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Homo Deus: A Brief History of Tomorrow

by Yuval Noah Harari

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30 Highlights

Highlight (Yellow) | Location 2771

Suppose you were given a choice between the following two vacation packages: Stone Age package: On day one we will hike for ten hours in a pristine forest, setting camp for the night in a clearing by a river. On day two we will canoe down the river for ten hours, camping on the shores of a small lake. On day three we will learn from the native people how to fish in the lake and how to find mushrooms in the nearby woods. Modern proletarian package: On day one we will work for ten hours in a polluted textile factory, passing the night in a cramped apartment block. On day two we will work for ten hours as cashiers in the local department store, going back to sleep in the same apartment block. On day three we will learn from the native people how to open a bank account and fill out mortgage forms. Which package would you choose?

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History isn't a single narrative, but thousands of alternative narratives. Whenever we choose to tell one, we are also choosing to silence others. Human cooperative

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Of course suffering might well be caused by our belief in fictions. For example, belief in national and religious myths might cause the outbreak of war, in which millions lose their homes, their limbs and even their lives. The cause of war is fictional, but the suffering is 100 per cent real. This is exactly why we should strive to distinguish fiction from reality.

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Since there is no script, and since humans fulfil no role in any great drama, terrible things might befall us and no power will come to save us or give meaning to our suffering. There won't be a happy ending, or a bad ending, or any ending at all. Things just happen, one after the other. The modern world does not believe in purpose, only in cause. If modernity has a motto, it is 'shit happens'. On the other hand, if shit just happens, without any binding script or purpose, then humans too are not confined to any predetermined role. We can do anything we want – provided we can

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Wars are not a necessary evil on the way to a better future – but we can make peace. No paradise awaits us after death – but we can create paradise here on earth and live in it for ever, if we just manage to overcome some technical difficulties.

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Credit is the economic manifestation of trust. Nowadays, if I want to develop a new drug but don't have enough money, I can get a loan from a bank, or turn to private investors and venture capital funds. When Ebola erupted in West Africa in the summer of 2014, what do you think happened to the shares of pharmaceutical companies that were busy developing anti-Ebola drugs and vaccines? They skyrocketed. Tekmira shares rose by 50 per cent and BioCryst shares by 90 per cent.

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However, unlike human bankers, vampires never charge interest. If vampire A loaned vampire B ten centilitres of blood, B will repay the same amount. Nor do vampires use loans in order to finance new businesses or encourage growth in the blood-sucking market. Because the blood is produced by other animals, the vampires have no way of increasing production. Though the blood market has its ups and downs, vampires cannot presume that in 2017 there will be 3 per cent more blood than in 2016, and that in 2018 the blood market will again grow by 3 per cent. Consequently, vampires don't believe in growth.¹ For millions of years of evolution humans lived under conditions similar to those of vampires, foxes and rabbits. Hence humans too find it difficult to believe in growth.

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Yet is economic growth more important than family bonds? By presuming to make such ethical judgements, free-market capitalism has crossed the border from the land of science into that of religion.

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This lesson is hammered home even to children and teenagers through ubiquitous capitalist games. Premodern games such as chess assumed a stagnant economy. You begin a game of chess with sixteen pieces, and you never finish a game with more. In rare cases a pawn may be transformed into a queen, but you cannot produce new pawns nor upgrade your knights into tanks. So chess players never have to consider investment. In contrast, many modern board games and computer games focus on investment and growth. Particularly telling are civilisation-style strategy games, such as Minecraft, The Settlers of Catan or Sid Meier's Civilization. The game may be set in the Middle Ages, the Stone Age or some imaginary fairy land, but the principles always remain the same – and are always capitalist. Your aim is to establish a city, a kingdom or maybe an entire civilisation. You begin from a very modest base, perhaps just a village and its nearby fields. Your assets provide you with an initial income of wheat, wood, iron or gold. You then have to invest this income wisely.

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Humankind finds itself locked into a double race. On the one hand, we feel compelled to speed up the pace of scientific progress and economic growth. A billion Chinese and a billion Indians want to live like middle-class Americans, and they see no reason why they should put their dreams on hold when the Americans are unwilling to give up their SUVs and shopping

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We blame ourselves, our boss, the mortgage, the government, the school system. But it's not really their fault. It's the modern deal, that we all signed up for on the day we were born. In the premodern world, people were akin to lowly clerks in a socialist bureaucracy. They punched their cards and then waited for somebody else to do something. In the modern world we humans run the business, so we are under constant pressure day and night. On the collective level, the race manifests itself in ceaseless upheavals. Whereas social and political systems previously endured for centuries, today every generation destroys the old world and builds a new one in its place. As the Communist Manifesto brilliantly put it, the modern world positively requires uncertainty and disturbance. All fixed relations and ancient prejudices are swept away, and new structures become antiquated before they can ossify. All that is solid melts into air. It isn't easy to live in such a chaotic world, and it is even harder to govern it.

Highlight (Yellow) | Location 3456

If everything is for sale, including the courts and the police, trust evaporates, credit vanishes and business withers.⁶ What, then, rescued modern society from collapse? Humankind was salvaged not by the law of supply and demand, but rather by the rise of a revolutionary new religion – humanism.

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Such views are no longer in vogue. Today humanists believe that the only source for artistic creation and aesthetic value is human feelings.

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But the million-dollar question is not whether parrots and humans can act upon their inner desires – the question is whether they can choose their desires in the first place.

