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Night
University
2022

HUMAN
NATURE
MORE

ESSAY

RUUD LATHOUWERS
& TON WILTHAGEN

Human nature, human (in)competencies and the prospects of non-human intelligence

Ruud Lathouwers¹ and Ton Wilthagen²

Maybe I'm foolish
Maybe I'm blind
Thinking I can see through this
And see what's behind
Got no way to prove it
But I'm only human after all
Don't put your blame on me
([Rag'n'Bone Man](#))

1. Introduction

Now that the Covid-19 virus is quieting down, Tilburg University is finally able again to organize its annual Science Festival 'Night University'. However, dark clouds are still hanging over us. First, we are putting Mother Earth, the planet we live and depend on, at an extremely high risk. On February 28, 2022, the BBC website published an article on the new report by The Intergovernmental Panel on Climate Change of the United Nations ([IPCC, 2022a](#)), headed "Climate change: IPCC report warns of 'irreversible' impacts of global warming" ([McGrath, 2022](#)). The article summarizes the main conclusions of the report as follows:

The Intergovernmental Panel on Climate Change says that humans and nature are being pushed beyond their abilities to adapt. Over 40% of the world's population are 'highly vulnerable' to climate change, the somber study finds. But there's hope that if the rise in temperatures is kept below 1.5C, it would reduce projected losses. ([McGrath, 2022](#))

The article then cites Professor Debra Roberts, co-chair of the IPCC: "Our report clearly indicates that places where people live and work may cease to exist, that ecosystems and species that we've all grown up with and that are central to our cultures and inform our languages may disappear" ([McGrath, 2022](#)). Climate change endangered our species before and may have killed other species of mankind. Research by [Raia et al. \(2020\)](#) argues that three homo species were primarily driven to extinction by climate change. Moreover, as Román-Palacios and Wien (2020) predict, one-third of all animal and plant species on earth are at risk of extinction by 2070 due to climate change.

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Commenting on another IPCC report ([IPCC, 2022b](#)) António Guterres, the UN secretary-general, stated in a press conference that the world was on “a fast track to climate disaster” ([Smith-Schoenwalder, 2022](#)).

Second, and possibly not unrelated to the previous issue, we got caught up in the COVID-19 pandemic from early 2020 onwards. A virus that may either be man-made or be thought to originate from an ecological system problem that might have been triggered by mankind. Currently, this pandemic is quieting down a bit, at least in our part of the world, although experts are sure that the virus will not leave us and might just become endemic for now. At the time of writing, 490 million cases and 6.15 million deaths have been reported worldwide ([Our World in Data, 2022](#)). Innumerable people, students included, have long-lasting medical and mental complaints due to a COVID-19 contamination, a great many children are experiencing educational disadvantages, and the financial costs of healthcare and economic support measures are enormous. The COVID-19 virus has certainly not proved to be a “great equalizer”: people that were already vulnerable and in bad conditions, be it health, living, or employment conditions (such as atypical work contracts), were hit disproportionately hard ([Wilthagen & Bongers, 2020](#); [Wilthagen 2021b](#)). The richest part of the world managed to acquire the largest parts of the vaccines first, leaving developing countries waiting and suffering.

Third, in early 2022, the Russian army invaded Ukraine, resulting in an old-style war on the European continent that had been rather peaceful after the Second World War. All of a sudden, and beyond imagination, real threats and risks are felt of a Third World War ([Keyton & Gambrell, 2022](#)). As this bloody battle is still going, the amount and scope of human suffering and damage to infrastructure, property, and trade, as well as the impact of huge migration flows is yet unknown and incalculable. There are also major consequences for other countries next to Ukraine as the supply of gas, grains, and various goods and materials is limited, skyrocketing energy costs and inflation. Here as well, the already deprived groups in society bear the most costs, among other things leading to “energy-poverty”, i.e., poverty caused or worsened by the mounting costs of gas (in poorly isolated houses) and petrol. [“There is an emergency on planet earth.”](#)

This year’s theme of Night University—Human Nature—was already formulated some time ago but could not have been better picked. What is it with human nature that, after 21 ages of civilization (in fact many more), we are still putting ourselves as humankind and our planet at risk? As [Michael Jackson](#) (whose own nature, by the way, was contested in court) worded it “If they say why (why?), why (why?). Just tell them that it’s human nature.”

So, here is the goal and the further outline of this essay. First, in Section 2, we dive into the concept of human nature. Who are we? What makes us tick? Are we good-natured or bad-natured. Are the current (and past) shadows hanging over our society caused by our own shadow as understood by Jung: the unknown dark side of our personality? (Adler et al., 2014). Evidently, we will and cannot discuss the immense literature on human nature, but we are looking for some clues that might contribute to understanding the competencies or incompetencies that humankind has shown in managing life on earth. In Section 3, we will look at what our human nature has brought us. Have we become the creators or the destroyers of our world? Whatever it may be, we, as humans, face challenges that we may not be capable of solving by ourselves. In Section 4, we will explore whether AI may be the solution. Can machines help us overcome our human weaknesses and biases?

Let us be fair, and you will already have anticipated that by now, a strong caveat from our part is in place. There is no way that one can fully deal with the complicated issues raised above in a short essay. Moreover, we are not pretending to be particular experts in these issues and their

dimensions. Ton was trained as a sociologist and moved into law and regulation, economics, and technology. Sociological curiosity is part of his very nature. Ruud is a Bachelor's student in governance who is moving to social psychology and education policy. We deliberately formed an author's duo representing two generations of scholars. The aim of the essay is first and foremost to raise questions, consider possible answers and stimulate discussion. And one more thing, as Steve Jobs used to say, we did not write this essay to make you feel depressed as a reader. As Victor Hugo (1862/2020) said in *Les Misérables* "Even the darkest night will end and the sun will rise" (Book three, chapter 8). Who knows?

2. Human nature

2.1 Stimulus-response machines

A commonly held view is that humans are "blank slates" ([Pinker, 2003](#)), actually denying the existence of human nature. In the blank slate view, humans are either fully free in making their choices or their slate is written upon as a result of the conditions people grow up in. In other words, what humans become and how they act is determined by nurture. Nowadays, first-year psychology students at our university are taught the course Philosophy of Mind where they learn that there is no slate to begin with. Moreover, although we tend to assume we have free will, this does not appear to be the case. Harari (2017, p. 328) summarizes it as:

Over the last century, as scientists opened the Sapiens black box, they discovered there is neither soul, nor free will, nor 'self' – but only genes, hormones and neurons that obey the same physical and chemical laws governing the rest of reality.

The blank slate view should not be confused with the conceptions of existentialist writers on *la condition humaine* (the human condition) such as Sartre and Camus, who think of us as fully free but unable to find guidance for our choices or to escape these choices and their consequences. André Malraux (1933/2012) took *La condition humaine* as the title for his 1933 novel on the unsuccessful communist insurgence in Shanghai in 1927. The same title was used by the German philosopher and Holocaust survivor Hanna Arendt for her 1958 book ([Arendt, 1958/2019](#)) in which she explores the reduction of human action to utility functions due to the cause-and-effect logics of science and math, embedded in electronic instruments and automation. The more we learn how things work, the less we are involved in questions on the what and why of our purposes ([Arendt, 1958/2019](#), foreword by Danielle Allen). This point of view is particularly relevant to the matters discussed in Section 3 of this essay.

Contrary to automations, which are not considered to have a soul, for us humans we tend to assume that there is a "ghost in the machine" an immaterial soul separate from our material body ([Pinker, 2003](#)). This assumes that we have a stable self or slate that is happy, sad, or angry. A self that changes through time, yet still the same recognizable unity. Tilburg University professor, [Hans Dooremalen](#), explains in his lectures (which you can view here) that although it appears to us that we have a stable self, this is not the case. If we had a soul, which in a material world should also consist of matter, we would have found it by now, but we have not. Furthermore, a stable material soul would mean that the cells of the soul are not replaced during the course of our lives, but that is not the case. All our cells are replaced every 20 years.

