Future Shock: 11 Real-Life Technologies That Science Fiction Predicted

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Truth can be stranger than fiction, yes, but what about science fiction? Some of the most outlandish scenarios imagined by writers of films, TV shows, and books have come true, and they were actually inspired by science fiction. In fact, without writers to imagine them, digital technologies such as video chatting, cell phones and tablets, drones, and robots might not even exist.

Science fiction predicted credit cards, television and the 1969 lunar landing. Bionic limbs, military tanks, antidepressants and submarines emerged from sci-fi, too. Even the concept of the internet originated in a book published more than 30 years ago: "Neuromancer" by the author William Gibson, who coined the term word "cyberspace" and defined it (quite presciently) as "a consensual hallucination." Gibson, who has been hailed as a modern-day Nostradamus, also foretold reality TV and nanotechnology, among other marvels.

Some science fiction predictions have been dystopic, like the villainous computer HAL 9000 in the Stanley Kubrick film "2001: A Space Odyssey." More than 50 years after the film's 1968 debut, HAL 9000 continues to serve as a warning of the malign potential of artificial intelligence.

Many other predictions, however, have pointed to tech's potential for enriching and enhancing our lives. From the hologram table in George Lucas's "Star Wars" (1977) to video chats and flying cars in the 1960s TV show "The Jetsons," so many modern-day digital wonders and wannabes were first imagined by — and inspired by — people who weren't scientists at all, but writers.

Who knows what the future might hold? Science fiction writers do, it seems. The rest is up to science—enabled by advances in technology.

Imagining the Future

Military tanks, computing tablets, submarines, bionic limbs, psychotropic medications: The list of science fiction predictions is long enough to fill a book—and in fact, entire books have been written on this subject. But to foresee digital technologies before computers even existed? How impressive is that?

The connection of sci-fi to technology is far from coincidental, it turns out. Researchers find inspiration in the books, TV shows, and movies that imagine the future. According to one study, science fiction writers often consult with scientists, and what they write influences tech research and provides ideas in a number of ways:

- Modifications to, or extensions of, the human body

- Human-computer interactions

- Human-robot interactions

- Artificial intelligence

If you enjoy any of these 11 technologies, be sure to thank a science fiction writer!

1. **Mobile phones:** The TV show "Star Trek" debuted a flip phone, the communicator, in 1966. Thirty years later, Motorola launched the first mobile flip phone, which, in a nod to the series, it dubbed the StarTAC. Interestingly, the creators of "Star Trek" also gave crew members the tricorder, a hand-held device that gathered and stored data from the planets Captain Kirk and his crew visited. Had the creators thought to combine the two, they might have prefigured the smartphone.

2. **3D holograms:** Perhaps inspired by the "Star Wars" scene in which the robot R2D2 projects a holographic image of Princess Leia asking Obi-Wan Kenobi for help,researchers have been busily working to bring this technology to life. Now, holography is offered in a number of applications, and in 2019, it will bring rock-and-roll icons Buddy Holly and Roy Orbison "back to life" in concert, backed by live musicians.

3. **3D food printing:** The eponymous family in the animated TV show "The Jetsons" had a home food machine that produced full meals. "Star Trek" had the replicator, which could print food literally from thin air in mere seconds. Now, Columbia University has created 3D printing technology that can produce entire cooked meals from prepared ingredients rather than from molecules — although that technology is in the works as well. And for

dessert, the race is on to invent the ultimate chocolate printer.

4. **Domestic robots:** Czech author Karel Čapek coined the term "robot" in 1920 in his famous science fiction play, "R.U.R (Rossum's Universal Robots)." The word stems from "robotnik," the Czech word for "forced worker."

   In "Helen O'Loy," Lester del Rey's 1938 story, two men invent Helen, a robot domestic servant, and fall in love with it. And Philip K. Dick's 1955 short story "Nanny" features a robot that takes care of children so well that the family it serves resists attempts to convince it to upgrade to a newer model. (Spoiler alert: Disaster ensues.)

