Jan. 10th

Metropolis Released

Jan. 10, 1927

"Metropolis" is an outstanding silent sci-fi film directed by Fritz Lang, and written by him and his wife, Thea von Harbou. It's perhaps best remembered for the *Maschinenmensch*, a female robot, played by Brigitte Helm in both her mechanical and human forms. Ralph McQuarrie's design for C-3PO in Star Wars [May 4] was inspired by it.

After Metropolis' release, a lengthy review by H. G. Wells [Nov 20] accused the film of "foolishness, cliché, platitude, and muddlement about mechanical progress and progress in general."

There are several short films predating Metropolis that can claim to feature robots. These include many silent "Oz" films [July 30] featuring the Tin Man, from as early as 1910. Also Harry Houdini's "The Master Mystery" (1919) a filmed serial with 15 installments, included a robot called Q, also referred to as "The Automaton."

Lynn Conway

Born: Jan. 10, 1938;

White Plains, New York

Conway invented scalable VLSI chip design methods which she popularized in the classic textbook, "Introduction to VLSI Systems" (1979), co-authored with Carver Mead [May 1]. The methods aim to minimize the size of a chip by arranging the circuitry into modules interconnected using simple wiring.

This work directly influenced the development of MOSIS (Metal Oxide Semiconductor Implementation Service) by Danny Cohen [April 18] which promoted the idea of "fabless foundries," which in turn led to numerous Silicon Valley start-ups of the 1980's that focussed on new chip designs.

In her early career, Conway worked at IBM on dynamic instruction handling, a form of out-of-order execution for improving performance, but was fired just before undergoing sex reassignment surgery in 1968. However, the company eventually realized its error, and issued an apology... in Oct. 2020.

Donald Ervin Knuth

Born: Jan. 10, 1938;

Milwaukee, Wisconsin

Knuth is very likely the preeminent computer scientist of our time, rightly fêted for his numerous contributions to several branches of theoretical computer science (especially to the analysis of algorithms). According to the *New York Times*, he bears a slight resemblance to Yoda [May 4] — albeit standing 6-foot-4 and wearing glasses.

Towering among this work is his awesome multi-volume "The Art of Computer Programming" (TAOCP), the "bible" of computer science pedagogy, which he began writing in 1968, and is still working on. After 652 pages, volume one use to finish with a blurb on the back cover from Bill Gates [Oct 28]: "You should definitely send me a résumé if you can read the whole thing."

His other contributions include attribution grammar; LR(k) parsing; the Knuth-Morris-Pratt string searching algorithm, the creation of the TeX typesetting system [March 30], the METAFONT font definition language, and the WEB and CWEB systems for literate programming. His interest in typesetting is perhaps due to the fact that his father owned a small printing business.

In eighth grade, Knuth entered a contest to find the number of words that could be generated by rearranging the letters in "Ziegler's Giant Bar". Although the judges had 2,500 words on their own list, Knuth unearthed 4,500. His school duly received a new television and a copious supply of candy bars.

This problem is much easier to attack today if you have a knowledge of UNIX scripting, The following program found 2,420 words:

```
tr A-Z a-z <
/usr/share/dict/words  |
egrep "^[zieglrsantb']*$"
|
egrep -v "^.$" |
egrep -v
"a.*a.*a|b.*b|e.*e.*e|g.*g
.*g|i.*i.*i|l.*l|n.*n|r.*r
.*r|s.*s|t.*t|z.*z|'.*'"
```

One of the 11-letter words is "brainteaser". Using a larger words list takes the total to 5,334 words, with five 12-letter results.

Donald Knuth (1960's). Early Stanford AI Lab People. Photo by Vaughan Pratt and Bruce Baumgart.

Knuth, aged 19, had his first article published, "The Potrzebie System of Weights and Measures," in issue 33 of the academically stringent MAD magazine. One potrzebie is equal to the thickness of issue 26 of MAD, or 2.63348517438173216473 mm.

In 1958, Knuth wrote a program to help the basketball team at Case Institute of Technology which gauged the probability of players getting points, a novel approach that was reported on

by *Newsweek* magazine and CBS Evening News.