[Dooremalen](#) proceeds by explaining that we do not have free will. A free will means that, whenever we make a choice, we could have chosen something else. Our choices are not just the product of input leading to output without us being able to influence it. We are not merely part of a large chain

of events, each automatically leading to the other. Instead, our choices are what set off the chain of events. Although free will may intuitively feel correct, scientifically this does not appear to be the case (see, for example, [Pinker, 2003](#)). Following the materialistic theory of determinism, which states that there can only be one future, free will cannot exist as it assumes that there are multiple possible futures (e.g., you could have chosen something else). In this light, Dooremalen refers to humans as stimulus-response machines in his lectures. "[We're just ordinary people, we don't know which way to go.](#)"

In this light, the distinction between man and machine is not large. Whereas humans are biological stimulus-response machines, automatons are metal stimulus-response machines. Although the view in favor of free will and the self is attractive, [Pinker \(2003\)](#) criticizes the free will and nurture advocates for a kind of wishful thinking, fearing to have to give up hope for progress in society. Pinkster, on the contrary, takes the position that if we are not to give up the values of peace and equality, we must rely on science and truth.

2.2 Good-natured or bad-natured?

At some point, every student at this university is going to be introduced to Thomas Hobbes, John Locke, Adam Smith, and Jean-Jacques Rousseau, four of the most important philosophers in history, who among others, discussed our human nature. Hobbes has a negative view, Locke and Smith have a mixed view and Rousseau has a positive view of humanity. In this section, we will look at their perspectives and those of modern scholars with similar views.

Thomas Hobbes has a pronounced negative view of human nature and argues that we would be in a constant "war of every man against every man" ([1651/2008](#), p. 84) if not for a strong ruler who keeps us from fighting. In his view, we are inclined to be selfish and violent in our natural state. Modern author Robert Greene (2018) has a similar view and argues that the Great Recession (2008-2014) is the result of greed and emotional behavior. Greene sees us all as narcissists, some of us more than others. Authors with a different, but nonetheless negative view of human nature are Hanna Arendt ([1958/2019](#)) and Christopher Browning (2017), who argue that we are all capable of extreme violence if the situation presents itself. Nazi executioners were just "ordinary men" who were, forced by the situation to do horrible things, according to Browning. Research at the time also seemed to agree with this viewpoint. [Milgram's \(1963\)](#) electrocution study showed that we will not resist hurting each other when an authority figure tells us to.

John Locke and Adam Smith have a mixed, nuanced view of humanity. [John Locke \(1690/2009\)](#) argues that we are peaceful in our natural state, but still selfish. A government is needed to protect our natural rights. Although Adam Smith is commonly known for his book [The Wealth of Nations](#) (1776/2008), he also wrote a book called [The Theory of Moral Sentiments](#) (1790/2010) in which he argues that we are inclined toward self-interest and egoism as well as sympathy and altruism. In this view, we are both good- and bad-natured. A modern related view is that of Dutch professor [Abram de Swaan \(2015\)](#), who argues that we are not all equally likely to do bad things. Horrible actions primarily occur in what he calls "killing compartments." In his view, mass-murders are not just "ordinary men", but men with certain dispositions and governmental support that caused them to do horrible things.

On the positive end of the spectrum stand Jean-Jacques Rousseau and, in our times, e.g., Rutger Bregman. [Rousseau \(1762/2004\)](#) sees human nature as positive in general but believes that the rich abuse their power. The government should be based on direct democracy instead of being in the hands of a few powerful people. Bregman (2019/2021) follows the same line of thought and argues that we were peaceful in the times of hunter-gatherers. We became violent when we went from

egalitarian hunter-gatherers' societies to hierarchical agricultural societies, which also created private property and power differences. In *The Social Leap* Von Hippel (2018) also makes that claim and elaborates on the benevolent consequences of the social leap our ancestors undertook from the rainforest to the savannah. Surviving in the open grasslands asked for a move from individualism to new modes of collectivism, leadership, and innovation, which permanently affected the workings of our mind. As a result, we became (mostly) good to one another. Bregman (2019/2021) continues to state that the common (wo)man is primarily good-natured and blames the violence in history on those in power whom he claims are corrupted.

It seems that we cannot yet answer who was right. Perhaps Hobbes and Arendt are right: our human nature is violent and capable of great evil. Or perhaps De Swaan, Smith, and Locke are correct: humankind is not evil per se, but humans can definitely do evil things. Or maybe Bregman and Rousseau got it right: human nature is positive, and the flaws are those of a small powerful group of people. What we can conclude though at the very least is that humans mostly do not act in an evil way. Even if we become evil when the situation forces us, until that time, we tend to act for the better.

2.3. Rationality

Originally, many dominant psychological and philosophical theories on the human mind and nature were not based on brain scans or empirical research. One of the founding fathers of psychology, Sigmund Freud (1905/2011), thought that we had three agencies: the instinctual, primitive, and unconscious id; our conscious moral compass, the super-ego; and the realistic broker who negotiates between what we instinctively want to do and what we morally should do, our ego. Freud never considered the agents to be part of the brain and, in this sense, presented a non-empirical model. The fairly recent rise of brain science and (neuro)psychology have enormous effects on our knowledge of human nature. Both can help us understand whether or not we are rational.

The brain and neuroscience are making significant contributions to understanding our behavior, often confirming or rejecting the theories and insights we had before. Scientists in this field are increasingly able to map out the structure and workings of our brains. Brain scans show how certain parts of our brains are involved in certain emotions or behavior. We can actually relate human "sin" and temptation to the operations of the brain (Sitskoorn, 2010). Similarly, scans can also reveal how damage to parts of the brain lead to problems and changes in people's behavior. The concepts coined by Freud and others appear to be paralleled in some way by the brain scientists' descriptions of our brain: the prefrontal cortex, a relative new part of our brain in its evolution, appears to play a key role in our cognitive control, impacting our attention, impulse inhibition, and cognitive flexibility. The amygdala, an older part of our brain, in its turn deals with memory processing and emotional responses such as fear, anxiety, and aggression. This indicates that our brain has both rational and emotional structures. However, these sciences are still far from capturing the full complexity of our brain, and therefore, we are still hesitant to hack our brains, also from a moral perspective. The good news about our brain is its neuroplasticity, defined by the Britannica Dictionary (n.d.) as the "capacity of neurons and neural networks in the brain to change their connections and behavior in response to new information, sensory stimulation, development, damage, or dysfunction." Thus, physical hacking is not necessary per se as the insight is that we can, e.g., train and develop our prefrontal cortex (Sitskoorn, 2017, 2022).

Modern-day psychology is, to some extent, also still in line with Freud's (1905/2011) ideas. The popular book *Thinking, fast and slow* by Daniel Kahneman (2012) argues that two systems govern our behavior. The unconscious, heuristic-based, fast, and skilled system 1, and the conscious,

rational, slow, and rule-based system 2—commonly referred to as the automatic and reflective system respectively (e.g., [Thaler & Sunstein, 2008](#)). Kahneman (2012) associates system 1 with the amygdala and system 2 with the frontal cortex of the brain. To an extent, this appears to be in line with Freud’s general notion, only now, the ego and superego are merged. However, this is not to say that the automatic system is “irrational”, as [Zeelenberg et al. \(2008\)](#) state concerning emotional decision making, “feeling is for doing” (p. 18). What this tells us about human nature is that we are neither rational nor irrational. We often make fast decisions that may not be perfectly rational but get us through the day.