   But the most widely known robot servant in science fiction is probably the Jetsons'Rosie, with its ever-present feather duster in hand and funny brrp-bing! punctuations when speaking. Today, we have disc-shaped robotic floor cleaners, said to do their job very well, but no multitasking, artificially intelligent robots serve our households yet. Researchers say the technology is in development, possibly available commercially in about a decade.

5. **Autonomous cars:** Cars with "robot brains" would be a central feature of the 2014 World's Fair, science fiction writer Isaac Asimov predicted in The New York Times in 1964.

   "Much effort will be put into the designing of vehicles with 'robot-brains' – vehicles that can be set for particular destinations and that will then proceed there without interference by the slow reflexes of a human driver," Asimov wrote.

   James Bond movies, too, envision automobiles that drive themselves with a modicum of human intervention. Sitting in the backseat of his BMW 750IL, agent 007 controls the car using his phone in 1997's "Tomorrow Never Dies." In fact, Bond always has the coolest ride around, with lots of features we're seeing today and will likely see tomorrow. A number of automakers and some tech companies are developing fully autonomous vehicles with an eye toward getting them on the road by 2025.

6. **Flying cars:** The fastest way to get from Point A to Point B is to travel as the crow flies — in a line. Earth's hilly, watery terrain makes that straight shot impossible much of the time, slowing us down. Is it any wonder that science fiction takes us to the skies? Flying cars made an early appearance Bond creator Ian Fleming's 1964 novel (and subsequent 1968 film) "Chitty-Chitty-Bang-Bang: The Magical Car."

   Fleming reportedly based his children's tale on the real-life Chitty Bang Bang cars designed by Count Louis Vorow Zborowski, a British race car driver and automobile engineer. The real-life Chitties didn't fly, but the final car in the series, Chitty 4 (rechristened "Babs"), did break the land-speed record in 1926 at 171 mph. The current record, set in 2018, is 448.757 mph—but who knows how fast flying cars will travel?

   "Autonomous urban aircraft" is under development privately as well as by the military and NASA. These flying vehicles, capable of carrying at least one human and therefore not considered drones, are predicted for common use by 2040.

7. **Drones:** Frank Herbert's 1965 novel "Dune" envisions a tiny "hunter seeker" assassin drone, and autonomous flying vehicles are everywhere in Star Wars. In fact, a number of sci-fi books and movies depict drones long before they were in actual use, first for military purposes in the last few decades, and more recently, for commercial and recreational purposes.

The U.S. Federal Aviation Administration reportedly issued its first commercial drone permit in 2006 and gave out 16 over the next eight years. Then, interest literally skyrocketed after Amazon CEO Jeff Bezos' 2013 announcement that the company was considering using drones to deliver packages. Then in 2018, the agency issued 100,000 remote pilot certificates, required to fly a drone.

Uses for drones have grown accordingly, including aerial photography, emergency response and agricultural precision crop monitoring. And, as predicted in Raymond Z. Gallun's 1936 short story "The Scarab" and popularized by the TV series "Black Mirror," robo-bees may someday help pollinate our food crops: Wal-Mart filed a patent application in 2018 for tiny drones that can detect and spread pollen.

8. **Virtual reality:** Credit goes to Stanley G. Weinbaum's 1935 story "Pygmalion's Spectacles" for portending VR, complete with goggles. Steven Lisberger's 1982 film "Tron" also imagines entering a digital world, and Neal Stephenson's 1992 novel "Snow Crash" describes VR in a way that rings familiar today:

"Through the use of electronic mirrors inside the computer, this beam is made to sweep back and forth across the lenses of Hiro's goggles, in much the same way as the electron beam in a television paints the inner surface of the eponymous Tube. The resulting image hands in space in front of Hiro's view of Reality….

So Hiro's not actually here at all. He's in a computer-generated universe that's drawing onto his goggles and pumping into his earphones."

Today's VR looks very much as these writers imagined it, offering escape into alternative worlds by means of goggles that provide immersive 3D images and sound. Haptic gloves allow us to experience touch in our alternative universe, and researchers are working to bring flavors and aromas to the experience as well.

