Nov. 8th

Friedrich Ludwig Gottlob Frege

Born: Nov. 8, 1848;

Wismar, Mecklenburg-Schwerin, Germany
Died: July 26, 1925

Frege was responsible for the creation of first-order predicate logic, thanks to his invention of quantified variables which solved the problem of expressing statements involving "every" and "all". This groundbreaking work was largely ignored during his lifetime, until Giuseppe Peano (1858–1932) and Bertrand Russell [May 18] introduced it to later generations of logicians.

Gottlob Frege, circa 1879.

Frege was described by his students as highly introverted; for example, he habitually faced the blackboard while lecturing.

Isaak Semyonovich Bruk

Born: Nov. 8, 1902;

Minsk, Byelorussia
Died: Oct 6, 1974

Bruk and Bashir Rameyev [May 1] designed an early von Neumann type computer [Dec 28] for which they received a Soviet patent in Dec. 1948. These ideas were put to the test by subsequent work with Nikolai Jakowlewitsch Matyukhin on the M-1 machine, built mostly from seized WWII German military equipment. It was put into service in 1952, just a few months after the better known MESM [Nov 6], but was perhaps still the first fully operational computer in Russia. Also, it only used 730 tubes rather than the 6000 in the MESM, so consumed much less power.

Other soviet computing pioneers include Sergey Lebedev [Nov 2], Georgi Lopato [Aug 23], and Boris Babayan [Dec 20].

George Bernard Dantzig

Born: Nov. 8, 1914;

Portland, Oregon
Died: May 13, 2005

In 1947, Dantzig devised the simplex method for solving Linear Programming (LP) problems ("programming" in this sense refers to planning rather than coding). Such is its importance, that the IEEE chose it as one of the "Top Ten Algorithms of the Century."

Naturally, Dantzig is often called the "Father of Linear Programming", although he always modestly pointed out that similar algorithms had been published earlier, and then forgotten – by Joseph Fourier in 1824, Charles de la Vallée Poussin in 1911, Leonid Kantorovich in 1939, and Frank Hitchcock in 1941. However, their solutions only applied to special cases, whereas Dantzig's was much more widely applicable.

The rapid ascendancy of the simplex method through the algorithm ranks was greatly helped by Dantzig's famous example – finding the best assignment of 70 people to 70 jobs. The traditional "brute force" approach of examining all the permutations for suitable pairings would create more configurations than the number of particles in the universe. However, it only took a moment for simplex to find the optimum solution.

Dantzig is also remembered for solving two open problems in statistical theory while still a student. He had mistaken them for homework questions after arriving late to a lecture given by Jerzy Neyman. Dantzig thought the problems "seemed to be a little harder than usual", and handed in the solutions a little late.

Jack St. Clair Kilby

Born: Nov. 8, 1923;

Jefferson City, Missouri.
Died: June 20, 2005

Kilby's revolutionary invention of the integrated circuit (IC) doesn't actually look that impressive – a tiny slice of germanium stuck to a piece of glass, with a transistor [Dec 16] and four other components etched into it, plus a few wires to connect it to an oscilloscope.

His insight was that if the various circuitry elements were made of the same stuff as the transistors, then the entire thing could be cut from a single block of semiconductor material. This would greatly simplify the circuit's production, packaging, and wiring.

He demoed a prototype to the Texas Instruments [Oct 1] management on [Sept 12] 1958, and wrote at the time: "Although this test showed that circuits could be built with all semiconductor elements, it was not integrated. I immediately attempted to build an integrated structure, as initially planned,"

Subsequently, Robert Noyce [Dec 12] at Fairchild Semiconductor modified Kilby's approach to make it more practical, and many historians now identify Kilby, Noyce, Kurt Lehovec [June 12], and Jean Hoerni [Sept 26] as the co-inventors of the IC.