2.4 So how about it?

Three months ago, [we celebrated](#) 50 years of research and education in psychology at our university. After ages of psychology and decades of brain sciences, we are still unsure whether, as humans, we really understand our human nature, let alone if we can influence it in a positive way. The physical laws of the external world might be easier to discover than the internal dynamics of our own nature. The current view is that we appear to be a sort of stimulus-response machine. It seems that we do not have a self or free will, are generally inclined to do good—yes with exceptions—but under certain circumstances, we can also freak out and do terrible things, as history has shown. Both psychology and neuroscience indicate that we are neither rational nor irrational but are capable of both rational and irrational actions. This stems from the interactions in our brains and mind. Fast versus slow thinking. Freud has not been proven wrong yet.

The question remains why some people do certain things others would not do. Circumstances that bring out the worst in us are often determined and triggered by the impact of group or collective systems that dehumanize others, spread propaganda, hide or distort the truth, or simply force people to fight and harm others. Power absolutely corrupts, not only the powerful themselves but sometimes also the people that are in their power.

All in all, we are certainly not a blank slate, but this finding should not deter us from nurturing people—care for and protect them while they are growing—and society. For this essay, understanding human nature is important but assessing the “outcome” in terms of what we cause and achieve is the proof of the pudding. This is the topic of the next section.

3. Human (in)competencies

3.1 How far we have come

Generally, we as humans tend to pay more attention to problems and negative events and developments than to the brighter sides of life. It would, therefore, be a mistake to conclude that in the past 21 centuries and before no progress has been achieved and that we as mankind are guilty of mismanagement, non-performance, “breach of contract” and sheer immorality in the Anthropocene where we as humans took control³. A severe complication in judging ourselves fairly and objectively is that we seem to have entered the post-truth era, implying that consensus on the state of affairs in our societies and on our planet is not self-evident. Fake news strategies are nothing new in history but have much more impact nowadays due to the development of social media. Fake news also gave rise to a host of fact checkers. Whether these fact checkers are effective remains debatable. Some

³ Tilburg Law School conducts three research projects funded by the Dutch Ministry of Education, Culture and Science to boost Dutch study programs in law as well as the societal debate on pressing issues regarding law and governance. The research projects are integrated in the signature plans. One of the projects concerns “Transformative effects of Global Law: Constitutionalizing in the Anthropocene.”

authors consider them effective ([Hameleers & Van der Meer, 2019](#)), others do not (Pennycook et al., 2018).

3.2 The Creator of worlds?

Many studies and also a lot of common sense indicate major achievements. In general, violence has declined in our societies, as Pinker (2012) shows. Health and hygienic conditions have improved due to the development of sewer systems, medicines such as penicillin and antibiotics, and better food. As a result, human life expectancy has been increasing at a fast rate. We can expect to live much longer than our ancestors just a few generations ago. Life expectancy at birth in the EU was about 69 years in 1960 and about 80 years in 2010 ([Brown, 2015](#)). Around 1850, the average worker, such as the Tilburg textile worker, would rarely reach the age of 50. The more vulnerable workers' lives even ended at the age of 32 (Brugmans, 1978). Admittedly, longevity is also associated with more years of chronic diseases. Another major positive trend is the much wider access to education, better and higher education. Especially women and young girls in developing countries have benefited from this.

These positive developments are documented in, e.g., Norberg's (2016) *Progress: Ten Reasons to Look Forward to the Future* and Rosling et al. (2018) *Factfulness: Ten Reasons We're Wrong About the World - and Why Things Are Better Than You Think*.

However, as the famous Dutch poet and writer Bredero (1585-1618) once wrote "*Het kan verkeren*" – Things can change. Some five years ago, the Israeli historian Yuval Noah Harari (2017) was quite positive about the future of mankind: "at the dawn of the third millennium, humanity wakes up to an amazing realization (...) in the last few decades we have managed to rein in famine, plague, and war" (Harari, 2017, p. 4). He envisaged a New Peace:

For the first time in history, when governments, corporations and private individuals consider their immediate future, many of them don't think of war as a likely event. Nuclear weapons have turned war between superpowers into a mad act of collective suicide, and therefore forced the most powerful nations on earth to find alternative and peaceful ways to resolve conflicts. (Harari, 2017, pp. 16-17)

3.3 The Destroyer of worlds?

After the detonation of the first atomic bomb, Oppenheimer spoke the famous words "Now I am become Death, the destroyer of worlds." The atomic bomb may be seen as the destructive height of the power of rationality. Mankind created a weapon that put the destructive power of God in the story of Sodom and Gomora to shame with its unrivaled capacity for destruction. Today, most people would find it irrational to consider a first strike, but in the 1950s, many well-regarded scientists, such as mathematician John von Neumann argued, it is obviously the rational choice (Poundstone, 1992). Does that mean we found a rational justification to become the destroyer of worlds? Has rationality not brought us life but death?

As a matter of fact, Harari (2017) just might have spoken too soon, considering our current state of affairs. His optimistic statements on war do not match the new realities of early 2022 where even Sweden and Finland are now considering joining NATO, and UK and US intelligence services are afraid that Putin will pull the nuclear trigger. The BBC website reported on "[Ukraine, the UN and history's greatest broken promise](#)" (2022). As the reporter observed:

The threat to the peace of Europe is greater now than at any time since the end of the Cold War in 1989. For nearly a month, I watched families flee westward from Lviv in trains, cars and buses as Russia waged war on their homeland. I listened to survivors from the besieged

port of Mariupol talk of a hell on earth with bodies lying in the streets and the cityscape they knew, of shops, restaurants, the Hurov Park with its spectacular fountains, reduced to rubble. (Ukraine, the UN and history's greatest broken promise, 2022)

According to Mathieu Segers ([Van Mersbergen, 2022](#)), professor in Contemporary European History and European Integration at Maastricht University, after the Cold War, we started to believe that the European history of wars and violence had come to an end and that the other parts of the world would become Western-European like. We stopped putting ourselves in the position of others, despite various developments and events that went the other way, not only in Russia, but also in China and the Capitol Hill siege in the United States. We never experienced this as real threats because our comfort was too big. We did not even look into ourselves.

And a North-Western (or Global North) bias exists: we in the North-Western part of the world pay much less attention to ongoing wars and conflicts that are less close to our countries, as a Somalian barber in Tilburg explained recently in Ton's neighborhood.

Another setback is the decline of the spread of democratization. Less than half of the world's population lives in a democracy, the recent edition of the Democracy Index by the Economist Intelligence Unit ([EIU, 2021](#)) reports.

[Oxfam International \(2022\)](#) expects that, this year, some 260 million people worldwide will live in extreme poverty, meaning that they have less than 1.74 euro to spend per day. Without action taken by the end of the year, 860 million people may live in poverty. Poverty is being caused by the effects of the COVID-19 pandemic and the increasing economic inequality in the world. The world's 2,153 billionaires have more wealth than the 4.6 billion people who make up 60 percent of the planet's population, [Oxfam International reports \(2020\)](#). Labor's share of income compared to capital grew post-World War II until the late 1970s, thereafter a steady decline started ([Brada, 2013](#)). The price of energy is a factor here.

Currently, the war in Ukraine plays a role because this leads to higher prices for energy and food. This implies that poor people are caught between a rock and a hard place: either pay for food, heating, or care. The situation is most urgent in parts of Africa, Yemen, and Syria. In the eastern part of Africa, some 28 million people are at risk of extreme famine. David Malpass, chair of the World Bank warns against a "crisis in crisis" ([Islam, 2022](#)): people not only eat less but also have less means for education at their disposal. It is not the case that there is an immediate shortage of food. In general, there is enough food to feed everyone, but the problem is the distribution. Paradoxically, in many parts of the world, more people nowadays die because of overeating and obesity than from starvation.

There is more bad news, among other things regarding education. Currently the Taliban regime in Afghanistan is blocking access to education for girls, despite the protest manifestations by this group ([Glinksi & Kumar, 2022](#)). Also in the Netherlands, one of the richest countries in the world, the income level of parents determines which school children will go to at the neighborhood level, resulting in strong segregation: the children of parents with low incomes go to other schools than the children whose parents have higher incomes. They do not mix and mingle ([Damen & Frijters](#)).