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Some of those voices repeat society's prejudices, some echo our personal history, and some articulate our genetic legacy. All of them together, says Sally, create an invisible story that shapes our conscious decisions in ways we seldom grasp. What would happen if we could rewrite our inner monologues, or even silence them completely on occasion? ⁸ As of 2016 transcranial

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Every time the narrating self evaluates our experiences, it discounts their duration and adopts the ‘peak-end rule’ – it remembers only the peak moment and the end moment, and assesses the whole experience according to their average.

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In the twenty-first century three practical developments might make this belief obsolete: 1. Humans will lose their economic and military usefulness, hence the economic and political system will stop attaching much value to them. 2. The system will continue to find value in humans collectively, but not in unique individuals. 3. The system will still find value in some unique individuals, but these will constitute a new elite of upgraded superhumans rather than the mass of the population.

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Discussions lasted for hours, battles took days, and wars dragged on for years. Cyber-wars, however, may last just a few minutes.

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Armies and corporations cannot function without intelligent agents, but they don’t need consciousness and subjective experiences. The conscious experiences of a flesh-and-blood taxi driver are infinitely richer than those of a self-driving car, which feels absolutely nothing. The taxi driver can enjoy music while navigating the busy streets of Seoul. His mind may expand in awe as he looks up at the stars and contemplates the mysteries of the universe. His eyes may fill with tears of joy when he sees his baby girl taking her very first step. But the system doesn’t need all that from a taxi driver. All it really wants is to bring passengers from point A to point B as quickly, safely and cheaply as possible. And the autonomous car will soon be able to do that far better than a human driver, even though it cannot enjoy music or be awestruck by the magic of existence. We should remind ourselves of the fate of horses during the Industrial Revolution. An ordinary farm horse can smell, love, recognise faces, jump over fences and do a thousand other things far better than a Model T Ford or a million-dollar Lamborghini. But cars nevertheless replaced horses because they were superior in the handful of tasks that the system really needed. Taxi drivers are highly likely to go the way of horses.

Highlight (Yellow) | Location 4838

Stock-exchange traders are also in danger. Most financial trading today is already being managed by computer algorithms that can process in a second more data than a human can in a year, and can react to the data much faster than a human can blink. On 23 April 2013, Syrian hackers broke into Associated Press’s official Twitter account. At 13:07 they tweeted that the White House had been attacked and President Obama was hurt.

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Watson will never be tired, hungry or sick, and will have all the time in the world for me. I could sit comfortably on my sofa at home and answer hundreds of questions, telling Watson exactly how I feel. This is good news for

most patients (except perhaps hypochondriacs). But if you enter medical school today in the expectation of still being a family doctor in twenty years, maybe you should think again. With such a Watson around, there is not much need for Sherlocks.

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In contrast, if and when you solve the technical problems hampering Watson, you will get not one, but an infinite number of doctors, available 24/7 in every corner of the world. So even if it costs \$100 billion to make it work, in the long run it would be much cheaper than training human doctors.

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Liberalism will collapse on the day the system knows me better than I know myself.

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such as choosing activities, career paths,

Highlight (Yellow) | Location 5712

In the 150 years since Charles Darwin published *On the Origin of Species*, the life sciences have come to see organisms as biochemical algorithms.

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The NSA may be spying on our every word, but to judge by the repeated failures of American foreign policy, nobody in Washington knows what to do with all the data. Never in history did a government know so much about what's going on in the world – yet few empires have botched things up as clumsily as the contemporary United States. It's like a poker player who knows what cards his opponents hold, yet somehow still manages to lose round after round.

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few billionaires smoking cigars and drinking Scotch in some back room cannot possibly understand everything happening on the globe, let alone control it. Ruthless billionaires and small interest groups flourish in today's chaotic world not because they read the map better than anyone else, but because they have very narrow aims.

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In a chaotic system tunnel vision has its advantages, and the billionaires' power is strictly proportional to their goals. When the world's richest tycoons want to make another billion dollars, they can easily game the system in order to do so. In contrast, if they felt inclined to reduce global inequality or stop global warming, even they wouldn't be able to, because the system is far too complex. Yet power vacuums seldom last long. If in the twenty-first century traditional political structures can no longer process the data fast enough to produce

meaningful visions, then new and more efficient structures will evolve to take their place. These new structures may be very different from any previous political institutions, whether democratic or authoritarian. The only question is who will build and control these structures. If humankind is no longer up to the task, perhaps it might give somebody else a try.

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In ancient times having power meant having access to data. Today having power means knowing what to ignore. So considering everything that is happening in our chaotic world, what should we focus on? If we think in terms of months, we had probably better focus on immediate problems such as the turmoil in the Middle East, the refugee crisis in Europe and the slowing of the Chinese economy. If we think in terms of decades, then global warming, growing inequality and the disruption of the job market loom large. Yet if we take the really grand view of life, all other problems and developments are overshadowed by three interlinked processes: 1. Science is converging on an all-encompassing dogma, which says that organisms are algorithms and life is data processing. 2. Intelligence is decoupling from consciousness. 3. Non-conscious but highly intelligent algorithms may soon know us better than we know ourselves.

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Are organisms really just algorithms, and is life really just data processing? 2. What's more valuable – intelligence or consciousness? 3. What will happen to society, politics and daily life when non-conscious but highly intelligent algorithms know us better than we know ourselves?