Kilby was awarded the 2000 Nobel Prize in Physics, and the Nobel website states that "Kilby and Noyce are considered to be co-inventors of the integrated circuit." However, Noyce had died in 1990, and the Nobel rules prohibit the granting of the prize posthumously. Kilby

himself said: “If he were still living, I have no doubt we would have shared this prize.”

Kilby's father owned a small electric company, where Kilby developed an interest in vacuum tubes while listening to big band music on the radio; a preference he retained throughout his life.

Shannon and Chess

Nov. 8, 1949

On this day, Claude Shannon [April 30] finished the paper, “Programming a Computer for Playing Chess,” which appeared in the March 1950 issue of *The Philosophical Magazine*. He also wrote a less technical version for *Scientific American*, called “A chess-playing machine”, which came out in February. He had first presented the ideas on March 9, 1949 at a talk at the National Institute for Radio Engineers Convention.

The article's main contribution was to utilize von Neumann's [Dec 28] minimax procedure as a game move evaluation function. This allowed a machine to calculate moves fast enough to play a reasonable game of chess.

Shannon doesn’t mention the chess-playing device that he had built earlier that year, called Caissac, after Caissa the muse of chess. However, it could only handle up to six pieces, and was primarily intended to test out his ideas. A choice of move typically required 150 relay operations, taking around 10-15 seconds. Caissac also included a random element so it didn’t always make the same move when faced with the same board configuration.

The first chess-playing machine was "The Turk" [April 00], an infamous fake. Real progress was made by Leonardo Torres y Quevedo [Dec 28] with his "El Ajedrecista". Alan Turing [June 23] also developed a chess playing algorithm with economist David Champernowne, called Turochamp, which was being simulated on paper in 1952 [June 25], and was described by Turing in the book "Faster than Thought" [Jan 00].

William (Bill) Nelson Joy

Born: Nov. 8, 1954;

Farmington Hills, Michigan

Joy was responsible for BSD (Berkeley Software Distribution) UNIX [March 0], which by the third release, as 3BSD, was a complete bootable system. Some of his other notable contributions to UNIX (made via BSD releases) were the ex and vi editors, and the csh command shell.

Bill Joy (2003). Photo by SqueakBox. CC BY 2.0.

An oft-told anecdote is that he wrote vi in a weekend, which Joy firmly denies. Eric Schmidt [April 27] also claims that Joy once rewrote the entire BSD kernel in a weekend (but not the same weekend as his vi endeavors).

In the early 1980's, Joy became unhappy with BBN’s [Oct 15] TCP/IP stack [May 5], so coded his own high performance version in a few weeks. This included a single night for the utilities: rcp, rlogin, and rsh. Joy's stack went on to help establish TCP/IP as the Internet’s networking standard protocol [Jan 1] rather than proprietary software from DEC, IBM, and others, which were popular at the time.

Joy co-founded Sun Microsystems [Feb 24] in 1982 with Vinod Khosla [Jan 28], Scott McNealy [Nov 13] and Andy Bechtolsheim [Sept 30]. Actually, he joined six months after the company was formed but was given co-founder status in any case. At Sun, Joy encouraged the development of NFS (a distributed file system), the SPARC [July 00], Java [Feb 23], and various Java-based concurrent and distributed libraries (Jini, JavaSpaces, and JXTA), which sadly failed to gain much traction.

Joy momentarily stepped into the public limelight in 2000 when he published “Why the Future Doesn’t Need Us”, where he expressed concerns over the development of genetic engineering, nanotechnology, and robotics (GNR for short).

Joy’s theory: “No matter who you are, most of the smartest people work for someone else.”

Another quote, made in response to Eric Raymond’s “Given enough eyeballs…” adage [Dec 4]: “The honest truth is that having a lot of people staring at the code does not find the really nasty bugs. The really nasty bugs are found by a couple of really smart people who just kill themselves.”

Prospector Presented

Nov. 8-15, 1977

PROSPECTOR was an expert system [Jan 20] for mineral exploration. The main developers were Richard Duda, John Gaschnig, Peter Hart, Rene Reboh, and Nils Nilsson at SRI International, coding in Interlisp [Nov 29; Aug 7], a dialect of LISP [April 15].