9. **Smart watches:** Fans of the comic strip "Dick Tracy" glimpsed the future in 1946 when creator Chester Gould gave his police detective a two-way wrist radio. In 1964, Gould added video, a feature that smart watches don't sport today but that seems inevitable.

Perhaps Gould's inspiration for the video watch came from "The Jetsons," in which boy Elroy Jetson, in 1962, used his watch to view "The Flintstones," another animated series produced by the same company, and to make and receive calls.

10. **Video calls:** With the use of Zoom; Facetime; WeChat in China; and other video-chat apps for business meetings and personal calls — video callers globally spend 340 million minutes daily on WhatsApp alone — it's difficult to imagine how wondrous (and impossible) this technology seemed not too long ago.

Seeing the face of the person you're speaking with on the phone has long been the stuff of science fiction, starting with the 1911 novel "Ralph 124C 41+: A Romance of the Year 2660" by Luxembourgish-American writer Hugo Gernsback, which featured a video-conferencing device called the "telephot." The German film "Metropolis," made in 1927, depicted a wall-mounted videophone, as did "2001: A Space Odyssey."

11. **Ear buds:** Ray Bradbury's 1953 novel "Fahrenheit 451" envisions seashells and thimble radios tucked into people's ears, as well as Bluetooth-like headsets, producing "an electronic ocean of sound, of music and talk

and music and talk, coming in on the shore of [your] unsleeping mind." How does that *not* sound like wireless ear buds?

Some predict that speech recognition, powered by machine learning (a form of artificial intelligence) will replace typing on keyboards or keypads altogether. Some predict that the market for the technology will grow nearly threefold by 2024, to $21.5 billion (up from $7.5 billion in 2018).

Dreams Come True Via Memory and Processing

For these technologies to work, they need ample memory, storage and superfast processing capabilities. Virtual reality, for instance, must process vast amounts of data at the speed of thought without dropping frames, which causes motion sickness. Artificial intelligence, which drives nearly every technology on our list, needs to "think" as fast as we do, or we won't consider it intelligent at all—a capability that 5G technology will enable.

Micron is meeting the challenges of tomorrow's technologies with solutions capable of storing more and more data in increasingly smaller spaces and moving it more quickly to computer processors. These include high-bandwidth GDDR6 graphics memory, developed for video gaming but used in many diverse applications; fast DRAM; high-density NAND flash memory; 3D XPoint™ persistent memory technology that combines the best features of DRAM and NAND; and our lightning-quick solid-state drives.

What's next among sci-fi inspired technologies? Time travel à la Spanish director Nacho Vigalondo's "Timecrimes" or H.G. Wells's "The Time Machine"? A "beam me up" teleporter like the one used in "Star Trek"? An invisibility cloak like Harry Potter wears in the J. K. Rowling series? Voyages to other planets or even solar systems?

These technologies and others have yet to emerge — but if they do, chances are they'll use Micron products. Now and in the future, Micron continually pushes our hardware to be the best, leading the pack in memory and storage solutions and paving the way for tomorrow's science fiction predictions.

The films, TV shows, books, and plays mentioned in this article are the artistic works of their creators. Micron has no tie to their creation. The views and opinions expressed in those works do not reflect those of Micron Technology. Mention of these works are for reference only and does not imply a promotion or endorsement from Micron.

