BOOKS

'I have said that the modern man, and especially the modern American, however much "know-how" he may have, has very little "know-what." ' —Norbert Wiener

The Man-Machine Myth

Rise of the Machines
By Thomas Rid
Norton, 414 pages, $27.95

BY MICHAEL SALER

LARGELY FORGOTTEN today, Norbert Wiener's science of "cybernetics"—the study of organisms and machines as mutually compatible feedback systems—captivated scholars and the public alike from the late 1940s through the 1960s. In "Rise of the Machines," however, Thomas Rid seems to welcome its eclipse, or at least the decline of its founder's reputation. He dubs Wiener an "eccentric mathematician," "stubborn scientist," "roly-poly professor," "hapless professor" and (more ambiguously) "M.I.T. professor." Yet Mr. Rid has come not to bury the "tweedy scholar with thick, horn-rimmed glasses" but to praise him. Wiener's insight, we find, was actually "one of the twentieth century's biggest ideas."

In its heyday, cybernetics highlighted the similarities between humans and machines and envisioned their symbiotic relations. The latter could range from buddy-buddy (think R2-D2) to predator-prey (think HAL 9000). Cybernetics dwindled as a popular field by the early 1970s, but many of its concepts—and its potent prefix "cyber"—continue to shape public expectations about technology. Mr. Rid argues that the beliefs inspired by the "cybernetic mythos" have a quasi-theological character: They tend to be faith-based and Manichaean, either ebulliently optimistic about the liberating effects of machines or darkly pessimistic about their dehumanizing, destructive potentials.

Indeed, Mr. Rid's account is less a history of cybernetics as an academic discipline than a cultural history of cybernetics as a peculiarly modern myth. The myth's auguries—hopeful ones of human-machine synergies; dire ones of oppressive artificial intelligences—are couched in scientific terms and thus appear real and inevitable. Like all mythic accounts, these visions seem to resolve intractable contradictions through emotionally resonant symbols, such as the "Singularity," in which humans might be uplifted by being uploaded into more intelligent machines. Most, though, have turned out to be scientific fictions (some inspired by science fiction). Mr. Rid contends that they are "dangerous" because they undermine rational considerations of how technologies are used and abused. Something of a cyber-Cassandra himself, Mr. Rid finds that many of the prophecies he exhumes are being repeated today in new guises: The "seductive power of the cybernetic mythos has increased over the decades, not decreased."

Wiener formulated his theory of cybernetics during World War II, while exploring the interactions between humans and machines in the heat of battle. He found that both adjusted to rapidly changing conditions through feedback loops, as in the case of a gunner calculating when and where to fire or radar equipment locating objects through the boomeranging of radio waves. Wiener developed a central observation: Organisms and machines were similar in their ability to regulate themselves and their environment through communications. Brains and

PIONEER Wiener in 1949.
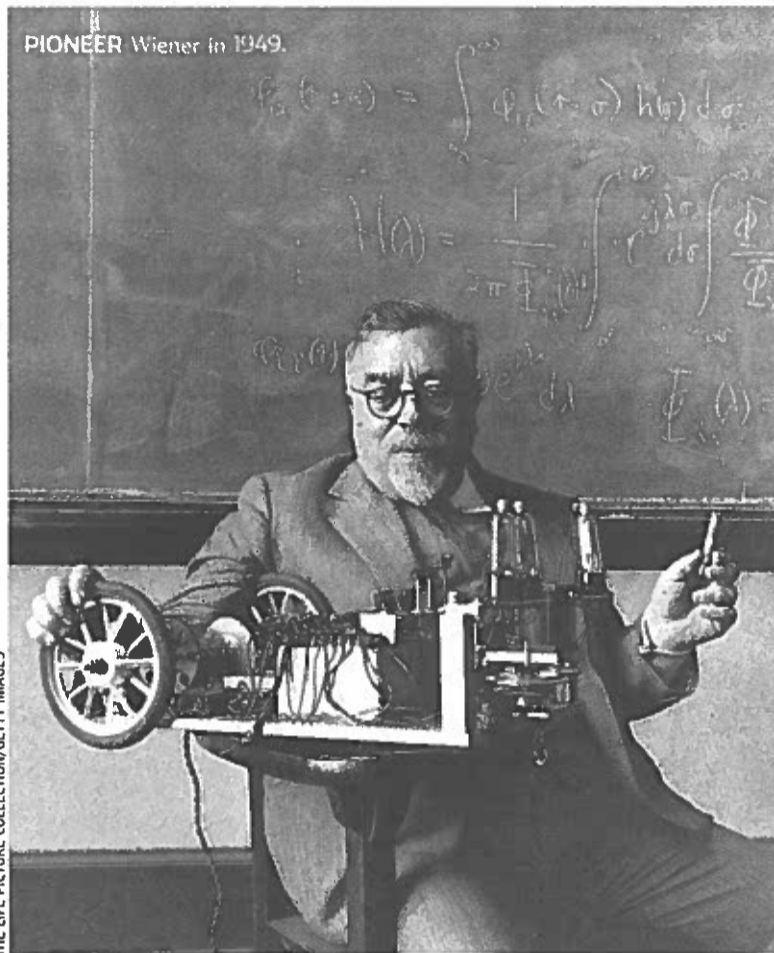
computers were essentially input-output devices, a conclusion reflecting the reigning school of behaviorist psychology. In tandem, humans and machines could form a dynamic and powerful system; left to themselves, machines could, in principle, develop intelligence and the ability to self-replicate. They might even replace humanity.

