors of this very special book have all died within a few months of one another. The analysis of these games involves a great deal of serious mathematics and it is no exaggeration to say that for Conway, 'Mathematics is a Game and Games are Mathematics'.

However, the discovery for which Conway would most like to be remembered is that of what Donald Knuth christened surreal numbers, which combined the approaches of Dedekind and Cantor to produce a rich system of finite, infinite and infinitesimal numbers with many remarkable properties. It is a striking fact that in 1968–69, the year Conway referred to as his *annus mirabilis*, he had discovered the three finite simple groups named after him, *The Game of Life* and the surreal numbers. Conway continued to be immensely productive and original. Again John McKay came on the scene, pointing out that the smallest degree of an irreducible complex representation of the Monster group is just one less than a coefficient in the Fourier expansion of the modular function  $J$ . This innocent observation led to the Conway–Norton theory of Monstrous Moonshine and to the Monstrous Moonshine conjecture for the proof of which Conway's student Richard Borcherds was awarded the Fields Medal.

By the late 1970s Conway's personal life had become chaotic and both his marriages to Eileen, with whom he had four daughters (Susie, Rosie, Ellie and Annie) and Larissa Queen, with whom he had two sons (Alexander and Oliver) ended in difficult divorces. It does seem that he was so utterly committed to mathematics that he could not afford to let human relationships interfere with his research. Some of those closest to him undoubtedly paid a price for his brilliant work. He had moved to Princeton with Larissa in 1986 to take up the von Neumann chair and, following this break-up, he married his third wife Diana, with whom he has a son Gareth. But the inventive brilliance continued, not least in the Free Will Theorem, which he proved together with Simon Kochen in 2004.

Working closely with Conway was a joy and an inspiration. When dealing with some new structure or concept he would hone and hone the notation until he felt it conveyed all the information required of it as concisely as possible. I often came into work in the morning to find that the language with which I had become familiar had been ditched overnight to be replaced by a more elegant version. Despite his being rather sniffy about combinatorics for its own sake, feeling that every mathematician should

possess the required skills, he was a consummate master of the art as is evident in so much of his work. His lectures, both to undergraduates and to research seminar audiences, were refreshing and spontaneous. In the early days he invariably lectured without notes, off the top of his head, spending just a few moments in contemplation before going 'on stage', although I understand that in later years he prepared his lectures meticulously. Indeed, at one time he had a cult following among Cambridge mathematics undergraduates who founded the Conway Appreciation Society.

Such is his international fame that he already has a prize-winning biography written about him: *Genius at Play, the curious mind of John Horton Conway* by Siobhan Roberts.

Conway received many honours during his distinguished career. Apart from his LMS prizes, he was awarded the Nemmers Prize in Mathematics in 1998 and the Leroy P. Steele Prize for Mathematical Exposition in 2000. He was elected a Fellow of the Royal Society in 1981.

John Conway was my mentor, inspiration, co-researcher and friend. I shall miss him enormously.

## Freeman J. Dyson: 1923 – 2020



Professor Freeman J. Dyson, who was elected a member of the London Mathematical Society on 17 March 1943, died on 28 February 2020, aged 96. He was elected LMS Honorary Membership in 2000.

*Michael Th. Rassias writes:* Freeman J. Dyson was one of the world's most famous and vocal scientists. We were all saddened by his passing, as – even at his 96 years – he seemed unstoppable, with his most recent book having been published in 2018. Honored and humbled to be surrounded by such pillars of science as a visiting researcher at the Program in Interdisciplinary Studies of the Institute for Advanced Study, Princeton, over the last years, I had the great privilege of meeting Dyson around 2015. Since then, I had the opportunity to spend some time with him, hoping to absorb some of his wisdom. Inspired by his accomplishments, I was always being carried away by

his beautiful narrations of the numerous interesting events of his life.

Dyson, born at Crowthorne in Berkshire, England, was an American theoretical physicist and mathematician whose academic stature had reached that of a historical figure of science, long before his passing.

At the age of 17, in 1941, he arrived at Trinity College, Cambridge, as an undergraduate at a period when Hardy, Littlewood, Besicovitch and other already famous professors were there, with whom he became personal friends: "Especially with Besicovitch, who was the owner of the billiard table", he smilingly pointed out raising his finger. In 1945 he obtained his BA in Mathematics from Cambridge University, for the period 1945–46 he was an Instructor at Imperial College and in 1947 he went to Cornell University as a graduate student, where he worked with Hans Bethe and Richard Feynman. Subsequently, for the period 1948–49 he was a Member at the Institute for Advanced Study, Princeton, and for the period 1949–51 he was a Research Fellow at the University of Birmingham. He then became Professor at Cornell University where he remained until 1953. Surprisingly, he was made Professor at Cornell notwithstanding the fact that he did not have and never actually obtained a PhD. Throughout his career he was a harsh critic of the PhD system, which he strongly believed should be abolished. In a discussion we had, he said that he considered himself "lucky to have been educated in England at a time when the PhD was not required as an entrance ticket to an academic career". He was very much bothered by the fact that the current rigid and lengthy PhD system is one of the main reasons why talented women drop out of academic careers.

In 1953, Dyson became a permanent Professor at the Institute for Advanced Study, Princeton, where he remained throughout the rest of his career.

Dyson has made numerous, profound and versatile contributions in a broad spectrum of subjects of Mathematics and Physics. Among his most important contributions is the unification of the three versions of quantum electrodynamics invented by Richard Feynman, Julian Schwinger and Shin'ichirō Tomonaga, all three of whom were awarded the Nobel Prize in Physics in 1965. His work and lectures on Feynman's theories played a decisive role in making them understandable to physicists of the time and this very much helped Feynman's work being accepted by the academic community. Dyson's work on this subject impressed J. Robert Oppenheimer – who

was at the time the Director of the Institute for Advanced Study, Princeton – and had an impact on him being offered a permanent position there. Curiously, despite his stellar accomplishments, Dyson was never awarded the Nobel Prize. He somehow missed his chance. On this subject, he humorously said with his playful character that it is better for people to ask you why you did not get a Nobel prize, rather than why you actually did.

In 1958, at the age of 35, he was a member of the design team under Edward Teller for a small and really safe nuclear reactor called TRIGA used throughout the world in hospitals and universities for the production of medical isotopes. Some of these reactors are still in use, sixty years later.

Teller, Feynman, Hardy, Littlewood, Besicovitch, Gödel, and many other legendary names were just a few of the people entangled with Dyson's spectacular academic life. I must admit that I often caught myself being mesmerized by the surreality of discussing with a living piece of history when I immersed myself in one of the two opposite armchairs in his office at the Institute for Advanced Study.

Throughout his career, Dyson had the characteristic passion to delve into the exploration of problems through which Mathematics can be usefully applied. His span of scientific interests and his everlasting appetite for research quests and the pursuit of the truth, had lead him to investigate problems not only in Mathematics, Physics and their interconnections, but also to other fascinating subjects, such as Astrobiology.

During his career, he had been bestowed with a plethora of awards and distinctions. However, no award bestowment provided him with greater joy than that of unraveling the mystery and beauty of Nature.

## Jan Saxl: 1948 – 2020



Jan Saxl, who was elected a member of the London Mathematical Society on 19 March 1976, died on 2 May 2020, aged 71.

*Martin Liebeck writes:* Jan Saxl was born and grew up in Brno,

Czechoslovakia. He began his university studies in 1966 at Masaryk University in Brno, but his life