Knuth used to pay a finder's fee of $2.56 for any typographical errors or mistakes discovered in his books, because "256 pennies is one hexadecimal dollar", and $0.32 for "valuable suggestions". These Knuth reward checks are among computerdom's most prized trophies. Sadly, he had to stop sending real checks in 2008 due to bank fraud, and now gives each error finder a "certificate of deposit" from a publicly listed balance in his fictitious "Bank of San Serriffe".

Knuth is also a biblical scholar, and somehow find time to write "3:16 Bible Texts Illuminated", a history that examines chapter 3, verse 16 in each of the Bible's 59 books.

Knuth's "Fantasia Apocalyptica", a multimedia work for pipe organ and video premiered in 2018. His interest in this topic may again stem from his father who use to play the organ at Sunday church services. Knuth joined the American Guild of Organists in 1965, has designed a baroque pipe organ for a church, and had his own house built around a smaller 812-pipe version.

Some quotes:

"Beware of bugs in the above code; I have only proved it correct, not tried it."

"Premature optimization is the root of all evil." Knuth refers to this as "Hoare's Dictum" [Jan 11], but the attribution is doubtful.

"l have to program because of the aesthetics of it. l love to see the way it fits together and sort of sings to you."

"The most important thing in a programming language is the name. A language will not succeed without a good name. I have recently invented a very good name, and now I am looking for a suitable language."

Project Diana

Jan. 10, 1946

The US Army Signal Corps' "Project Diana" involved bouncing radio signals off the Moon, the first time another celestial body had been used in this way. The first echo was detected at 11:58am by John H. DeWitt and E. King Stodola at Fort Monmouth in New Jersey.

"Project Diana" is often cited as the birth of the US space program, as well as that of radar astronomy. It also established the practice of naming space projects after Roman gods and goddesses, as in the somewhat better known NASA Mercury and Apollo missions [July 20].

The development of communication satellites in the 1960's made this technique obsolete, but radio amateurs have taken up EME (Earth-Moon-Earth) communication as a hobby. The first amateur radio Moon bounce took place in 1953.

The Atari ST

Jan. 10, 1985

The Atari ST series succeeded the Atari 8-bit family [Nov 00]. The initial model, the 520ST, was announced at CES [June 24] in Las Vegas, and went on sale in July.

Atari 1040STF running GEM (1986). Photo by Bill Bertram. CC BY-SA 2.5.

"ST" stood for "Sixteen/Thirty-two", referring to the Motorola 68000's 16-bit external bus and its 32-bit internals [Sept 26].

The ST was the first PC to come with a bitmapped color GUI, a version of Digital Research's GEM [Feb 28]. GEM ran on top of TOS ("The Operating System"), much as early versions of Microsoft Windows ran on top of MS-DOS [Aug 12].

Due to the 520ST's similarities to the Macintosh [Jan 24], and Jack Tramiel's [Dec 13] role in its development, it was quickly nicknamed the Jackintosh. TOS also became better known as the "Tramiel Operating System"

One significant difference between the 520ST and the Mac was the price: the Mac 512K sold for $3,195, while the 520ST (also with 512 KB of RAM) was only $800, or $1000 with a color monitor (which the Mac didn't offer).

Thanks to its two built-in MIDI ports (the first PC to feature them), the 520ST was popular as a controller for digital musical devices. For instance, the Fatboy Slim album "You've Come A Long Way, Baby" has a large foldout picture of the recording studio with a ST taking pride of place.

Early 520ST owners became accustomed to the "Atari Twist" and the "Atari Drop" case manipulations. The "Atari Twist" maneuver helped discharge built-up static electricity, while the "Atari Drop" helped re-seat chips which may have become loose.

The 520ST was released shortly before the Commodore Amiga 1000 [July 23], and a huge (but mostly friendly) rivalry grew up between their users.

The follow-up ST model, the Atari 1040STF, debuted in 1986. It was the first PC to ship with 1 megabyte of RAM, and the first with a memory-cost-per-kilobyte of less than $1.