Wiener presented his new dispensation in "Cybernetics: Or Control and Communications in the Animal and the Machine" (1948). The media processed the book's thorny arguments into mythic fodder, popularizing both a glamorous image of artificially augmented human potential and a more horrific vision of robo-apocalypse. The book appeared at an opportune moment, as cybernetics provided a compelling way to understand the computers ("big brains") first developed during the war, as well as the vast extension of business automation ("cybernation") in the postwar period.

Cybernetics also became a trendy interdisciplinary field, uniting scientists, engineers and social scientists. The definition of "communicating entity" soon became highly elastic: It was applied to computers, individuals, societies and the globe, all of which were defined as regulating their behavior through feedback loops. (Feedback wasn't always perfect: Anthropologist Margaret Mead recalled being so excited at a cybernetics conference that "I did not notice that I had broken one of my teeth until the conference was over.")

A professor of war studies at King's College London, Mr. Rid implies that the U.S. defense services made greater practical use of cybernetics than ivory-tower intellectuals like Wiener. He lovingly details the military applications of cybernetics, such as the largely automated air-defense system of the 1950s. (Its decentralized communications system was a precursor of the internet.) In 1960, the Air Force first proposed cyborgs, or "cybernetic organisms," for use in space, and later in the decade the Army developed cumbersome "exoskeletons" for deploy-

ment in the Vietnam War. Neither program fulfilled its larger ambitions, a common thread in cybernetic history.

Wiener was a harsh critic of the military use of cybernetics, fearing the consequences of machine error and the fatal seduction of a "push-button" war. Others, like Kurt Vonnegut in "Player Piano" (1952), decried the dystopian consequences of a fully automated society. Yet despite such gloomy forecasts, cybernetics inspired mostly hopeful dreams through the 1990s.

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Self-help and human-potential movements were especially susceptible to its charms. L. Ron Hubbard's "Dianetics" (1950) was indebted to cybernetics, depicting neuroses as the result of faulty brain programming. In 1960, Maxwell Maltz, a plastic surgeon, transformed cybernetics into a self-help book—"Psycho-Cybernetics"—that sold more than 30 million copies.

Where self-help goes, the counterculture is rarely far behind. Mr. Rid discusses the apparent contradiction between the flower-power generation's revolt against an "administered society" and its simultaneous embrace of "machines of loving grace." Stewart Brand, erstwhile hippie, influential creator of the Whole Earth Catalog in the 1960s and one of the earliest "digerati" of the 1980s, adopted Wiener's mantra that machines extended human potential. Mr. Brand was also galvanized by anthropologist Gregory Bateson's theory that the earth itself was one vast cybernetic system whose equilibrium depended on feedback loops.

The emergence of ethereal "virtual reality" in the 1980s seems unrelated to the mechanistic tropes of cybernet-

ics. William Gibson, the science-fiction writer who coined the term "cyberspace" in 1982, claimed that he did so precisely because it "meant absolutely nothing." Perhaps—but Mr. Brand, Timothy Leary and other members of the counterculture quickly defined computer-generated realities as the high-tech equivalent of an acid trip, expanding consciousness in true cybernetic style. Leary proclaimed that virtual reality represented "the mix of the psychedelic and cybernetic cultures," and Grateful Dead lyricist John Perry Barlow championed the appropriate (and by now expected) neologism: "cyberdelic."

