

Next Civilization

Dirk Helbing

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Digital Democracy and Socio-Ecological
Finance—How to Avoid Dystopia
and Upgrade Society by Digital Means

Second Edition



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for the incredible support he has given to me
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¹I also like to acknowledge support from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No. 833168), see: Using the Wisdom of Crowds to Make Cities Smarter, FuturICT Blog (March 28, 2019) <http://futurict.blogspot.com/2019/03/using-wisdom-of-crowds-to-make-cities.html>; furthermore, see: ERC 2018 Advanced Grants Highlighted Projects, ERC (March 27, 2019) <https://erc.europa.eu/news/erc-2018-advanced-grants-highlighted-projects>.

Prologue

We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.

*The United States Declaration of Independence after Thomas Jefferson*²

Those who surrender freedom for security will not have, nor do they deserve, either one.

*Benjamin Franklin*³

Many people know me as the scientist who has worked, among other things, on traffic and pedestrian flows and crowd disasters. As some may still remember, I have also been the initiator and scientific coordinator of the FuturICT project.⁴ This project attracted serious interest of *Google*, *NASA*, the US government,⁵ Russia⁶ and China,⁷ for example.

FuturICT was a visionary project for the digital age that was in the pole position for Europe's one billion dollar flagship funding.⁸ You will find more information about it in the Epilogue. In short: hundreds of scientists were ready to bring a new

²https://en.wikipedia.org/wiki/United_States_Declaration_of_Independence.

³<http://www.goodreads.com/quotes/140634-those-who-surrender-freedom-for-security-will-not-have-nor>.

⁴See https://web.archive.org/web/*/www.futurict.eu.

⁵The U.S. needs a FuturICT program to confront the challenges of the 21st century government, GovLoop (January 2, 2013) <https://www.govloop.com/community/blog/the-u-s-needs-a-futurict-program-to-confront-the-challenges-of-21st-century-government/>.

⁶The FuturICT project on Russian TV: <https://youtu.be/H3aKfswfGag>.

⁷The FuturICT project on Chinese National TV: <https://youtu.be/a4rx2r9SdI>.

⁸See <http://www.futurict.eu> and Participatory Science and Computing for Our Complex World, EPJ Special Topics 214 (2012) <https://link.springer.com/journal/11734/214/1/page/1>.

paradigm for the world on the way. But, then, to everyone's—including our competitors'—surprise, another flagship candidate was chosen.⁹ With the 1 billion Euro Human Brain Project,¹⁰ Europe wanted to build a realistic brain in silico, and Barack Obama announced a multi-billion dollar Brain Initiative.¹¹ With this, the transhumanist era was launched.¹² In the course of this book, we will understand the worrying implications of this.

In principle, it is a normal thing that one project wins and another one loses, and people move on. However, here, things were pretty different for various reasons. Whatever part of the project I wanted to follow up on—Nervousnet,¹³ for example—was seriously obstructed. This applied also to our work on “Digital Democracy”,¹⁴ which was repeatedly not even accessible on the Internet. Furthermore, I was permanently put under pressure for years, and so I wondered what was going on...

My discoveries were highly concerning.¹⁵ In the meantime, a digital mirror world¹⁶ has become reality¹⁷—but without privacy, ethics, participation and democracy, it seems. Instead of a visionary, almost utopian project, it appears that dystopia is on its way, as I will show in the course of this book (besides the great potentials of the digital revolution, too).

⁹Neelie Kroes & Prof. Henry Markram: Human Brain Project (January 29, 2013) https://www.youtube.com/watch?v=DsZ_LBdthC0.

¹⁰See https://en.wikipedia.org/wiki/Human_Brain_Project and <https://www.humanbrainproject.eu>.

¹¹Obama launches multi-billion dollar brain-map project, Nature NewsBlog (April 2, 2013) <http://blogs.nature.com/news/2013/04/obama-launches-ambitious-brain-map-project-with-100-million.html>.

¹²The Age of Transhuman Politics Has Begun, Telepolis (April 12, 2015) <https://www.heise.de/tp/features/The-Age-of-Transhumanist-Politics-Has-Begun-3371228.html?seite=all>.

¹³See https://web.archive.org/web/*/nervousnet.info; Creating a Planetary Nervous System Together, TEDx Groningen (February 5, 2015) <https://www.youtube.com/watch?v=BKcWPdSUJVA>; A digital Nervousnet for everyone and the golden age of complexity science (talk given at the ICCSS2015) <https://www.youtube.com/watch?v=pN2hAcr6ujk>.

¹⁴D. Helbing and E. Pournaras, Build Digital Democracy, Nature 527, 33-34 (2015) <https://www.nature.com/news/society-build-digital-democracy-1.18690>.