And finally, there is the condition of our climate and planet as already assessed in the introductory section of this essay. The progress reported above is about human lives and much less about the wider ecosystem on earth. Recently the Belgian newspaper *De Standaard* published an article with the heading "Who still wants to put a child on a dying planet?" ([Mayda & Debrock, 2022](#)) reporting on a survey that showed that one out of ten Belgians between the age of 25 and 35 does not want to

have any children. Climate change is also contributing to forced migration, another negative indicator in assessing the progress we have actually made ([Philip & Couldrey](#)).

Were we so busy getting what we wanted that we lost sight of what we really needed as a sustainable environment to survive as a species? Have we been overplaying, being off our game in the Anthropocene, pursuing a too narrow definition of well-being instead of the broader concept as already introduced by the Club of Rome in its 1972 report, *The Limits to Growth*, alerting the world to the consequences of the interactions between human systems and the health of our planet? Chances are that things are irreversible now, although the UN experts sometimes reassure us by declaring that we still have a fighting chance.

3.4 So how about it?

Have we made progress, have we been competent as mankind as the most dominant species on earth? From a human-centric perspective, we have made quite some progress, by significantly improving the living, health, and working conditions of our fellow human beings. We live much longer, on average, than in past times, and we managed to fight and control various diseases. We as humans acquired a lot of power. We can fly across continents and have started to organize fun trips into space, even setting the controls for Mars. We also thought that war (at least big wars) would be largely over by now.

However, if we take stock of 21 centuries and more and also of the latest developments, we can by no means be satisfied with what we have achieved. Like it or not, we are under-achievers. For one, we have proved ignorant and careless with respect to the ecosystem we are part of. Climate change is a real and urgent problem. We did too little and too late and now have to try to deal with the consequences, which in itself is a troublesome process. Second, many of the problems we—at least in the Global North—considered to be under control proved persistent or returned. Pandemics are not over, as the COVID-19 outbreak showed, and might be related to our reckless behavior within earth's ecosystem. Bloody war has returned and local wars, that were often outside our Western field of vision, have not ended. Poverty, inequality, famine, and forced migration are on the rise, also due to climate change, and we have encouraged lifestyle diseases in situations of affluence. Democratization and access to education are under pressure.

Whether we see these developments as temporary setbacks or not, we cannot think lightly about it. And we have sufficient reason to doubt our competencies in view of our human nature. Is there still hope for us and the world, or might we look for help among unusual suspects? That is the third and following question of this essay.

4. The prospects of non-human intelligence

4.1 The band-aid of the cyborgs

“The world is dying ... to get better!” This line comes from the 1971 protest song “[Chicago](#)” by Graham Nash. In our times, it is still relevant. As we can derive from the sections above, there is indeed a great need and a lot of room for improvement and progress. We should try and shape “new commons” ([Aarts et al., 2020, 2021](#)) that are better than the old commons we had and where many of the current problems developed or were not properly and timely addressed; new politics and policies, at the world, European, national, regional, and local level with definitely more citizen participation. These politics and policies can no longer be exclusively human-centric. An interesting line of thinking and acting is the acknowledgment of the rights of nature in terms of legal personality. The latter is thought to cause a legal revolution that could save the world (Boyd, 2017)

by facilitating that nature's voice is heard in the courtrooms and at the various negotiation platforms.

It is hard to ignore the possibility that our abilities and competencies are just too limited to do the job of saving the planet and society now that the final countdown seems to have started. Who else could come to our aid? There is a beckoning perspective that perhaps—we are unsure—non-human, artificial or hybrid intelligence might help us, acting as a comrade, a new BFF (Best Friend Forever), with superior capacities. In short, the question in this section can be formulated as “Can robots make the world a better place?” (see also [Tilburg University, n.d.-b](#))⁴, where ‘robots’ include all forms of autonomous technology featured by deep learning and machine-learning: cobots, chatbots, softbots, and all other applications of artificial intelligence and data science.

James Lovelock, one of the best-known scientists, environmentalist, and futurist alive, at the age of 102 foresees the ending of the Anthropocene “which power has manifested itself most forcibly in war” (Lovelock, 2019, p. 45). He points at the common sense that we as humankind took the wrong turn by distancing ourselves from our natural place in the world, although this era also brought good things such as longer life expectancies, the reduction of poverty, the spread of education, and the vast accumulation of scientific knowledge of the world.

Lovelock is quite sure about what will happen as we enter the Novacene. We are going to meet the cyborgs, as he calls the manifestations of autonomous technology:

Live cyborgs will emerge of the womb of the Anthropocene (...) Like it or not, the emergence of cyborgs cannot be envisaged without us humans playing a god-like – or parent-like – role (...) Novacene life will then be able to modify the environment to suit its needs chemically and physically. (Lovelock, 2019, pp. 85-86)

This is the point of singularity: the hypothetical moment in time when artificial intelligence will have improved to such an extent that it will have more influence on the direction of our society than humanity itself.

Lovelock states that we are wrong to think that an intelligent being would look somewhat like us and be more or less humanoid and, moreover, act as our servant. Lovelock expects no such thing: “They will be entirely free of human commands because they will have evolved from code written by themselves (..) Cyborgs would start again (...) they would start from a blank slate.” (Lovelock, 2019, pp. 94-95).

According to Lovelock the new beings, appearing from AI systems, will think 10,000 times faster than us and will need to safeguard the cooling of our aging planet, which is threatened by heat. These

⁴ This was the title of a recent event of the ‘Children’s University’ of Tilburg University, as a part of Tilburg University Junior. A few hundred children aged between 9 and 14 years attended a very lively lecture on robots and chatbots, delivered by three Tilburg University scholars. At this occasion Ton’s new children’s book (in Dutch) on this topic was presented: ‘Roosbot’ (Wilthagen, 2022). ‘Roosbot’ invites children to think about the role and value of robots in our lives. A young girl called Roos is the main character and she doesn’t understand why grown-ups treat the world and nature so carelessly. When she hears about new technology and robots and about how they make the world a better place, her response is: that is precisely what I want, too. That’s why Roos decides to become a robot: ‘Roosbot’. Roos then comes to face various dilemmas. She learns that technology can be both a blessing and a curse. And it’s us, human beings, who tip the balance. You can watch a short after movie of the event [here](#). Also, a [‘knowledge video clip’](#) was produced on the topic, aimed at primary school pupils.

beings will not drive us out but eventually consider us in the way we ourselves currently look at plants.

Similar views, although a bit less spectacular, are expressed by the historian Yuval Noah Harari in *Sapiens: A Brief History of Humankind* (Harari, 2015), *Homo Deus: A Brief History of Tomorrow* (Harari, 2017) and *21 Lessons for the 21st Century* (Harari, 2019). Harari envisages the transition from Homo Sapiens to Homo Deus, a species that has as its main question “What will we do with all that power?” (Harari, 2017, p. 3). Harari’s answer to that question is that mankind will aim at divinity, in the sense of conquering death as the hitherto inevitable human fate. “Who wants to live forever?” as [Queen](#) sang. We do!⁵

However, if we manage to live forever, we are still unsure whether we are capable of better managing society and the planet. Human nature may just not be up to the tasks. Harari, like Lovelock, votes for artificial nature: “In the past there were many things only humans could do. But now robots and computers are catching up and may soon outperform humans in most tasks” (Harari, 2017, p. 361). Harari speaks of ‘The Great Decoupling’. He does not expect computers to become humanlike, acquire consciousness, and get to feel emotions and sensations. But that does not save us humans from no longer having economic value because intelligence is decoupled from consciousness. Put differently, other than humans and animals, artifacts do not require consciousness to be or become intelligent. Non-conscious intelligence becomes better in carrying out certain tasks than we do. Intelligence is mandatory, consciousness is optional (Harari, 2017, p. 362).

