David John Wheeler

Born: Feb. 9, 1927;
Birmingham, UK
Died: Dec. 13, 2004

Wheeler invented the first assembly language, co-implemented the subroutine, and made major contributions to the ILLIAC I [Sept 1], the CAP computer, the Cambridge Ring, and to cryptography.

As a research student in Cambridge's Mathematical Lab, under the supervision of Maurice Wilkes [June 26], he was part of the team that built the EDSAC [May 6], and received the first doctorate awarded by the lab in 1951.

David Wheeler (1949). Photo by Univ. of Cambridge, Mathematical Lab. CC BY 2.0

Wheeler's "Initial Orders" assembler let EDSAC instructions be written in a simple language rather than as binary, and made it possible for non-specialists to write programs.

Their experience of coding on the EDSAC led Wheeler, Wilkes, and Stanley Gill [March 26] to publish the first book on programming, "The Preparation of Programs for an Electronic Digital Computer", in 1951. It described the use of subroutines, and gave the first explanation of how to design software libraries. The "jump to a subroutine" instruction was often called a Wheeler Jump in the 1960's.

As you might have guessed, the issue of who invented the subroutine is almost as thorny a question as who invented the stored program. The notion of subroutine libraries seems to have cropped up many times (e.g. for the ENIAC, used by the Refrigerator Ladies [May 00], in Zuse's Plankalkül [June 14], in Turing's ACE Proposal [Feb 19], and in "Planning and Coding Problems for an Electronic Computing Instrument" [April 1] by Goldstine and von Neumann). However, Wheeler actually implemented the idea.

Wheeler was also the co-designer of the TEA and XTEA encryption algorithms with Roger Needham [next entry], and worked with Mike Burrows on Burrows-Wheeler compression.

A quote (attributed to him by Butler Lampson [Dec 23]): "Any problem in computer science can be solved with another level of indirection." Wheeler is said to have added, "Except for the problem of too many layers of indirection."

Roger Needham

Born: Feb. 9, 1935;
Sheffield UK
Died: March 1, 2003

Needham is known for his work on security software, and also for being the head of Cambridge University's computer science lab for 15 years (following on from Maurice Wilkes [June 26]). Later, he became the head of Microsoft's first overseas research lab, based in Cambridge.

Among his theoretical contributions was Burrows-Abadi-Needham authentication logic, generally known as BAN logic. His Needham-Schroeder security protocol (co-invented with Michael Schroeder) formed the basis of MIT's Kerberos authentication and key exchange system [Oct 9]. In 1967, he pioneered the technique of protecting passwords using a one-way hash function.

Needham became interested in computer security as a byproduct of working on OSes and early high-speed local networks, such as the Cambridge Ring in the 1970's.

Needham married Karen Spärck Jones [Aug 26] in 1958. While working on their doctorates, they managed to find time to build the house that they lived in for the next 40 years. They also loved sailing, and bought their first boat in 1972 – a 22-foot long Itchen Ferry Cutter built in 1872. They often sailed her around the East Coast of Britain.

A quote: 'Good research is done with a shovel, not with tweezers. You should find an area where you can get a lot out of it fast.'

John Maxwell Coetzee
(pronounced kuut-SEE)

Born: Feb. 9, 1940;
Cape Town, South Africa

A recipient of the 2003 Nobel Prize in Literature, Coetzee was also the first writer to be awarded the Booker Prize twice: for "Life & Times of Michael K" in 1983, and for "Disgrace" in 1999.

In 1962 he began working as a programmer for IBM in London, and subsequently joined ICT (International Computers and Tabulators [Feb 18]) in Bracknell. He described his time in England in "Youth" (2002), his second volume of 'fictionalized' memoirs.

The main computer he used at IBM was a 7090 [Nov 30], although he also played games on an IBM 1401 [Oct 5]. He thought the work tedious, interrupted only by the arrival of the tea lady at 11:00am and 3:30pm. However, one of his assignments was to analyze wind tunnel data for the TSR-2, a Cold War strike and reconnaissance aircraft being developed for the Royal Air

Force (RAF). However, the project was scrapped in 1965.

His move to ICT in Bracknell coincided with their programming work on the Atlas 2, or Titan, a joint development of Ferranti [Feb 27] and Cambridge University. Coetzee ran his work on a machine at Cambridge's Mathematical Lab (which has already been mentioned twice in today's entries), working from 6pm to 6am. He was also responsible for installing code on the Atlas 2 at the UK's Atomic Energy Research Establishment at Aldermaston.

Coetzee's "Youth" memoir is unclear about the nature of his programming duties, but they were probably related to the Titan's multi-user time-sharing OS, the Titan Supervisor. The technical leads of that project at Cambridge included David Barron, David Hartley, Roger Needham [prev. entry], and Barry Landy

One of Coetzee's side projects was a program to generate "computer poetry" by randomly selecting words from a specified vocabulary. Coetzee later utilized fragments in his own poetry.

Coetzee moved to the University of Texas at Austin in 1965 to study for a PhD on the stylistic analysis by computer of the works of Samuel Beckett. His dissertation was published in 1968.


William (Bill) David Mensch, Jr.
Born: Feb. 9, 1945;
Quakertown, Pennsylvania

Mensch was part of the design team that created the Motorola 6800 8-bit chip, the predecessor to the 68000 [Sept 26]. He was the principal designer of the 6820 Peripheral Interface Adapter (PIA), and responsible for several 6800 system patents.

Many of the 6800 designers, including Chuck Peddle [Nov 25] and Mensch, left Motorola shortly after the chip's release, when management ordered them to stop working on a low-cost version.

He joined Peddle's design team at MOS Technology which went on to develop the inexpensive 6502 chip [Sept 16] that became a very popular in microcomputers, including Apple, Atari, and Commodore 8-bit machines. Mensch is the co-holder of the 6502 patent.
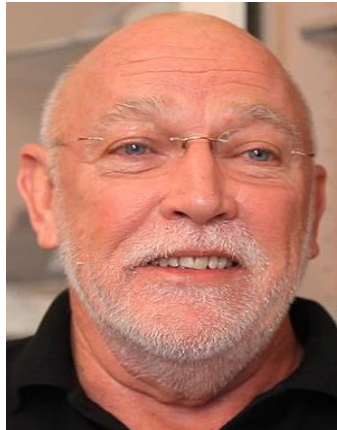
Bill Mensch (2014). Photo by Jason Scott. CC BY 2.0.

He founded the Western Design Center (WDC) in 1978, a company focused on developing MOS 65xx-based chips and related devices. For example, he designed the 16-bit 65C816 which was used in the Apple IIgs and SNES [Nov 21]. His sister Kathryn was the layout design manager.

His "Mensch Computer" is a hobbyist device aimed at people who enjoy programming at the assembly language level.

Mensch currently lives close to Superstition Mountains in Arizona, the probable home of the Lost Dutchman's Gold Mine.