

REVIEWS

More Than Human

The dawn of a technologically enhanced super-species is upon us

REVIEW BY MICHAEL SHERMER

HOMO DEUS:
A Brief History of Tomorrow
 BY YUVAL NOAH HARARI
 Harper, 440 pp., \$35

AS ONE OF THE MOST far-seeing visionaries of our time, the science-fiction author Arthur C. Clarke often opined on the nature of science in relation to humanity's future, never more elegantly than in his famous three laws:

Clarke's First Law: "When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong."

Clarke's Second Law: "The only way of discovering the limits of the possible is to venture a little way past them into the impossible."

Clarke's Third Law: "Any sufficiently advanced technology is indistinguishable from magic."

The "laws" have been quoted and modified over the decades, including by me in my suggestion that any sufficiently advanced extraterrestrial intelligence or far future human would be indistinguishable from God.

The latter is what the Israeli historian Yuval Noah Harari has in mind in his appositely titled

Michael Shermer is the publisher of *Skeptic* magazine, a monthly columnist for *Scientific American*, and a Presidential Fellow at Chapman University. He is the author of *The Moral Arc*, *The Believing Brain*, *Why Darwin Matters*, and *Why People Believe Weird Things*. His next book is *Heavens on Earth: The Quest for Immortality and Perfectibility*.

Homo Deus—Man God—his considerations of what humanity is about to become as a result of our advanced science and technology. This is not a book of prophecy; Harari is not trying to be Nostradamus. Neither does it include a litany of predictions that investors can use to bank on what and when the Next Big Thing will be. Instead, *Homo Deus* is a meditation on what could be our long-term future given our nature and our past, which he wrote about in his prior best-selling and widely praised *Sapiens*. To that end, given the obvious limitations of any book about the future, *Homo Deus* succeeds. It is beautifully written, stylish, wide-ranging across disciplines and intellectual geographies, integrative of diverse ideas not obviously connected, creative in perspectives most scholars do not normally take, and reflective on what our species might become if current trends continue.

Harari is also a realist in his deliberations. A case in point is in the realm of health and longevity. Thanks to public health measures and medical technologies, life expectancy in the West has more than doubled during the past century and is now approaching 80. Could it double again, and again, indefinitely into the far future, leading humans to become immortal gods? A number of techno-optimists think so. One of Google's directors of engineering, Ray Kurzweil, the creative genius who gave us the first optical character recognition program and CCD flatbed scanner, the first print-to-speech reading machine for the blind, the first text-to-speech synthesizer, and much more, believes that "the law of accelerating returns"—which holds not just that change is accel-



This early prototype of Watson at IBM's research facility in Yorktown Heights, New York, is the size of a master bedroom.

erating, but that the *rate* of change is accelerating—means that when we reach 2040 to 2050, we will achieve what he calls the Singularity, in which the world will change more in a year than in all pre-Singularity history. When that happens, humans will achieve immortality. He's not alone in his techno-utopianism. Kurzweil's bosses at Google, Larry Page and Sergey Brin, started the biotech company Calico to develop the science and technology to expand the human lifespan beyond the current maximum of about 120 years. Hedge fund manager and PayPal cofounder Peter Thiel created Breakout Labs in order to fund scientists and startups that are working on achieving immortality, and he invested \$3.5 million into the anti-aging Methuselah Foundation, founded by Aubrey de Grey, a biomedical gerontologist who treats aging as an engineering problem to be solved at the cellular level by reprogramming the anatomy, physiology, and genetics of cells so that they stop aging. He's on record asserting that the first human to live 1,000 years is alive today.

Harari will have none of this utopian fabulism. "My own view is that the hopes of eternal youth in the twenty-first century are premature, and whoever takes them too seriously is in for a bitter disappointment." Moreover, Harari

gives readers a cold dose of reality that "so far modern medicine hasn't extended our natural life span by a single year." Say what? "Its great achievement has been to save us from *premature* death, and allow us to enjoy the full measure of our years." If we eliminated every major disease like cancer and diabetes, Harari reminds us, it would only mean that everyone who wasn't killed in an accident, homicide, suicide, or war would get to live into their 90s, "but it will not be enough to reach 150, let alone 500." Not to mention immortality.