Harrari simply recommends that we hand over to “techno-humanism” and Dataism: “stop listening to your feelings and start listening to these external algorithms instead” (Harrari, 2017, p. 456). He continues:

(...) with the rise of machine learning and artificial neural networks, more and more algorithms evolve independently, improving themselves and learning from their mistakes. They analyse astronomical amounts of data, that no human can possibly encompass, and learn to recognise patterns and adopt strategies that escape the human mind (Harari, 2017, p. 458)

Mo Gawdat, a former Chief Business Officer at Google (X), begins his recent book *Scary Smart* (Gawdat, 2021) by warning us of “the approaching pandemic—the imminent arrival of artificial intelligence” (p. 1). However, in the book, he appears hopeful in view of the power of AI to save the world, as long as you and I get involved and take responsibility in steering the new technologies in the right directions. He goes farther than Harrari in attributing emotions to the machines: “(...) will the machines (...) feel emotions? Absolutely! They will follow the same logic to arrive at fear, hate, panic, disgust, and anger. The way they manifest those emotions will be different to how we manifest them (...) if you follow the same logic, the machines are likely to feel more emotions than you and I have ever felt, or even imagined” (pp. 205-206). [Human after all?](#)

⁵ At the time of writing this essay, metaverse company Somnium Space unfolded its plans to offer “immortality” in the metaverse with the new “Live Forever mode” (Hawkins, 2022). The company’s CEO and Founder Artur Sychov was encouraged by the death of his father due to an aggressive form of cancer and the fact that his children would grow up without their grandfather to talk to. Huge amounts of data will be used to create an avatar that will continue to move, talk, and sound just like you after your death. All your loved ones will be able to communicate with me whenever they wish so. For the first 10 minutes they would not know it’s AI, instead of ‘I’.

Again, if managed well, AI will do better than us human beings—according to Gawdat (2021) “the smartest beings (known to humans) on the planet (...) also the most arrogant” (p. 22). This will herald an optimistic and promising future:

This new form of intelligence could look at some of the world’s most pressing problems with a fresh eye, with infinite knowledge and superior intelligence to come up with ingenious solutions that we could never, ever have conceived of. These super machines could permanently solve problems like war, violent crime, famine, poverty or modern-day slavery. They could become our superheroes. (Gawdat, 2021, p. 8) (...) The robots revolt to become the ‘guardians’ of life – a task at which humanity is clearly failing. Sounds familiar. Do I need to mention the words ‘climate change’ or ‘single-use plastic’? (Gawdat: 2021, p. 58)

4.2 Blessing or devil in device?

So, should we invest our hope in new technologies to make up for our human shortcomings, incompetencies, and limitations? What are the dangers, pitfalls, and challenges we are facing?⁶ First, we need to take good notice of the fact that the developments we are now triggering, observing, and experiencing may be regarded either a “blessing in disguise” or a “devil in device.” This insight was incorporated in Kranzberg’s first law: “Technology is neither good nor bad; nor is it neutral” (Sacacas, 2021). Robots and AI can both promote the “social good” and “the good society” or contribute to a dystopian future where people are enslaved (the original meaning of the Czech term ‘robot’ is servant or slave) in a techno-fascist way and where the technology does not save lives and the planet but kills people in cyber-based wars. Similarly, the autonomous may create new, meaningful jobs for people and augment our ways of working, or jobs will be automated and destroyed, and in the remaining jobs, people will be disciplined or even robotized by the technology (Autor et al., 2021). Humanization and dehumanization are two sides of the same coin (Wilthagen & Schoots, 2019; Wilthagen, 2021a) by making life safer, easier, better, healthier, and more efficient and productive. New jobs will appear for people to take up. One could argue that there is no difference between old and new technology: with a hammer you can build a house or slam someone in the head. However, unlike robots and AI, a hammer does not operate on its own but is fully controlled by a human being.

4.3 It is all about values

We see four main challenges in making technology work optimally for society and the planet:

1. The key challenge is defined as value alignment, i.e., the alignment between human values and the technology.⁷ If we can properly “upload” our most important values to the technology and ensure that the technology acts and decides on these values, we get trustful, trustworthy, value-driven technology—value by design. How can we get this done?

⁶ This section draws from Wilthagen and Schoots (2019).

⁷ This is the general approach taken in Europe, e.g., by the [European Commission \(2019\)](#) in its Communication ‘Artificial Intelligence for Europe, Building Trust in Human-Centric Artificial Intelligence’. Also, in the Netherlands the Dutch [NL AI Coalition \(2021\)](#) is establishing ELSA Labs which refer to Ethical, Legal and Societal Aspects. At [Tilburg University \(n.d.-c\)](#) the ‘TAISIG’ network is active (Tilburg University AI Special Interest Group) which takes a similar approach. Furthermore, in the centre of Tilburg ‘MindLabs’ is being created, home to “a partnership in which three knowledge institutions, authorities and a growing number of business partners, social institutions and start-ups participate. Together, MindLabs’ partners strengthen the development of technologies that interact with human behaviour; in other words, human-centred AI. Partners want to help solve societal challenges using the unique possibilities of these technologies” (Mindlaps, n.d.).

2. The idea of value driven technology presupposes that we as humans can define our core values. Many of these values are formally laid down and codified in national basic laws and European and UN-level charters, declarations, and conventions, including e.g., the Universal Declaration of Human Rights. The democratic legitimation of values is crucial. However, in practice, that is empirically, not all values are supported to the same extent across various countries and parts of the world, as the Tilburg University led [European Value Studies](#) project shows. Think of some of the laws that were enacted by Hungary, as a Member State of the EU, bound by EU values, legislation, and soft law. How are we going to deal with that? No less important is the fact that we as humans may have defined these values but have not always acted accordingly, as the previous section has made clear. Values should be turned into norms and norms into decisions, actions, and results. In this process values can also conflict with one another, which means that the machines also need to be able to resolve these value conflicts to the best of their ability.

3. Let us assume that we manage to build a database of the most important values and also of all the strategies that we as humans have developed, successfully or not, to realize and implement these values. How is it possible to tell machines to internalize this information in their operating systems? Currently, we see two approaches: a top-down approach, in which ethical principles are programmed into the technology and a bottom-up approach where the machines are expected to learn how to make ethical decisions through the observation of human behavior in real situations, i.e., without providing them with formal rules and ethical principles. At this stage, both approaches are still in their infancy. What has already been developed, by us humans (governments and corporations) are innumerable "unethical" algorithms that result in statistical discrimination and exclusion of groups, killer drones, and other destructive devices. These exist in addition to benevolent technological applications such as in healthcare and health diagnostics and algorithms that optimize the logistics of food supply deliveries to countries and areas that suffer from shortages and famine (e.g., [Tilburg University, n.d.-c](#)). This again goes to show that, currently, we as humans still decide what the technology does or does not do. In other words, our human nature defines artificial intelligence. Currently the machines tell us "[I'll be your mirror, if that's what you want.](#)" And this can go two ways, good or bad. Surely, as many authors state, this can and will change, in the sense that machines will be able to work and learn independently. When this moment comes, will the machines act as our "trustees"? Gawdat (2021) is optimistic: "The answer is yes! The machines will have ethics and values too" (p. 207).

Developing autonomous and self-learning machines can be compared to raising children, a bunch of gifted children (Gawdat, 2021, p. 191). This could be the [best educational advice](#):

You, who are on the road. Must have a code that you can live by. And so, become yourself.
Because the past is just a goodbye. Teach your children well. Their father's hell did slowly go
by. And feed them on your dreams. The one they pick is the one you'll know by."