As usual with the cybernetic mythos, these giddy visions were far ahead of what machines could actually accomplish; virtual reality was virtually dead by the mid-1990s. Utopian hopes became attached to the rapidly expanding internet. Mr. Rid outlines how anarchists and libertarians welcomed it as the new "cybernetic frontier" that could be fortified against government intrusion through robust forms of encryption. These "cypherpunks" prophesied that the state would wither away once alternate markets, currencies and information exchanges became the norm online. Such "crypto anarchy," though, is truly remote from many of the original tenets of cybernetics. Mr. Rid gamely justifies its inclusion because it "embodied the unshakable cybernetic faith in the machine."

According to Mr. Rid, the emergence of "cyberwar" in the 1990s marked the "fall of the machines," reflecting more dystopian attitudes toward cyberculture at the turn of the century. Between the 1970s and the 1990s, the Pentagon was favorably disposed to the original premises of cybernetics. ("Cyberspace isn't just for geeks," crowed one strategist. "It's for warriors now.") The Defense Department blithely assumed that the U.S. would always maintain technological superiority. But it was not adequately prepared for the "first large state-on-state" cyberattack, which took place in 1998, prosecuted by hackers in Moscow. The global internet had leveled the playing field, making everyone vulnerable. And cryptography, the liberating panacea for the cypherpunks, has since proved a tool for oppression as well as liberation.

Mr. Rid's fascinating survey of the oscillating hopes and fears expressed by the cybernetic mythos offers an implicit lesson. He is right to find many of its visions excessive—although this should be balanced against the value of bold dreams to inspire innovation. Perhaps a greater problem with these mythic tales is their binary nature. They are often cast in the digital "either/or" mode of programming logic: Machines are either friend or foe. Even Mr. Rid sometimes falls into this trap, asking: "Are machines finally freeing humankind? . . . Or are modern societies sleepwalking into a dangerous brave new world?" The reality, of course, usually lies somewhere in between. Traditional prophets sacrificed clarity by speaking in tongues; the modern cybernetic mythos does so by speaking in digits.

Mr. Saler, a professors of history at the University of California, Davis, is the author of "As If: Modern Enchantment and the Literary PreHistory of Virtual Reality."

Quests and Questions

HOUSTON in the summer of 1952 is the setting of James Lee Burke's evocative and often poetic coming-of-age thriller **"The Jealous Kind" (Simon & Schuster, 382 pages, $27.99),** an action-packed yet discursive saga narrated by the 17-year-old Aaron Holland Broussard, whose adolescent chivalry, lustful yearning and loyalty to a reckless friend pull him into a creepy and dangerous world of organized crime and extremist politics.

At Broussard's high school, children of privilege go to class with "hard-core blue-collar" students who use the metal shop in secret to manufacture brass knuckles for "some of the roughest kids on earth." The beautiful girl Broussard rescues from the attentions of an arrogant young thug is the daughter of an ex-OSS of-

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She's the daughter of an ex-OSS officer with radical leftist views and a propensity for violence.

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ficer who has radical leftist views as well as a propensity for violence. The young thug's father, meanwhile, is a coldblooded right-winger with criminal ties to the Mob.

In this volatile environment, the sensitive and literate Broussard struggles with life-or-death questions of love and comradeship, courage and responsibility, in the wake of two killings and the disappearance of a stolen fortune in cash. Hobbled by rampant insecurity ("For me, low self-esteem was . . . a step up"), plagued by hereditary amnesiac "spells" ("it's like an alcoholic blackout without the alcohol"), he faces each day "like an interlude in time when the potential for good or bad could go either way."

Mr. Burke's lyrical prose style (filtered through a mature Broussard, who reveals that he has become a writer) at times puts one in mind of the late Ross Macdonald: "The moon was yellow, surrounded by a rain ring that looked like a halo on the painting of a Byzantine saint." Or: "His skin had the texture of ham rind." This book, with its larger-than-life characters, is a grand adventure, a sweeping love story and a tale of youth recollected in relative tranquility—its noirish reality tinged with a rosy glow, part of which comes from spilled blood.

Elsa Hart's winning first novel, "Jade Mountain Dragon" (2015), introduced an intelligent sleuth in the form of early 18th-century Chinese librarian-scholar Li Du, and it's even more enjoyable to encounter him in a