¹⁵Some of them have found their way into the Science Fiction „iGod” by Willemijn Dicke and myself, published at CreateSpace (2017).

¹⁶Virtual ‘mirror’ of world to help predict future, The Sunday Times (January 6, 2013) <https://www.thetimes.co.uk/article/virtual-mirror-of-world-to-help-predict-future-rcflmw0dss>.

¹⁷Sentient world: war games on the grandest scale, The Register (June 23, 2007) https://www.theregister.com/2007/06/23/sentient_worlds/; The era of digital twins and the mirror world, Medium (May 5, 2020) <https://medium.com/@nomoko/the-era-of-digital-twins-and-the-mirror-world-82b33e3e3d46>.

I have been warning the world about the dangers of dual use¹⁸ of digital technologies since 2011.¹⁹ After the FuturICT flagship was turned down, I got concerned and started to alert the public.²⁰ In the years since 2013, hundreds of newspaper articles appeared (these can be found with *Google* News). I have given several hundred talks, which were uploaded to the FuturICT youtube channel²¹ (but not all of them are publicly accessible). I have also published dozens of blogs (see <http://futurict.blogspot.com>), many of which appeared in two books entitled “Thinking Ahead”²² and “Towards Digital Enlightenment”.²³

Furthermore, I have worked on the self-published book “The Automation of Society Is Next: How to Survive the Digital Revolution”,²⁴ which is written for a scientifically interested readership that is open to philosophical, ethical and programmatic considerations. The 10 chapters from 2015 (Chaps. 1–5 and 7–11) have become the core of this book with the title *Next Civilization*, but I have added 4 new chapters that were written in 2019 (Chap. 14) and 2020 (Chaps. 6, 12 and 13). For the sake of historical authenticity, I left the previous chapters largely unchanged.

From today’s perspective, it is hard to imagine that the 2015 version of the book was highly controversial. At that time, a global digital control system was in the making. My alternative vision of the future, based on distributed organization, coordination, self-organization, and self-governance, fundamentally questioned the data-driven paradigm controlled by a powerful Artificial Intelligence (AI).

At that time, many were looking forward to the “singularity”, after which we would see a superintelligent system or “digital God,”²⁵ which may be allowed to reign the world like a “benevolent dictator”,²⁶ based on mass surveillance data. It could also be tasked to make the world sustainable. Unfortunately, the Artificial Intelligence system may figure out that a “depopulation strategy” might “fix the

¹⁸See https://en.wikipedia.org/wiki/Dual-use_technology.

¹⁹See the second part of D. Helbing and S. Ballestti, From social data mining to forecasting socio-economic crises, EPJ Special Topics 195, 3–68 (2011) <https://link.springer.com/article/10.1140/epjst/e2011-01401-8>.

²⁰Probably the first contribution of this kind was “Google als Gott?”, published in the NZZ on March 20, 2013, <https://www.nzz.ch/startseite/google-als-gott-1.18049950>; English translation: Google as God?, in D. Helbing (ed.) Thinking Ahead (Springer, 2015) Chap. 8, <https://www.springerprofessional.de/en/google-as-god-opportunities-and-risks-of-the-information-age/2369816>, <https://arxiv.org/pdf/1304.3271>.

²¹See <https://www.youtube.com/futurict>.

²²D. Helbing (ed.) Thinking Ahead: Essays on Big Data, Digital Revolution, and Participatory Market Society (Springer, 2015).

²³D. Helbing (ed.) Towards Digital Enlightenment: Essays on the Dark and Light Sides of the Digital Revolution (Springer, 2019).

²⁴D. Helbing, The Automation of Society Is Next: How to Survive the Digital Revolution (CreateSpace, 2015).

²⁵Google and the Birth of a Digital God?, The Globalist (December 25, 2017) <https://www.theglobalist.com/google-artificial-intelligence-big-data-technology-future/>.

²⁶See https://en.wikipedia.org/wiki/Benevolent_dictatorship.

problem”. Later on, you will learn that this terrible scenario is not just theoretical, but a real possibility and serious threat.

I have, therefore, started to work on concepts that could make the world more sustainable in a democratic way: “digital democracy,” “City Olympics,” “democratic capitalism,” and a “socio-ecological finance system” (“FIN4”) to boost a circular economy²⁷—to mention just a few of the ideas featured in Chaps. 7–13. In other words, there are surely alternatives to a dystopian future, but we would have to bring them on the way.

It turns out, however, that this is more difficult than expected, because many stakeholders seem to have different plans in mind, such as China, for example, or the big tech companies of “surveillance capitalism”. These often appear to be more interested in maximizing power or profit than in “saving the world”. And even those who claim that they want to save the world (such as CERN,²⁸ the United Nations,²⁹ and the World Economic Forum³⁰) seem to pursue a centralized approach based on mass surveillance, with little transparency and no democratic participation.