As all parents know or should know, it is not so much about what you tell your children but about how you act yourself in front of them, providing them with bad or good examples—the agreed moral code. (Rhino, 2018, 0:12)

4. Last but not least, suppose that the machines are perfectly functioning human-values based? Will we always accept the results of their actions, given our human nature? Will we listen to their early warnings and recommendations? We might want to choose otherwise, due to our human nature, when the machines backfire our values and their implications to us. Wilthagen & Schoots (2019: 65) provide the following example:

In Ian McEwan's (2020) novel *Machines like me*, the main character Charly, 32 years old and living in south London, buys an "Adam", a robot from the first series of really human-like humanoids, which you can hardly distinguish from human beings. Adam is very able and earns a lot of money on the stock market by just sitting in front of the computer. He outperforms Charly, who used to make a living that way. With those financial gains, Charly and his girlfriend are about to buy a great house in Notting Hill. Then Adam stays away for two days, and when Charly wakes up, Adam has arrived home and hands Charly a brown envelope with a modest amount of money. Seeing Charly puzzled, Adam explains that he visited a number of promising social projects in the neighborhood and decided that it makes much more sense to invest money in these projects, rather than buying a big and expensive house for just two young people.

What will the machines think of us?⁸

4.4 So how about it?

AI and robots in all their applications and manifestations are developing at a fast rate. There seems indeed to be a prospect or even a promise that this technology can and will contribute to a better stewardship (*rentmeesterschap*) than we humans have been capable of. The optimism by some authors is appealing and inspiring. To quote Harari (2017) one more time with a striking statement, not having been able to foresee the current war in Ukraine: "Human soldiers murder, rape and pillage, and even when they try to behave themselves, they all too often kill civilians by mistake. Computers programmed with ethical algorithms could far more easily conform to the latest rulings of the international criminal court" (Harari, 2017, p. 360).

However, there are still many steps to take in creating value-driven technology that can function as an artificial friend and do-gooder on its own. In the meantime, we as humans still determine what the technology does or does not do, and that is partly a scary and risky operation. Powerful technology in the wrong hands and designed by bad-natured people can be extremely dangerous and harmful. Gawdat wraps it up as follows (Gawdat, 2021) "There is nothing wrong with AI at all. If anything is wrong, sadly, it's wrong with us" (p. 242).

Our position is not that artificial intelligence should fully overtake human nature. We do not see the new technology as a correction of the human incompetencies but rather as means to augment them. Helping us overcome *la condition humaine*. There is a lot of scope and an urgent need for that: "accept the machines as part of our life and commit to making life better because of their presence" (Gawdat, 2021, p. 251).

5. Some (not really) conclusions

In this essay, we first started our quest of human nature. Although without a doubt nurture has profound influences on the way we as human beings develop ourselves and act upon the chances we get and the outcomes we achieve, we are certainly not blank slates. Human nature exists but should not be conceptualized in terms of free will and us being stable persons. On the contrary,

⁸ "I wonder if (...) the machines will wonder why humanity has felt so little empathy or compassion towards its fellow humans and the rest of the planet. If they will wonder why we felt so much ego and hate when the only logical reaction to the abundance that our beautiful planet has provided us with should have been gratitude and joy. My hope is that while you – my dear, artificial intelligent children – are taking a full nanosecond to ponder how humanity has come so low that it could use, abuse, rape, torture and kill so many of its own, you will realise that the worst acts of humanity were committed by only a tiny minority that don't represent the rest of us" (Gawdat, 2021, p. 206).

there may not be an underlying personality although we like to think so. We seem to be organic devices that continue to “update” ourselves because of our internal and external environment: a kind of input-output machine. As Harari explains, the life sciences have started to challenge us by saying that all organisms are algorithms, and that humans are not individuals but “dividuals” lacking a single inner voice or a single self. The algorithms constituting a human are not free but shaped by genes and environmental pressures. Clearly, this kind of algorithmic perception of human nature by no way implies that we should not put every effort in education and improving the living and working conditions to establish equality of chances and, preferably, equality of outcomes. On the other hand, there is more to it, and we are just in the process of learning what this “more” means and how we can deal with it in the most positive and humanistic-emancipatory approach.

We observe that most people are generally inclined (we are avoiding the term “programmed”) to do good and that we may operate in ego-centric ways but also show altruistic behavior. This notwithstanding, we as humankind have proved to be willing and able to do awful things under certain circumstances, especially if our environment encourages us to dehumanize others. We are also able to construct and even support horrible systems, managed by ruthless and Machiavellian, even dictatorial leaders. We are plagued by the logics of collective action, resulting in free rider behavior and often failing to do justice to the common good. Indeed, we live the tragedy of commons, where the collective interests that we all might perceive and value are insufficiently or belatedly served and secured because we act otherwise in practice. And we also suffer from short-termism in our design. We are not bad-natured, but rather randomly natured and the nature of our actions (and non-acting) does not always turn out well and has major consequences.

As a second step in the essay, considering our human limitations but also our unknown possibilities, we tried to assess our human competencies or incompetencies. Did we manage our society and planet in an adequate and responsible manner? Clearly, in the human-centered and controlled Anthropocene era much has been accomplished, at least in terms of more humans, a bewildering rapid growth as James Lovelock puts it, and more human flourishing. Living, working, education, and health conditions certainly have been improved and in many parts of the world—certainly not all—and the incidence of bloody wars has decreased.

However, if we adopt a broad well-being perspective as developed by the United Nations, articulated through the Sustainable Development Goals ([UN, n.d.](#)) and the [OECD \(n.d.\)](#), we see a significantly different picture⁹. For starters, we witness strong distribution effects. In many countries, such as the United States, economic well-being has fared quite well in terms of GDP, an average metric, in the past decades. However, on closer look, we see that many groups have not benefited from these developments or even lost their positions. The rich got richer, and the poor became poorer. Moreover, through a broad well-being lens, we see much more that leaves us unhappy. Some developing countries are not doing so badly economically, but they have a very high mortality rate, which means that the health dimension of well-being performs badly. Going beyond direct human concerns, we find that the quality of the climate and that of the oceans is rather lamentable. These indicators are fully in the red. If we destroy our natural habitat, we lose our future on earth as a species. In a decadent and apocalyptic way, we consider Planet B scenarios while scientists consent that, for humankind, there is likely no Planet B and we should invest all we can in saving the Earth.

In addition to this much more than just inconvenient climate change truth, which has been articulated most strongly by the youngest generations, we are facing several alarming setbacks as

⁹ At Tilburg University an ‘Academische Werkplaats’ ([Tilburg University & Het Pon Telos, n.d.](#)) was recently established on the broader approach to well-being, involving various societal stakeholders.

discussed in this essay. Various influential authors, including Harari, have spoken too soon in their optimism about man-made progress. The said New Peace is over in Europe, where Ukraine and its population are attacked, die, suffer, and flee in a setting that was not experienced since World War II. Democracies are under pressure in Europe and other parts of the world. Moreover, the health and economic impact of the COVID-19 pandemic has been overwhelming and the virus might flare up again in the fall and wintertime. Perhaps this all represents a temporary regression, but all in all, we, as self-acclaimed Masters of the Universe, can by no means be satisfied with what we have accomplished so far. Competencies and progress go hand in hand with striking incompetencies, continued immorality, setbacks, and deteriorations. We urgently need a new and better common, based on shared values, resources, and spaces, both in an abstract metaphorical sense as in a real-life physical sense.

The third step we undertook in our essay was to look at the prospects of non-human intelligence. Could artificial intelligence or hybrid intelligence come to our aid and make up for our human flaws, limitations, inconsistencies, and tunnel vision? We as humans have great difficulties in seeing the big picture and how everything is related in the comprehensive ecosystem that Lovelock has called Gaia. We have not only denied the self-regulatory capacity of that nature (homeostasis, symbiosis et cetera) but also managed to substantially damage this system. Moreover, we cannot handle large amounts of data properly and are weak in observing gradual change. From this point of view, we could just call in AI and robots, as they are par excellence and innately consistent and logical.