PROSPECTOR hit the headlines in 1981 with a prediction that amazed many geologists. It reported that deposits of a metal-ore called molybdenum would be found in Washington state, which turned out to be correct after exploratory

drilling. Molybdenum is primarily used to create ultra-high strength steels.

Aaron Hillel Swartz

Born: Nov. 8, 1986;

Chicago, Illinois
Died: Jan. 11, 2013

At the age of 14, having dropped out of high school, Swartz helped to write the RSS web syndication specification [March 15]. He was also one of the early architects of Creative Commons [Dec 16] and a developer for the Internet Archives' Open Library [May 12]. At 19, he co-programmed the social news and entertainment website Reddit [June 23], which was sold to Condé Nast in 2006 for between $10 – 20 million.

Aaron Swartz (2009). Photo by Sage Ross. CC BY-SA 2.0.

In 2008, he co-wrote the "Guerilla Open Access Manifesto", which called for activists to "liberate" information controlled by corporations or publishers.

On Jan. 6, 2011, Swartz was arrested in connection with the downloading of academic articles from the JSTOR digital library. Prosecutors refused all settlement offers that didn't include jail time, and the case was pending when Swartz committed suicide. This terribly sad outcome inspired several proposed amendments to the Computer Fraud and Abuse Act [June 3] that would mitigate its ridiculous criminalization of online activity.

Loebner Prize

Nov. 8, 1991

The first Loebner Prize contest was held at the Boston Computer Museum [Sept 24], with the intention of finding the most human-like chatterbot in a Turing test-like [Oct 00] environment. In each round, a human judge held five minute long text-based conversations with a program and a human via computer links. Based upon the responses, the judge had to decide which was which.

The event was organized by Hugh Loebner in conjunction with the Cambridge Center for Behavioral Studies, and has since become an annual AI competition.

It has had some detractors, the most prominent probably being Marvin Minsky [Aug 9], who called it a publicity stunt, and offered a "prize" to anyone who could stop the competition. Loebner later noted that Minsky's offer had made him a co-sponsor of the event.

The 2008 competition was a landmark in that every program was mistaken for a human by at least one of the judges.

Homer's Brain

Nov. 8, 1998

Intel began airing a 30-second commercial on US TV entitled "Homer's Smarter Brain", where Homer Simpson's brain was replaced by a Pentium II [March 22]. Homer is transformed into a world-class expert in organic chemistry and puts his newfound ability to good use by engineering the world's densest doughnut.

The ad finishes with a view of the back of Homer's head, showing an "Intel Inside" logo [July 00].

For more Simpsons, see: [Jan 12], [Feb 15], [Nov 13] and [Nov 30].

Virtual Town Hall

Nov. 8, 1999

US President Bill Clinton held the nation's first "virtual town hall meeting" on the Internet. Clinton answered questions from pre-screened online users, although someone else typed in his answers.

Clinton's image and responses were webcast, and a transcript of the meeting was made available afterwards. The event was co-sponsored by ExciteAtHome [April 4].

Beforehand the organizers had expected about 15,000 participants, but later estimates put the number at closer to 30,000.

Among the probing questions, "Cynthia in Arizona" asked "Would you save a little food for Y2K [Dec 31]?" to which the President answered "no" [July 20].

BubbleBoy Detected

Nov. 8, 1999

VBS/Bubbleboy was the first worm that was able to spread via e-mail without the recipient having to open an attachment to execute it. It was enough that the user opened the message in MS Outlook, which would trigger an embedded Visual Basic script [June 3].

The worm spread by mailing itself to every e-mail address in the user's address book, in a similar way to the Melissa virus [March 26]. For more Outlook viruses, see [Feb 11], [Oct 26], [Dec 4], [Dec 5] (and most other days of the year).

"BubbleBoy" references a character in an episode of the "Seinfeld" TV show [April 23].