Harari's optimism on this front is in line with what the futurist and *Wired* magazine cofounder Kevin Kelly calls "protopia": step-wise, incremental progress in which today is slightly better than yesterday, and tomorrow is a bit better than today. Let's attenuate plagues, famine, wars, terrorism, homicides, suicides, poverty, pollution, while we accentuate peace, prosperity, freedom, health, education, and happiness for more people in more places more of the time. It won't make us *Homo deus* the species, but it is something well worth striving for with quantifiable benefits.

After a lengthy reflection on *Homo sapiens* as evolved animals in relation to nature and other animals, and how the last millennium set the stage for the coming jarring changes in the 21st century, the rest of *Homo Deus* focuses on artificial intelligence (AI) and the many changes,

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most notably economic ones, it will bring about for our species. As AI takes over our lives—from running our companies, homes, and hospitals to driving our trains, planes, and automobiles—how will that effect economies, most especially jobs? What will we do, not only for a living but for life itself, when there are machines that can do just about everything better than we can?

If there is a religion in Harari's projections for *Homo deus* it is Dataism, the belief "that the universe consists of data flows, and the value of any phenomenon or entity is determined by its contribution to data processing." Like previously successful religions, Harari suggests, Dataism wants to "link everything to the system, including heretics who don't want to be plugged in. And 'everything' means more than just humans. It means every *thing*. Our bodies, of course, but also cars in the street, refrigerators in kitchens, chickens in their coops, and trees in the jungle—all should be connected to the Internet-of-All-Things." Thus, the greatest good for the greatest number in Harari's utilitarian calculus is the free flow of information, and the greatest sin in the Dataism religion is to block data flow.

This is the most speculative and necessarily uncertain part of *Homo Deus*, and Harari admits that "we cannot really predict the future." Thus, "all the scenarios outlined in this book should be understood as possibilities rather than prophecies." We evolved as bipedal primates on the African plains, and our senses and brains are geared toward projecting the immediate future based on the most recent past. "When we think about the future," Harari concludes, "our thoughts and actions are usually constrained by present-day ideologies and social systems." He wants us to try to think beyond these constraints, and to that end, I return to Arthur C. Clarke and another observation he made in his 1951 book, *The Exploration of Space*: "If we have learned one thing from the history of invention and discovery, it is that, in the long run—and often in the short one—the most daring prophecies seem laughingly conservative." Call that Clarke's Fourth Law.

Robocops and Robbers

Criminal justice in the age of digital spying and surveillance

Review by Jill Leovy

**UNWARRANTED:
Policing Without Permission**

BY BARRY FRIEDMAN

Farrar, Straus and Giroux, 448 pp., \$28

CRIMINAL JUSTICE is neither a puzzle to crack nor an engineering problem to solve but a negotiation—a process by which humans reach consensus about violent conflict. It cannot be ceded to robots and algorithms. The system requires human victims, human witnesses, and proceedings on a human scale. Real people must participate in the assignment of guilt—not because of a lack of means, but because human participation is the *point*.

At its core, law is about discrete events, not conjectured risks. It asks: What can we agree happened? What's to be done about it? That's the problem inherent in technology-driven, predictive approaches to law enforcement. They may have their uses, but criminal justice is not one of them. Surveillance and conflict resolution are fundamentally different enterprises. Surveillance-driven policing seeks to anticipate wrongdoing rather than respond to it. Such a system does not ask, What happened? It asks, What might happen? The answer, of course, is *anything*. The open-ended logic of predictive policing argues for the increasing escalation of state intrusions, using swiftly advancing technology.

New York University law professor Barry Friedman addresses this danger in *Unwarranted: Policing Without Permission*, a sprawling book—part survey, part manifesto—that offers a catalog

Jill Leovy is the author of *Ghettoside: A True Story of Murder in America*, a finalist for the 2016 National Book Critics Circle Award for nonfiction. She is a staff writer for *The Los Angeles Times*.