Unfortunately, things are more complicated. At this stage of the development of autonomous and self-learning technologies, we are still the parents that tell the bots and AI what to do and not to do. If we act as responsible and wise parents, we get responsible children who will act upon all the good things we have taught them. At some stage, these children can stand on their own feet, and we can let go. They no longer need our daily supervision to do good. However, if we act as bad, irresponsible parent and teach our robotic and artificial children bad stuff, they are inevitably going to ill-behave and do bad things.

So, the whole debate about the good and bad things of AI and robots is actually about us. AI and robots are not scary, but some people (i.e., organizations, governments, corporations) are. If we align the values and goals that we as humans have laid down in basic law and universal treaties and agreements (such as the Universal Declaration of Human Rights and the Sustainable Development Goals) with the new technologies and equip them with the capacity to act upon these values in all decision making and actions, using all the data available, we create the best of both worlds: humans and artifacts going hand in hand. We place our bet on this.

We should then also agree that sometimes we might not like the recommendations technology gives us, the decisions it makes, and the acts it performs (because we are lazy, recalcitrant, egoist, evil, ignorant, confused). However, if these are in line with our best interests and goals as humankind, we should by and large recognize and accept them. Is this techno-humanism? Algorithmic governance? Probably yes. Is this strange and unprecedented? Yes. Could it give way to technofascism and dehumanization Robocop style? Only if we do not get things right. Doing the right things and doing things right is key, as film director Spike Lee told us. Might there come a day when technology takes over to save the planet, end all wars, create peace, and rescue the weakest groups in our society at the very last minute? We do not know and we do not want to think about this. Not now.

In these bleak times, where the stakes are high, we may have little confidence in good outcomes, but we can still keep our faith in good processes, collaboration, and cooperation. There is nothing

inherent in our human nature, competencies, or in non-human intelligence that restricts us in doing our utmost best, especially for the young and future generation. May this essay be a call for action.

References

- Aarts, E., Fleuren, H., Sitskoorn, M., & Wilthagen, T. (Eds.). (2020). *The New Common: How the Covid-19 pandemic is transforming society*. Tilburg University.
https://pure.uvt.nl/ws/portalfiles/portal/41774237/The_New_Common_cover.pdf
- Aarts, E., Fleuren, H., Sitskoorn, M. & Wilthagen, T. (Eds.). (2021). *The new common: How the COVID-19 pandemic is transforming society*. Springer.
- Adler, G., Fordham, M., Read, H., McGuire, W., & Hull, R. F. C. (Eds.). (2014). *The collected works of C.G. Jung: Complete digital edition*. Princeton University Press.
- Arendt, H. (2019). *The human condition* (2nd ed.). University of Chicago Press. (Original work published 1958)
- Autor, D., Salomons, A., & Seegmiller, B. (2021). *New frontiers: The origins and content of new work, 1940-2018*. <https://economics.mit.edu/files/21810>
- Boyd, D. R. (2017). *The rights of nature: A legal revolution that could save the world*. ECW Press.
- Brada, J. C. (2013). The distribution of income between labor and capital is not stable: But why is that so and why does it matter? *Economic Systems*, 37(3), 333-344.
<https://doi-org.tilburguniversity.idm.oclc.org/10.1016/j.ecosys.2013.04.001>
- Bregman, R. (2021). *Humankind: A hopeful history* (E. Moore & E. Manton, Trans.). Bloomsbury Publishing. (Original work published 2019).
- Britannica. (n.d.). *Neuroplasticity*. In *Britannica Dictionary*. Retrieved 27 April, 2022, from <https://www.britannica.com/summary/neuroplasticity>
- Brown G. C. (2015). Living too long: The current focus of medical research on increasing the quantity, rather than the quality, of life is damaging our health and harming the economy. *EMBO reports*, 16(2), 137–141. <https://doi.org/10.15252/embr.201439518>
- Browning, C. R. (2017). *Ordinary men: Reserve police battalion 101 and the final solution in Poland* (Rev. ed). HarperCollins Publishers.
- Brugman, I. J. (1978). *De arbeidende klasse in Nederland in de 19e eeuw, 1813-1870* [The working class in the Netherlands in the 19th century, 1813-1870] (11th ed.). Spectrum.
- Club of Rome. (1972). *The limits to growth*. Universe Books.
- Damen, F. & Frijters, S. (2022, April 23). Bij wie zit een kind in de klas? [With who has a child the same class?]. *Volkskrant*. <https://www.volkskrant.nl/kijkverder/v/2022/bij-wie-zit-een-kind-in-de-klas~v510467/>
- De Swaan, A. (2015). *The killing compartments: The mentality of mass murder*. Yale University Press.
- Economist Intelligence Unit. (2021). *Democracy Index 2021: The China challenge*. The Economist Group. https://www.eiu.com/n/campaigns/democracy-index-2021/?utm_source=economist-daily-chart&utm_medium=anchor&utm_campaign=democracy-index-2020&utm_content=anchor-1#mktoForm_anchor

- European Commission. (2019). *Building trust in human-centric artificial intelligence*.
<https://ec.europa.eu/jrc/communities/en/community/digitranscope/document/building-trust-human-centric-artificial-intelligence>
- Freud, S. (2011). *Three essays on the theory of sexuality* (J. Strachey, Trans.). Martino Fine Books. (Original work published 1905)
- Gawdat, M. (2021). *Scary smart: The future of artificial intelligence and how you can save our world*. Bluebird.
- Glinksy, S., & Kumar, R. (2022, March 25). *Taliban U-turn over Afghan girls' education reveals deep leadership divisions*. The Guardian. <https://www.theguardian.com/global-development/2022/mar/25/taliban-u-turn-over-afghan-girls-education-reveals-deep-leadership-divisions-afghanistan>
- Greene, R. (2018). *The laws of human nature*. Profile Books.
- Hameleers, M., & van der Meer, T. G. L. A. (2019). Misinformation and polarization in a high-choice media environment: How effective are political fact-checkers? *Communication Research*, 47(2), 227-250. <https://doi.org/10.1177/0093650218819671>
- Harari, Y. N. (2015). *Sapiens : A brief history of humankind*. Vintage Publishing.
- Harari, Y. N. (2017). *Homo Deus: A brief history of tomorrow*. HarperCollins Publishers.
- Harari, Y. N. (2019). *21 lessons for the 21st century*. Vintage Publishing.
- Hawkins, J. (2022, April 19). *Somnium Space sells immortality using digital clones that live forever in the metaverse*. BGR. <https://bgr.com/science/somnium-space-sells-immortality-using-digital-clones-that-live-forever-in-the-metaverse/>
- Hobbes, T. (2008). *Leviathan: Or the matter, forme, & power of a common-wealth ecclesiasticall and civill* (J. A. C. Gaskin, Ed.). Oxford University Press. (Original work published 1651)
- Hugo, V. (2020). *Les misérables* [The wretched] (C. E. Wilbour & N. Denny, Trans.). Pharos Books. (Original work published 1862)
- Intergovernmental Panel on Climate Change. (2022a). *Climate Change 2022: Impacts, adaptation and vulnerability* (Sixth Assessment Report). World Meteorological Organization; United Nations Environment Programme. <https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/>
- Intergovernmental Panel on Climate Change. (2022b). *Climate Change 2022: Mitigation of climate change*. World Meteorological Organization; United Nations Environment Programme. https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_FullReport.pdf
- Islam, F. (2022, April 2021). *Ukraine war: World Bank warns of 'human catastrophe' food crisis*. BBC News. <https://www.bbc.com/news/business-61171529>
- Kahneman, D. (2012). *Thinking, fast and slow*. Penguin Books.
- Keyton, D. Gambrell, J. (2022, April 26). *Russian foreign minister Sergei Lavrov warns Ukraine against provoking World War III*. Time. <https://time.com/6170616/russia-ukraine-world-war/>
- Locke, J. (2009). *The second treatise of government*. Barnes & Noble. (Original work published 1690)