In the end, one of the people who probably know more about this made a worrying statement in front of the United Nations’ General Assembly 2019:

*“Can we still have confidence in politics, in business, in international organizations? These are questions to which we must find answers at our General Assembly”.*³¹

In fact, the past years have been a tough time characterized by a global struggle for the path into the future. The following events give just a glimpse of what has happened in these years.³²

²⁷See https://en.wikipedia.org/wiki/Circular_economy.

²⁸CERN: The gulf between machine learning and AI, The Inquirer (July 29, 2015) <https://web.archive.org/web/20150731231358/https://www.theinquirer.net/inquirer/feature/2419669/cern-the-gulf-between-machine-learning-and-artificial-intelligence>.

²⁹UN and CERN celebrate science for peace and development and CERN’s 60th anniversary (October 20, 2014) <https://home.cern/news/press-release/cern/un-and-cern-celebrate-science-peace-and-development-and-cerns-60th>.

³⁰Shaping the Future of Cybersecurity and Digital Trust, <https://www.weforum.org/platforms/shaping-the-future-of-cybersecurity-and-digital-trust>; accordingly, the Global Centre for Cybersecurity (<https://www.weforum.org/videos/global-centre-for-cybersecurity>) brings together actors from America, Russia, China, Israel, Saudi Arabia and many other countries, Europol, Interpol, and companies from the banking, insurance, oil and Internet sectors, in particular Cisco and Huawei, Amazon, IBM, Mastercard, Microsoft, Palantir and PayPal.

³¹Official Speech of Federal President Ueli Maurer in front of the UN General Assembly, New York (September 24, 2019) <https://www.news.admin.ch/news/message/attachments/58526.pdf>.

³²A more detailed timeline seems to be given by this Connectivist blog: <https://theconnectivist.wordpress.com/2019/08/06/log-of-the-rightwing-power-grab-of-society/>, https://web.archive.org/web/*/https://theconnectivist.wordpress.com/2019/08/06/log-of-the-rightwing-power-grab-of-society/.

On September 25, 2015, for example, a Snowden revelation was published about the “Karma Police” program run by British secret service GCHQ, which judges (the value of) everyone’s life based on mass surveillance.³³ On the same day, Pope Francis promoted the Sustainability Development Goals (Agenda 2030) at the United Nation’s general assembly.³⁴ I mention this here, because—believe it or not—I sent him a preprint of “The Automation of Society Is Next: How to Survive the Digital Revolution” before (it was my only mail to a pope ever). Just ahead of his speech, on September 24, 2015, and on September 11, 2015, Saudi Arabia suffered from a twin disaster. It was the biggest tragedy in the history of the Muslim pilgrimage³⁵ and felt like part of the apocalypse.

As a follow-up to the UN general assembly, from November 30 to December 16, 2015, the Paris Agreement was worked out, which tried to bring a binding global contract to fight climate change on the way.³⁶ However, before the US Congress signed the agreement, Donald Trump was elected US president, who later quit the international climate deal.³⁷

Shortly before the Paris Agreement, I published the Digital Manifesto (“Digital Democracy Rather than Data Dictatorship”)³⁸ together with an interdisciplinary team of scientists. The German online version appeared on November 12, 2015, but one day later, the world got distracted by the shocking terror attacks in Paris³⁹ ahead of the climate summit. The publication of the English translation was ready to be published in *Scientific American* the week after. However, it got delayed for more than a year (in fact, until the end of the Obama administration).

³³British ‘Karma Police’ program carries out mass surveillance of the web, *The Verge* (September 25, 2015) <https://www.theverge.com/2015/9/25/9397119/gchq-karma-police-web-surveillance>; Profiled: From Radio to Porn, British Spies Track Web Users’ Online Identities, *The Intercept* (September 25, 2015) <https://theintercept.com/2015/09/25/gchq-radio-porn-spies-track-web-users-online-identities/>.

³⁴Pope Francis Addresses U.N., Calling for Peace and Environmental Justice, *The Guardian* (September 25, 2015) <https://www.nytimes.com/2015/09/26/world/europe/pope-francis-united-nations.html>; United Nations Sustainable Development Summit 2015, https://www.unaids.org/en/resources/presscentre/featurestories/2015/september/20150925_UN_Summit_opening.

