fit, white soldier. Vital tool to retain that perceived superiority was the extensive use of fitness training. It was the climate in the colonies of Africa and Asia that put into a fierce test the fitness of white, European soldiers, and their experience of for example extremely high mortality rates was rather the contrary of their believed superiority. Pathologizing the colonies was one of the ways that European medicine and local medical knowledge have influenced each other, but this did not result the creation of specific classifications and systems of recruitment for military service in the colonies in any of the European countries, argues Hartmann.

Chapter 6 provides and outlook of the use and influence of military statistical methods and ideas in the civilian world. In this chapter, Hartmann establishes a clear connection between the development and racial classification of military statistics and the emerging field of radial paradigm. The prevalence of racial paradigm is especially interesting according to Hartmann, because initially it was marginalized in the scientific discourse and it was the beginning of the 20th century that it became one of the most influential scientific perspective of demographic studies.

All in all, Hartmann's study is a very detailed account of the history of military statistics, mostly focusing on German speaking countries. Via sometimes microscopic detail, it is sometimes a bit difficult to see where the author is taking the reader. This however may be accounted for that this monograph book is a translation of the German original, and so the study is springing up from a specific style of scientific writing. Nevertheless, Hartmann does a good job to contextualize the importance of military statistics within the discourse of racial science and nationalism, which are sadly both very topical scientific and social issues today. Due to that the scientific contributions of this book are unquestionable and reading this volume would be in the interest of not only military historians, but researchers of racial studies, history technology and cultural history, and anyone interested in eugenics and racism.

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Yuval Noah Harari, *Homo Deus: A Brief History of Tomorrow,* Vintage, 2017, 264 pages, $19.81

Stewart Brand famously said, "We have become as gods, so we might as well get good at it." Yuval Harari in *Homo Deus* argues that is what humanity has been doing for the last 70,000 years, having transformed from "an insignificant African ape into the ruler of the world." Evolution is leading us on a path to "immortality, bliss, and divine powers of creation." We are rising from mere *Homo Sapiens* to reign as *Homo Deus*: a digitally-enhanced, quasi-organic species of post-humans who will live forever and enjoy eternal happiness while continuously re-engineering our minds to be even happier.

If this sounds dubious, or even undesirable, you are merely old-fashioned, Harari suggests. Moreover, in the coming era, you might find yourself – and your species – obsolete. After all, "When the car replaced the horse-drawn carriage, we didn't upgrade the horses – we retired them," Harari observes. "Perhaps it is time to do the same with Homo sapiens."

Harari claims to have written a book that "Instead of narrowing our horizons by forecasting a single definitive scenario … aims to broaden our horizons and make us aware of a much wider spectrum of options." But that hardly squares with the contents. His three primary takeaways, offered as findings at the end – first, "Science is converging on an all-encompassing dogma, which says that organisms are algorithms, and life is data processing"; second, "Intelligence is decoupling from consciousness," meaning that artificially intelligent algorithms (AI) will become more common; and third, that "Non-conscious but highly intelligent algorithms may soon know us better than we know ourselves" – are in fact the very axioms through which he reads human history.

In his telling, the present moment is defined by a global clash between two religions, "Humanism" and "Dataism" – and it doesn't look good for the former. In fact, Humanism never had a chance, having been merely a messy, organic prologue to the clean, high-powered future of Dataism. Accordingly, *Homo Deus* is a data-centric preamble to the future, not a history. Evolution is just information processing, and organisms are just algorithms. Even the human psyche is just a bundle of "highly refined algorithms we call sensations, emotions and desires" – and one that, like the Face of Man on Foucault's sandy shore, risks being washed away in the rising tide of Data: "we might be reduced from engineers to chips, then to data, and eventually we might dissolve within the data torrent like a clump of earth within a gushing river."

If this sounds like an unusual conclusion for a historian to draw, trust your instincts. *Homo Deus* is a highlight reel of historical bromides for tech bros, designed to bolster their econometric view of the world. History written for (a particular set of) winners. Their motivations are recast as drives inherent to human nature. It is not only a handful of wealthy, mostly white men from the tech sector promoting life-extension technologies, but *humans* who are "likely to make a serious bid for immortality" in 21st century." It is not the minority of people in the Global North who can afford expensive drugs and supplements, but *humankind* that is dedicated to "the biochemical solution" to happiness. Arcane techniques for intelligence augmentation are not the province of elite-funded neo-eugenicist research institutions, but the shared pursuit of *humanity*.

