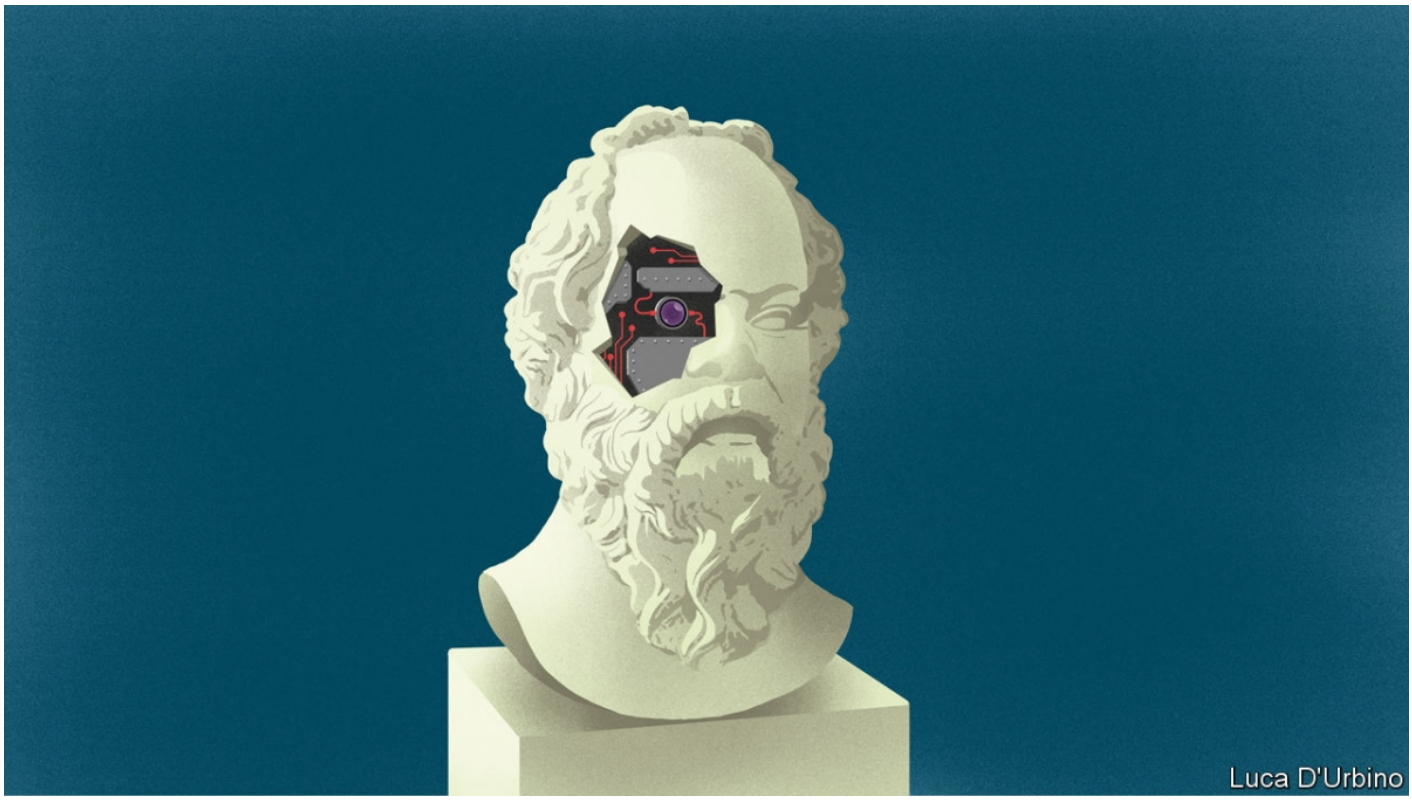
In the kingdom of cyborgs

# Big data is reshaping humanity, says Yuval Noah Harari

*Uneven and easy to mock, his new book contains provocative and profound ideas*

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**21 Lessons for the 21st Century.** By Yuval Noah Harari.*Spiegel & Grau; 372 pages; $28. Jonathan Cape; £18.99.*

YUVAL NOAH HARARI may be the first global public intellectual to be native to the 21st century. Where other authors are carpetbaggers, hauling their 20th-century thinking into the new millennium, Mr Harari is its local boy done good. He comes with all the accoutrements of the modern pop thinker: a education (Oxford, followed by a

teaching gig at the Hebrew University of Jerusalem), two bestsellers and the obligatory TED talk. He even meditates for two hours a day.



