



George Felton

Pioneering computer scientist regarded as one of Britain's leading software experts

George Felton, who has died aged 98, was the doyen of software designers. In the early 1950s the term "software" had not been invented and for most computer manufacturers responsibility stopped with handing over the hardware - programming the computer was the customer's problem. Felton helped change that perception.

He managed, and largely implemented, the programming scheme for the Ferranti Pegasus computer, first delivered in 1956. It was a programming regimen of unprecedented completeness that made life a great deal easier for computer users. He went on to become the UK computer industry's pre-eminent software authority.

The son of Muriel (nee Layland) and George Felton, he was born in Paris, where his father was manager of the Paris branch of the National

Bank. The family returned to the UK in 1932. George was educated at Bedford school, where he excelled in mathematics. He won a state scholarship in 1940 to Magdalene College, Cambridge, and studied mathematics and physics.

After a year at Cambridge he was enlisted in the RAF. Because he had obtained a "ham" radio operator's licence while still at school, he was assigned to work on radar and electronic navigation equipment.

On demob, Felton returned to Cambridge, completing his degree in 1948. He then became a research student in physics at the Cavendish laboratory. This brought him into contact with the university's mathematical laboratory, where Maurice Wilkes had led the construction of EDSAC, the world's first practical electronic computer. Felton was smitten. He spent most of his time thinking about computers and recalled that "as a result I never submitted my PhD thesis but I knew a good deal about programming".

In 1951 he joined Elliott Brothers in London, a firm then at the forefront of computer research. In the same year he married Ruth Holt, who had recently graduated in mathematics, and she, too, joined Elliotts. They both worked on the Nicholas, an experimental computer - the name was a pun on the fact that its memory system used nickel delay lines.

In an early tour de force Felton used the ideas he had picked up at Cambridge to design an elegant programming scheme. Among its scientific calculations, Nicholas performed metal-fatigue analysis necessitated by the two crashes of the Comet aircraft disaster of 1954. That same year, following management problems at Elliotts, Felton and several of the team left to join Ferranti, the Manchester-based electrical equipment manufacturer that was also in the computer business.

Ruth left at the same time to bring up the first of their four sons. Ferranti was then embarking on the manufacture of a new computer, the Pegasus, specified by Christopher Strachey. A nephew of the writer Lytton Strachey, he produced a design that was a masterpiece and later became the first professor of computer science at Oxford University.



Felton was responsible for the Pegasus programming system and it, too, was a masterpiece - the most complete and effective of its era. From this time forward a programming system became an essential complement to a computer's hardware. Besides the basic system, Felton wrote mathematical packages and a simple programming language "autocode".

Beyond the computer industry, Felton was best known for using the Pegasus to calculate pi to a new accuracy. He announced his result - pi to 10,017 decimal places - at a mathematics conference in Oxford in April 1957. The number duly appeared in the conference proceedings as a "footnote" that continued over the succeeding 40 pages. His record lasted just six months before it was broken by a much more powerful IBM computer.

In 1960 Felton became software manager for a new large-scale computer, the Ferranti Orion. For this he designed the Orion monitor program, an early example of what would later be called an operating system. His system incorporated "multi-programming", a technique that enabled several programs to run simultaneously. Multi-programming was much talked about in the early 60s, but the Orion was one of the very first machines to support it.

As the decade went on a wave of mergers swept the UK computer industry resulting in two major players, International Computers and Tabulators (ICT) and English Electric Computers. In 1963 Ferranti's computer division was absorbed by ICT, and as a result the Orion never fulfilled its sales potential. Instead, ICT promoted another Ferranti design, which became the 1900 series of computers. Felton headed a team of 200 programmers to produce the systems software.

In a final spasm of consolidation, in 1968 ICT and English Electric Computers merged to become ICL. The merger was inspired by the government's inducement of funding for a new range of computers. Felton was one of a team of six that planned the new range and he oversaw the development of the software system.

The new range of computers was announced in 1974 as the ICL 2900 series. After the launch, Felton was immersed in product planning and in the final years of his career he managed ICL's university relations.

His retirement in 1985 enabled him to pursue his love of photography.

Meanwhile, in 1983, the Science Museum acquired an original Pegasus and it was restored to full life by enthusiasts from the Computer Conservation Society. It was inaugurated in 2001 and was maintained as a working exhibit at the museum for more than a decade.

Felton is survived by three sons; Ruth died in January.

Martin Campbell-Kelly

George Eric Felton, mathematician and computer programmer, born 3 February 1921; died 14 June 2019