Atari ended development of the ST in 1993, to focus on the Jaguar [Nov 23], a gaming console.

GEOS Introduced

Jan. 10, 1986

Berkeley Softworks announced GEOS (Graphic Environment Operating System), a Mac-like OS for the Commodore 64 [Jan 7], and later the Commodore 128, Apple II, and the PC.

At its peak, GEOS was the third most-popular microcomputer OS in terms of units shipped, trailing only MS-DOS [Aug 12] and the Mac OS [May 13]. It included a word processor (geoWrite) and paint program (geoPaint). Other software included a desktop publishing application called geoPublish, and a spreadsheet named geoCalc.

GEOS was based on Berkeley Softworks' OS for the "Sky Tray", a battery-powered 6502-based device [Sept 16] with a LCD and membrane keyboard intended for the backs of airline seats. That project was dropped, and the OS repurposed.

Amazingly, GEOS needed as little as 64 KB of RAM (and a 20K ROM), and came on a single 5.25" floppy disk. The main problem was its extreme use of copy-protection that only allowed one backup disk to be made, and linked the running of all of the GEOS applications to that copy.

On Aug. 19, 2016, Michael Steil released the C source code for a fully reverse-engineered GEOS 2.0 to Github.

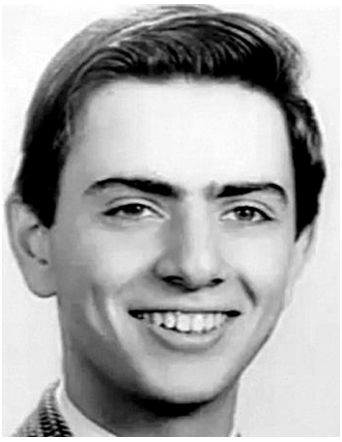
Apple vs. Sagan

Jan. 10, 1994

The first three Power Macs [March 14], the 6100, 7100, and 8100, all had so-called "fraud" codenames ("Piltdown Man", "Carl Sagan" [March 2], and "Cold Fusion"). This was intended to be a humorous reference to their PowerPC chip's ability to emulate a 68000 [Sept 26]. Although the names were internal to Apple, they were somehow made public in a 1993 issue of *MacWeek* magazine

Hurriedly, Apple PR explained that the "Carl Sagan" label was actually a reference to his catchphrase "billions and billions", since Apple hoped that the 7100 would make billions and billions of dollars.

Nevertheless, Sagan asked Apple to clarify that the codename wasn't an official endorsement on his part. Also, some observers speculated that Sagan wasn't too keen on having his name associated with two prominent examples of pseudo-science. When Apple refused, Sagan wrote a letter of complaint to *MacWeek*, which was published on this day.



Carl Sagan (1951). Photo by Rahway High School.

Belatedly, Apple changed the codename to "BHA" (apparently standing for "Butt-Head Astronomer"). Sagan responded by suing for libel, but lost.

Sagan and Apple finally came to an out-of-court agreement in Nov. 1995, leading to Apple issuing an apology. The engineers also changed the codename again, from "BHA" to "LAW", reputedly short for "Lawyers are Wimps".

Later that same year [Aug 24], Apple had similar trouble with Bob Dylan.

AOL and Time Warner to Merge

Jan. 10, 2000

AOL [Oct 2] announced that it was planning to purchase Time Warner for $164 billion. It has since been called the worst merger of all time.

According to AOL President Bob Pittman, the amalgamation would mean that slow-moving Time Warner would start flying at Internet speed, and a lot of people agreed with him. Ted Turner, a prominent Time Warner director, gushed, "Shortly before 9:00 last night, I had the honor and privilege of signing a piece of paper that irrevocably cast a vote taken, a vote of my 100 million shares, for this merger. I did it with as much or more excitement and enthusiasm as I did on that night when I first made love some 42 years ago."

Just a few months after the deal was closed (Jan. 11, 2001), the dot com bubble burst [March 10]. Advertising dollars evaporated, and AOL was forced to write-off nearly $99 billion, the largest loss ever reported by a company at the time.

The value of AOL's stock plummeted from $226 billion to $20 billion.