And he is armed with a big idea: that human beings will change more in the next hundred years than they have in all of their previous existence. The combination of biotechnology and artificial intelligence (AI) may enable some people to be digitally enhanced, transforming what being human means. As this happens, concepts of life, consciousness, society, laws and morality will need to be revised.

The ballast for these views was laid down in Mr Harari's earlier books. In "Sapiens" he argued that what made humans special was their ability to organise on a large scale around shared beliefs, such as religion, nationalism or capitalism. In "Homo Deus" he looked at how humans may meld with technology, and what this means for inequality. He foresaw a world divided between biologically and digitally enhanced "gods" and the "useless", who lack the cash for an upgrade.

In his new book Mr Harari takes these changes as a given, and turns his attention to contemporary themes such as work, education and immigration, as well as more abstract subjects such as justice, liberty, war and religion. This descent from the ivory tower to the crowded terrain of punditry has inevitably attracted criticism—and there is plenty to mock. Clichés abound: "Strangeness becomes the new normal", Mr Harari tells readers, a few sentences before counselling them to "feel at home with the unknown" and "reinvent yourself". Still, his is a creative mind teeming with provocative ideas. Even—or especially—when they are questionable, they are worth considering.

The most controversial is that so-called "big data"—the notion that more information than ever can be collected about the world—means algorithms will know people better than they know themselves, and that this knowledge e used by business or governments for

might establish the authority of big data algorithms, while undermining the very idea of individual freedom."

As more of the world becomes tailored around individuals' personality traits and interests, Mr Harari prophesies, people will become passive recipients of AI decisions. Their autonomy and capacity for free thinking will wither. The individual agency on which democracy and capitalism are predicated may become extinct.

Accept this premise, and Mr Harari is correct that (for example) the way political leaders are chosen, how inequality is treated and how young people are educated will all have to change. But will the technology that generates Amazon book recommendations and micro-targeted ads on Facebook ever be so flawless that people become zombies? In any case, if human brains really do get upgraded, wouldn't advanced critical thinking and free will be enshrined in the code?

The basic danger that Mr Harari identifies is certainly real. AI's machine-learning systems already utilise troves of data to spot obscure patterns and solve tricky problems. Today's web giants hold daunting amounts of information on customers' preferences, intentions and activities. As well as diagnosing the problem, Mr Harari sees a possible way out: "If we want to prevent the concentration of all wealth and power in the hands of a small elite, the key is to regulate the ownership of data." Yet he is vague as to how that might be accomplished, merely intoning that "this may well be the most important political question of our era", and that, unless it is answered soon, "our sociopolitical system might collapse".

Despite its occasional hyperbole, the book contains many gems. Mr Harari's analysis of the Industrial Revolution is compelling. He traces the political clout of socialism to the economic power of workers, noting that this transmission mechanism has broken down in the 21st century, when workers are no longer "exploited" but "irrelevant". He puts forward an intriguing thesis about the sputtering engines of history. The 20th century, he contends, offered three "global stories" to follow: fascism, communism and liberal capitalism. Today "we are down to zero."

The ideas shine most when Mr Harari discards the strut of the pundit and delves into the areas he knows well, history and religion. His commentary on Judaism, Catholicism and Buddhism in a supposedly post-truth world sparkles. "When a thousand people believe some made-up story for one month, that's f ews. When a billion people believe it for a

The division of the book into thematic sections creates a jagged structure. Some of the material is recycled from old articles and interviews, and indeed from bits of Mr Harari's previous books. This is a collection of ideas, not a fully fledged cosmology. But readers who accept these shortcomings can accompany the author as he peers fascinatingly into the future.

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