In order of appearance:

"Necromancer," William Gibson, 1984

"2001: A Space Odyssey," MGM, 1968

"Star Wars," Lucasfilm, 1977

"The Jetsons," Hanna-Barbera, 1962-1962, 1985-1987)

"Star Trek," Gene Roddenberry, 1966-1969

"Roy Orbison & Buddy Holly: The Rock 'N' Roll Dream Tour," Base Hologram, 2019

"R.U.R. (Rossum's Universal Robots)," Karel Čapek, 1921

"Helen O'Loy," Lester del Rey, 1938

"Nanny," Philip K. Dick, 1955

"Tomorrow Never Dies," MGM/United International Pictures, 1997

"Chitty-Chitty-Bang-Bang: The Magical Car," Ian Fleming, 1964-1965 (3 volumes)

"Chitty Chitty Bang Bang," United Artists Pictures, 1968

"Dune," Frank Herbert, 1965

"The Scarab," Raymond Z. Gallun, 1936

"Black Mirror," Channel 4, 2011-2014; Netflix, 2016-present

"Pygmalion's Spectacles," Stanley G. Weinbaum, 1935

"Tron," Lisberger-Kushner Productions, 1982

"Snow Crash," Neal Stephenson, 1992

"Dick Tracy," Chester Gould, 1931-1972; Various illustrators, 1972-present

"The Flintstones," Hanna-Barbera, 1960-1966

"Ralph 124C 41+ : A Romance of the Year 2660,"Hugo Gernsback, 1911

"Metropolis," UFA, 1927

"Fahrenheit 451," Ray Bradbury, 1953
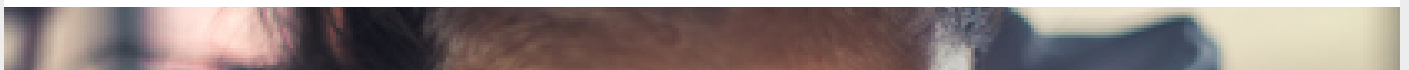
"Her," Annapuma Pictures, 2013

"Timecrimes," Karbo Vantas Entertainment, Zip Films, Fine Productions, Arsenico PC, 2007

"The Time Machine," H. G. Wells, 1895

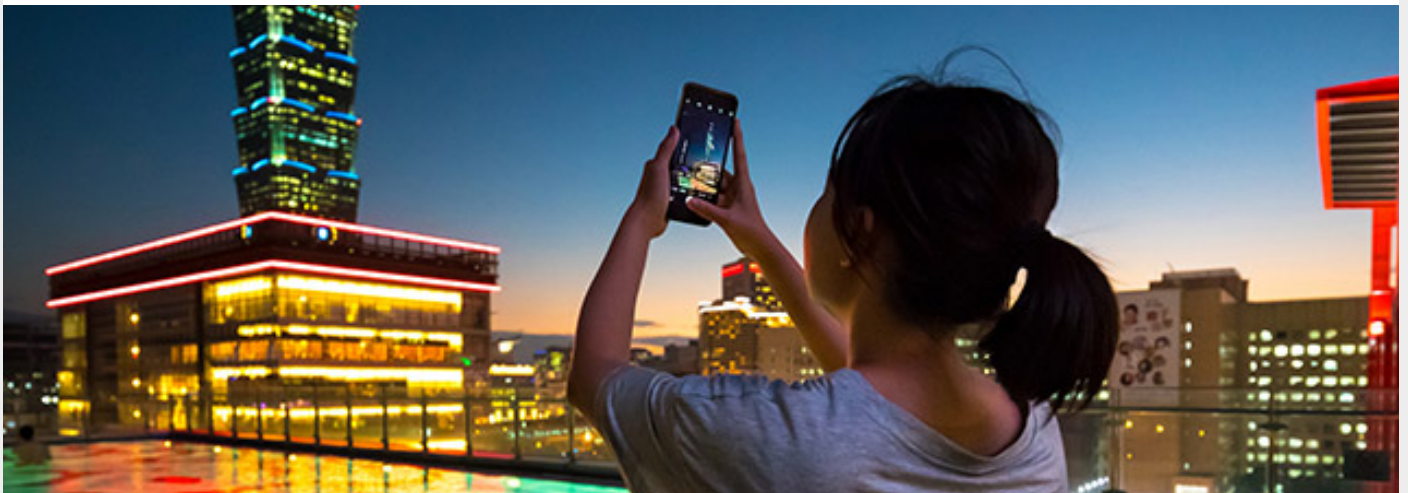*Harry Potter series, J. K. Rowling, 1997-2007*

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