John Von Neumann

This brilliant mathematician lends his name to the design of modern computers

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Complementary Couple
John von Neumann with his second wife Klara, herself an accomplished programmer of early computers

Only a Hungarian could enter a revolving door behind you and emerge ahead of you. So said John von Neumann in describing the competitiveness of his fellow countrymen.

He was no exception. His own ambition coupled with an extraordinary intelligence took him to the highest scientific posts in the United States.

Neumann was born into a wealthy Jewish family of the Austro-Hungarian Empire. His mathematical skills were spotted while he was still quite young, and by the age of 25, he had collected two degrees and a doctorate and was discussing mathematical problems on an equal footing with such eminent men as Einstein and the mathematician David Hilbert.

Neumann was never blind to worldly problems. With the collapse of the Austro-Hungarian Empire after the First World War, he adopted the title of 'von' and slipped into the academic life of defeated Germany. At the same time he was building up his American contacts, spending the winters at Princeton University, in New Jersey, and the summers in Europe administering his father's estates.

When the Second World War broke out he was already safely established in America.

Von Neumann made his name in mathematics by patching together the theory of sets, which Bertrand Russell had undermined with his logical paradoxes. Von Neumann was fascinated by quantum physics and also the theory of games. He invented the Monte Carlo method, which uses random numbers to solve mathematical equations.

When the war came to America he was immediately brought into the Manhattan Project where he enthusiastically joined in the production of the atomic bomb. While stationed at Los Alamos he would often drive 120 miles to eat at his favourite Mexican restaurant and in his later years at Princeton it was said that he destroyed a car a year by his wild driving.

He was still engaged in the Manhattan Project when he learned that attempts were being made to build an electronic computer and he had himself invited onto the ENIAC project. The work was under the control of electronic engineers but as the first mathematician involved he saw the problem differently and drew up a report that was to become the blueprint for the modern computer.

After the war he became increasingly involved with the defence policy of the United States. But he remained committed to mathematical research and designed the first computer for Princeton University. It was called JOHNIAC. At a party to celebrate its completion he had a model of it carved in ice.

In his 50's he developed cancer and was subsequently confined to a wheelchair.

Although he had been an agnostic all his life, he became a Catholic in his last months.

A friend said about his death: 'I think von Neumann suffered more when his mind no longer functioned than I have ever seen any human being suffer before.'

In his honour the design of computers is known to this day as von Neumann architecture.

1903
Janos Louis Neumann born in Budapest 28 December

1921
First mathematical paper published in collaboration with his tutor

1933
Becomes a professor at Princeton University, New Jersey, the haven for Einstein and other emigré mathematicians from Europe

1942
Publishes a book on the application of Games Theory to economics

1943
Appointed consultant to the Manhattan Project at Los Alamos, New Mexico

1944
Learns about the secret ENIAC project

1945
Attends first atomic bomb tests

1947
Report on ENIAC and draft designs for a new computer to be called EDVAC (Electronic Discrete Variable Computer) to be built using these proposals

1951
JOHNIAC – his personally designed computer becomes operational at Princeton University

1951-1953
President of the American Mathematical Society. Works on automata theory

1955
Appointed US Atomic Energy Commissioner by President Eisenhower

1957
Dies of cancer on 8 February. As a special honour a whole volume of the 'Bulletin of the American Mathematical Society' is devoted to his life and work