The Globe and Mail is Canada's national newspaper. Jack Kapica is lead columnist and reporter for globetechnology.com. The following article appeared in the Obituary Page of the Globe and Mail on Moday //25 Oct 2004.

(Roger Hui)

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Kenneth Iverson, Mathematician 1920-2004

By JACK KAPICA Globe and Mail Update

Kenneth Iverson was a mathematician whose intense fascination with words and syntax led him to create an early programming language that inspired a generation of computer programmers.

Born in Alberta in 1920 and educated in a one-room schoolhouse, Mr. Iverson harboured little intention of going to college, instead absorbing himself in textbooks his older brothers brought home, eventually teaching himself calculus. But the Second World War intervened; he became a flight engineer specializing in reconnaissance. When the war ended, a fellow serviceman who had taken note of his love of learning, told him, "If you don't go to university I'm going to go down and beat your brains out," his widow, Jean, recalls.

So when he was demobilized, Mr. Iverson enrolled at Queen's university, earning a Bachelor of Arts degree in mathematics. He continued his education at Harvard University, where he graduated with a Master of Arts and, in 1954, a doctorate in applied mathematics.

He stayed at Harvard to teach mathematics and there developed a system of notation to describe to students a method of handling large groups of numbers. He published a book on it in 1962, titled A Programming Language, a name that was subsequently contracted to APL.

International Business Machines Ltd. took note of what he had done, and in 1962 lured him from Harvard to develop APL as a language for use in its new IBM System 360 mainframe computers. He took three colleagues along with him to IBM – Larry Breed, Roger Moore and Dick Lathwell – who were later awarded the Grace Hopper Award for the subsequent implementation of APL based on the principles laid down by Mr. Iverson.

As the computing revolution picked up speed, APL was not relegated to a dark corner of history, but embraced by a growing number of programmers who were in awe of its "elegance," a word the community uses to describe an especially simple but powerful language. APL's popularity lay in its ability to manipulate large amounts of data, therefore making it ideal for programming databases.

Although it is compact, simple and easy to learn, APL's use of symbols can initially in-

timidate novice programmers. "You could write a program using APL 10 times faster than with any other languages," recalls Lib Gibson, an executive with Bell Canada who worked with Mr. Iverson in his later years at I.P. Sharp Associates Ltd., a Toronto-based time-sharing company.

Initially, it was bundled with what are considered to be the world's first microcomputers, made in Toronto by MCM Computers Ltd., in 1974 – at least two years before Apple introduced its desktop machine.

APL maintained its devotees well into the 1980s, when it become a "niche language," said his son Eric. During his later years Mr. Iverson developed an advanced version called J – more formally, the J Notation for the APL language – that could run on a variety of computers.

But he will remain known for APL. For more than 35 years he managed to turn it into a successful commercial property and, in the process, won the Harry Goode Award in 1975, the A.M. Turing Award in 1979, the IEEE Computer Pioneer Award in 1982 and the National Medal of Technology in 1991.

His ability to create such languages came from his "sheer enjoyment of language and words," recalls his daughter Janet Cramer. "He read dictionaries like people read novels."

Mr. Iverson thought it was important that language, both English and mathematics, could communicate clearly and concisely, she said, and he was always finding relationships between things. "If there was anyone who would have come up with the Universal Theory of Everything, it would have been him."

Mr. Iverson was no pedant, however. A gregarious man, he attracted many young people around him. "He was a natural teacher," said his widow Jean. "He couldn't change a light bulb without showing the kids how it was done."

In fact, he and his wife looked after many children, particularly during the years Jean worked in a youth advocacy program. The Iversons had four children of their own – sons Eric, Paul and Keith and one daughter, Janet – but still found room for some of Jean's troubled children. Two of them – Robin Dick and Sherry Natusky – ended up staying at the Iverson home, and are now part of the Iverson family.

Mr. Iverson became a Fellow at IBM, a signal honour given only to its most prized employees. When he retired in 1980, he moved back to Toronto, where he worked at I.P. Sharp until 1987.

For the rest of his life he dedicated himself the exploration of computer languages.

"He didn't stop thinking or working in 1987, his son Eric said, "but continued his aggres-

sive research until he died."

And that's how he died. He was sitting at his computer at home, working on the J language, when he was felled by a stroke.

Kenneth Iverson, mathematician, was born on Dec. 17, 1920, in Camrose, Alta. He died on Oct. 19, 2004. He was 83.