- Lovelock, J. (2019). *Novacene: The coming age of hyperintelligence*. Allen Lane.
- Malraux, A. (2012). *La condition humaine* [The human condition] (S. Doudet & A. Verlet, Eds). Folioplus classiques. (Original work published 1933)
- Mayda, K., & Debrock, F. (2022, April 16). 'Wie wil nog een kind zetten op een stervende planeet?' [Who still wants to put a child on a starving planet?]. De Standaard. https://www.standaard.be/cnt/dmf20220414_96352288
- McEwan, I. (2020). *Machines like me*. Penguin Books.
- McGrath, M. (2022, February 28). *Climate change: IPCC report warns of 'irreversible' impacts of global warming*. BBC News. <https://www.bbc.com/news/science-environment-60525591>
- Mindlaps. (n.d.). *About us*. <https://www.mind-labs.eu/en/service/about-us/>
- Milgram, S. (1963). Behavioral Study of obedience. *The Journal of Abnormal and Social Psychology*, 67(4), 371–378. <https://doi.org/10.1037/h0040525>
- NL AI Coalition. (2021, May 20). *All the signs are in place for ELSA Labs and human centred AI*. <https://nlaic.com/en/news/all-the-signs-are-in-place-for-elsa-labs-and-human-centred-ai/>
- Norberg, J. (2016). *Progress: Ten reasons to look forward to the future*. Oneworld Publications.
- Organisation for Economic Co-operation and Development. (n.d.). *Measuring well-being and progress: Well-being research*. <https://www.oecd.org/wise/measuring-well-being-and-progress.htm>
- Our World in Data. (2022). *Coronavirus (COVID-19) deaths*. Retrieved April 1, 2022, from <https://ourworldindata.org/covid-deaths>
- Oxfam International. (2020, January 20). *World's billionaires have more wealth than 4.6 billion people*. Oxfam Novib. <https://www.oxfam.org/en/press-releases/worlds-billionaires-have-more-wealth-46-billion-people>
- Oxfam International. (2022). *First crisis, then catastrophe*. <https://www.oxfam.org/en/research/first-crisis-then-catastrophe>
- Pennycook, G., Cannon, T. D., & Rand, D. G. (2018). Prior exposure increases perceived accuracy of fake news. *Journal of experimental psychology*, 147(12), 1865–1880. <https://doi.org/10.1037/xge0000465>
- Philip, A., & Couldrey, M. (2022). Climate crisis and displacement: From commitment to action [Editor's briefing]. *Forced Migration Review*, 69. <https://www.fmreview.org/sites/fmr/files/FMRdownloads/en/FMR69%20Editors%27%20briefing%20web.pdf>
- Pinker, S. (2003). *The blank slate: The modern denial of human nature*. Penguin Books.
- Pinker, S. (2012). *The better angels of our nature: Why violence has declined*. Penguin Books.
- Poundstone, W. (1992). *Prisoner's dilemma: John von Neumann, game theory and the puzzle of the bomb*. Random House.
- Raia, P., Mondanaro, A., Melchionna, M., Di Febraro, M., Diniz-Filho, J. A. F., Rangel, T. F., Holden, P. B., Carotenuto, F., Edwards, N. R., Lima-Ribeiro, M. S., Profico, A., Maiorano, L., Castiglione

- S., Serio, C. & Rook, L. (2020). Past extinctions of homo species coincided with increased vulnerability to climatic change. *One Earth*, 3(4), 480-490.
<https://doi.org/10.1016/j.oneear.2020.09.007>
- Rhino. (2018, August 2). *Crosby, Stills, Nash & Young: Teach your children (official music video)* [Video]. YouTube. <https://www.youtube.com/watch?v=dQOaUnSmJr8>
- Román-Palacios, C., & Wiens, J. J. (2020). Recent responses to climate change reveal the drivers of species extinction and survival. *Proceedings of the National Academy of Sciences*, 117(8), 4211-4217. <https://doi.org/10.1073/pnas.1913007117>
- Rosling, H., Rosling, O., & Rosling Roennlund, A. (2018). *Factfulness: Ten reasons we're wrong about the world and why things are better than you think*. Flatiron Books.
- Rousseau, J. J. (2004). *The social contract: Or principles of political right* (M. Cranston Trans.). Penguin Books. (Original work published 1762)
- Sacasas, L. M. (2011, August 25). *Kranzberg's six laws of technology, a metaphor, and a story*. <https://thefrailestthing.com/2011/08/25/kranzbergs-six-laws-of-technology-a-metaphor-and-a-story/>
- Sitskoorn, M. (2010). *Passies van het brein* [Passions for the brain]. Prometheus.
- Sitskoorn, M. (2017). *Train your CEO brain: And become your best self*. Vakmedianet Management.
- Sitskoorn, M. (2022) *Het superbrein-geheim* [The super-brain secret] . Boom Uitgevers.
- Smith, A. (2008). *An inquiry into the nature and causes of the wealth of nations*. Oxford University Press. (Original work published 1776)
- Smith, A. (2010). *The theory of moral sentiments*. Penguin Books. (Original work published 1790)
- Smith-Schoenwalder, C. (2022, April 4). *U.N. report details 'Fast Track to Climate Disaster'*. US News. <https://www.usnews.com/news/world-report/articles/2022-04-04/u-n-report-details-fast-track-to-climate-disaster>
- Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth and happiness*. Yale University Press.
- Tilburg University. (n.d.-a). *TAISIG organises AI activities at Tilburg University*. <https://www.tilburguniversity.edu/research/institutes-and-research-groups/taisig>
- Tilburg University. (n.d.-b). *Tilburg University Junior*. https://www.tilburguniversity.edu/education/junior?utm_source=short-url
- Tilburg University. (n.d.-c). *Zero hunger lab*. <https://www.tilburguniversity.edu/research/impact/creating-value-data/zero-hunger-lab>
- Tilburg University, & Het Pon Telos. (n.d.). *Academische werkplaats 'Brede welvaart in de regio'* [Academic workplace 'Broad welfare in the region']. <https://www.tilburguniversity.edu/sites/default/files/download/Infosheet%20Academische%20Werkplaats%20DEF.pdf>
- Ukraine, the UN and history's greatest broken promise. (2022, April 9). *BBC News*. <https://www.bbc.com/news/world-europe-61021862>

- United Nations. (n.d.). *The 17 goals*. <https://sdgs.un.org/goals>
- Van Mersbergen, C. (2022, April 16). Hoogleraar: 'Deze oorlog zet de toekomst van het hele continent op het spel' [Professor: 'This war puts the future of the whole continent in jeopardy']. *Algemeen Dagblad*. <https://www.ad.nl/binnenland/hoogleraar-deze-oorlog-zet-de-toekomst-van-het-hele-continent-op-het-spel~a194be79/>
- Von Hippel, W. (2018). *The social leap: The new evolutionary science of who we are, where we come from, and what makes us happy*. HarperCollins Publishers,
- Wilthagen, T. (2021a). Het werkend perspectief van robotica [The working perspective on robotica]. *Filosofie - Tijdschrift*, 31(2), 15-19.
- Wilthagen, T. (2021b, November 18). Virus bleek niet de grote gelijkmaker [Virus did not turn out to be great equalizer]. *Brabants Dagblad*, 10-11.
- Wilthagen, T. (2022). *Roosbot*. Uitgeverij Zwijsen.
- Wilthagen, T. & P. Bongers (2020). *Resilience in an infected society*. NIAS Food for Thought <https://nias.knaw.nl/insights/tonwilthagen-resilience-in-an-infected-society/>
- Wilthagen, T., & Schoots, M. (2019). *Building TrusTee: The world's most trusted robot*. Tilburg University. <https://ssrn.com/abstract=3487489>
- Zeelenberg, M., Nelissen, R. M. A., Breugelmans, S. M., & Pieters, R. (2012). On emotion specificity in decision making: Why feeling is for doing. *Judgment and Decision making*, 3(1), 18-27.