The book climaxes, however, with a twist: Technology is making us into gods – and dehumanizing us at the same time. We soon will have the entire world at our electronic fingertips, fully-commoditized and drone-deliverable anywhere around the globe at the click of a button. Yet we will be prey to the very algorithms that make all this possible, since they will be programmed to anticipate our every move, and always coax us in a profit-maximizing direction. Harari's uncomfortable conclusion is that in spite of our new-found godlike powers, we will become slaves to the very machines that serve us, losing our humanity in the process. *Homo Deus* implicitly encourages the reader to ask: how can Humanity do this to itself?

But this is the wrong question for the Anthropocene. Harari's self-destructive *Homo* is a chimera produced by his uncritical use of the pronoun "we." In both his best-selling *Sapiens* (2012) and *Homo Deus*, "we" are the protagonist of his Story of Humanity, in which "we" become powerful godlike beings – and also something less-than-human, a fleshy appendage of an integrated global network of increasingly intelligent machines.

Of course, there is no such "we" – it is a signifier with no real-world referent. Groups of people do things, but "Humanity" is not an actor. Therefore, "we" should ask: *Who*, exactly, becomes a god on Earth? *Who* will be dehumanized? To these queries, Harari replies: "this is not what most individuals will actually do in the twenty-first century. It is what humankind *as a collective* will do." He thus obscures a frankly uncomfortable fact: Technology makes *some* people godlike while simultaneously dehumanizing others – perhaps a great many more.

Attributing the actions of a tiny minority of wealthy elites to humankind is not only a profound sociological error, but a disservice to readers of this popular book. That may, however, be the point. *Homo Deus* provides an academic imprimatur for the Silicon Valley ideology known as the "Singularity," a technologized eschatology in which humanity will merge with super-intelligent machines. In it, Harari sings a paean to the creed, having studiously donned the mantle as one of its top prophets. And in return, he has been amply rewarded; the *New York Times* reports that "Tech C.E.O.s Are in Love With Their Principal Doomsayer" (9 November 2018). Without this bit of context, historians will find much of *Homo Deus*, such as Harari's claim that "once technology enables us to re-engineer human minds, Homo sapiens will disappear, human history will come to an end and a completely new kind of process will begin, which people like you and me cannot comprehend," incomprehensible.

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Simon Pirani, *Burning Up: A Global History of Fossil Fuel Consumption*, Pluto Press, 2019, 272 pages, $27.00

This is a history of the human use of fossil fuels since 1950. That is an odd, and very useful, place to start. Odd because most historians would start with either coal and the industrial revolution in Britain or the discovery of oil in Pennsylvania, Texas, Arabia and Iran. Useful because Pirani's central concern is to understand the history - so we know why we are currently facing problems due to climate change. And as he points out, the great majority of human-made greenhouse emissions have been put into the atmosphere since 1950. Indeed, half of that accumulation of greenhouse gases has happened in the last 30 years. Why that happened at that time is the story he has to tell, and it has implications for all of us.

I have been reading and writing about the technical side of possible ways of drastically reducing human heat emissions for fifteen years. In that time, I have read a great many general arguments about the political necessities. And I have noticed just how much special pleading there is in all the literature. Proponents of nuclear power, automobiles, coal, wind power, solar power, dietary change, organic farming, cattle ranching and sustainable forestry all exaggerate their own side of the argument, usually massaging the numbers and often enough making up statistics about the future, or even the present. The joy of Pirani's book is that he does not do this. His political anger is clear, but his judgement on technical matters is balanced, and I think reliable.

Pirani understands the engineering, which is a blessing, and the political economy, which many engineers do not. The heart of the book explains two things. The first is how the global energy system actually works. He explains it not in terms of actors, but in terms of numbers, and therefore in terms of emissions. He tells you who burns what to what ends, what the technical constraints upon them are, and how and why the shape of burning has changed. There are few named actors here, barely a mention of Bush, Obama, Putin or Gore. China, the United States and Japan are organised rather differently, he tells us, but those are differences within a larger sameness. The reason there are so few politicians in this account is that he is concerned to look not at what people said, but at the numbers which tell you the results of what they did.

This is a book where the great strength is in the detail. The discussion, for example, tells us why rural electrification was so different in Maharashtra from Orissa, or so different in South Africa from the rest of the continent; it tells us why miles-per-gallon controls on American cars had an impact, and then stopped having an impact. For the specialist, there is a feast here.