³⁵See https://en.wikipedia.org/wiki/2015_Mina_stampede and K. Haase, M. Kasper, M. Koch, and S. Müller, A Pilgrim Scheduling Approach to Increase Safety During the Hajj, *Operations Research* 67(2), 376–406 (2019) <https://pubsonline.informs.org/doi/abs/10.1287/opre.2018.1798>; I.Ö. Verbas et al. Integrated Optimization and Simulation Framework for Large-Scale Crowd Management Application, *Transportation Research Record* 2560, 57–66 (2016) <https://journals.sagepub.com/doi/pdf/10.3141/2560-07>.

³⁶See https://en.wikipedia.org/wiki/Paris_Agreement.

³⁷See https://en.wikipedia.org/wiki/United_States_withdrawal_from_the_Paris_Agreement.

³⁸Das Digital-Manifest: Digitale Demokratie statt Datendiktatur, *Spektrum der Wissenschaft* (November 12, 2015) <https://www.spektrum.de/thema/das-digital-manifest/1375924>; Eine Strategie für das digitale Zeitalter, <https://www.spektrum.de/kolumne/eine-strategie-fuer-das-digitale-zeitalter/1376083>.

³⁹See https://en.wikipedia.org/wiki/November_2015_Paris_attacks.

Already before Obama left his office, it seems that China was trying to take over the role of the world's leading superpower. At the G20 summit in Hangzhou in September 2016, Obama was denied the usual red carpet treatment.⁴⁰ Before this happened, on April 30, 2016, Obama had warned the world⁴¹:

"... this is also a time around the world when some of the fundamental ideals of liberal democracies are under attack, and when notions of objectivity, and of a free press, and of facts, and of evidence are trying to be undermined. Or, in some cases, ignored entirely.

And in such a climate, it's not enough just to give people a megaphone. And that's why your power and your responsibility to dig and to question and to counter distortions and untruths is more important than ever".

This hinted at the upcoming post truth era,⁴² which apparently took over after the control of the Internet was given to ICANN at the end of September 2016.⁴³ It seems this cleared the way for a highly personalized Internet (using surveillance data about all of us). The development was complemented by two laws allowing for (counter-)propaganda.⁴⁴ I believe, we have been in a kind of information war⁴⁵ ever since. After the Cambridge Analytica scandal,⁴⁶ we know how much this development has challenged democracies all over the world.

⁴⁰Barack Obama 'deliberately snubbed' by Chinese in chaotic arrival at G20, The Guardian (September 4, 2016) <https://www.theguardian.com/world/2016/sep/04/barack-obama-deliberately-snubbed-by-chinese-in-chaotic-arrival-at-g20>.

⁴¹"Obama out": President Barack Obama's hilarious final White House Correspondents' Dinner speech (April 30, 2016) <https://www.youtube.com/watch?v=NxFkEj7KPC0>; see also <https://obamawhitehouse.archives.gov/the-press-office/2016/05/01/remarks-president-white-house-correspondents-dinner>.

⁴²See https://en.wikipedia.org/wiki/Post-truth_politics.

⁴³An Internet Giveaway to the U.N., Wall Street Journal (August 28 2016) <https://www.wsj.com/articles/an-internet-giveaway-to-the-u-n-1472421165>.

⁴⁴See https://en.wikipedia.org/wiki/Smith-Mundt_Act, https://en.wikipedia.org/wiki/Countering_Foreign_Propaganda_and_Disinformation_Act.

⁴⁵See https://en.wikipedia.org/wiki/Information_warfare; 'I made Steve Bannon's psychological warfare tool': Meet the data war whistleblower, The Guardian (March 18, 2018) <https://www.theguardian.com/news/2018/mar/17/data-war-whistleblower-christopher-wylie-faceook-nix-bannon-trump>; Before Trump, Cambridge Analytica quietly built "psyops" for militaries, FastCompany (September 25, 2019) <https://www.fastcompany.com/90235437/before-trump-cambridge-analytica-parent-built-weapons-for-war>.

⁴⁶The Cambridge Analytica Files, The Guardian, <https://www.theguardian.com/news/series/cambridge-analytica-files>.

You are certainly aware that the struggle for the future of this planet has further intensified since the world started suffering from COVID-19.⁴⁷ So, if you want to understand what might come next and what are the alternatives, it is about time to read this book, because these developments will likely affect your life much more than you ever have imagined.

Zürich, Switzerland

August, 2020⁴⁸

⁴⁷See https://en.wikipedia.org/wiki/COVID-19_pandemic, https://en.wikipedia.org/wiki/List_of_COVID-19_pandemic_legislation.

⁴⁸Where no date for the access of an Internet URL is given: all links were checked and accessed around August 8, 2020, if not specified otherwise. If an URL is not anymore accessible, please try to find it via the Internet Archive/Wayback Machine at <https://archive.org/web/>. Many scientific references may, for example, be found via <https://scholar.google.com> or <https://www.researchgate.net>

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